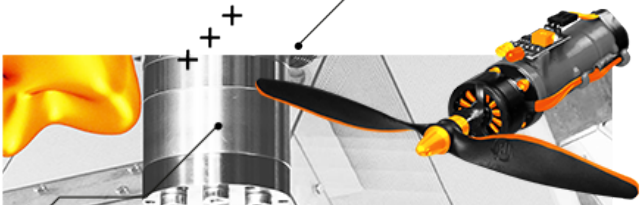
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TECHNO RAMA'26

Catalogue

technorama.ktu.edu



ktu STARTUP space

TECHNORAMA is an innovation exhibition organized by Kaunas University of Technology (KTU) Startup Space and its partners. For over two decades, it has brought together innovators – students, researchers, and technology enthusiasts.

The mission of **TECHNORAMA** is to inspire and support technology creators by showcasing their achievements to the public, providing funding for product development, and connecting them with investors and industry professionals.

In 2026, with the slogan “Let's make it!”, **TECHNORAMA** called on all innovators, creators, and tech enthusiasts to participate in the event and transform their ideas into reality.

This year's highlights include:

Projects
101 innovative projects presented at the exhibition

Participants
Over 400 innovators showcasing groundbreaking projects

Visitors
An enthusiastic audience of more than 1,500 attendees, including industry professionals and investors

Prize Fund
A prize pool of more than €12,000, dedicated to fostering innovation and supporting future development

Public vote:

Partners
11 key partners collaborating to make the event a success

Public Voting
Up to 10,000 votes for the best innovation from public voting

Pitch Battle
40 teams presented their ideas on the Pitch Battle stage

Organizers

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ktuSTARTUP space

Co-organizers

SustAIn Liv Work / CENTRE OF EXCELLENCE OF ARTIFICIAL INTELLIGENCE

Co-funded by the European Union

Main Partner

nordclinic

Partners

esa BUSINESS INCUBATION CENTRE Lithuania operated by VITP

UDS

Innovation Agency LITHUANIA | Startup Lithuania

FESTO

MARS

LEMONA electronics

ktu alumni

Kaunas

Rockit

Aardvark

Media Partner

Lrytas

Content

Chemical technologies 8

Design and Mechanics 32

Economy, Social Sciences and Humanities 80

Electricity, Electronics, and Energy 99

Health Sciences 121

Information Technologies 134

Natural Sciences and Mathematics 274

ADVANCING AI FOR SUSTAINABLE WORLD

Launched in 2023, the SustAInLivWork Centre of Excellence (CoE) for Sustainable Living and Working was established to pioneer cutting-edge solutions powered by Artificial Intelligence (AI). The CoE focuses on driving innovation across four critical domains: industry, energy, transport, and health, addressing pressing challenges with sustainable, AI-driven advancements.

It is built on strategic collaboration between key national partners:

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LITHUANIAN UNIVERSITY OF HEALTH SCIENCES

TUHH Hamburg University of Technology

VYTAUTAS MAGNUS UNIVERSITY

Tampere University

VILNIUS TECH Vilnius Gediminas Technical University

These partners contribute their expertise to enhance value creation through advanced AI technologies.

MAIN ACTIVITIES OF THE CENTRE

AI laboratories and systems

Intelligent systems modelling, business analytics, and sandbox environments with test-before-invest AI labs for external organisations.

Practical training and education

Value-added training programmes and courses that integrate best practices for implementing AI solutions while prioritising sustainability in the private and public sectors.

Systems development and evaluation

AI solutions implementation, dual-environment testing, and certification for compliance and reliability.

Data analysis

Customised data storage and computing infrastructure with 3A data

services: analysis, annotation, and anonymisation for AI applications.

New generation intelligent solutions

Personalised Explainable Artificial Intelligence (XAI) solutions providing higher levels of understanding while maintaining human oversight of AI systems.

Patents

New patents focused on delivering ethical, sustainable, robust, and high-quality intelligent technology performance.

BENEFITS FOR BUSINESS

High-value, personalised training
Access to facilities and equipment
Pool of innovative ideas
Influence research direction
Risk-free AI trials
Expanded R&D capacity

GET IN TOUCH

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https://www.sustainlivwork.eu/

PARTNER WITH US

To drive AI innovations that transform sustainability across Lithuania and beyond!

Funded by the European Union

The project is co-funded under the European Union's Horizon Europe programme under Grant Agreement No. 101059903and under the European Union Funds' Investments 2021–2027(project No. 10-042-P-0001).

CHEMICAL TECHNOLOGIES

Maris Plius: slow-cooked fish broth enriched with collagen, available in multiple flavors

Field of science Chemical Technologies
Type of innovation Food (new food products and ingredients)

Vita Neverdauskienė
Rita Čapienė
Deimantė Jackauskaitė
Virmantas Ivanauskas

Head: Dr. Loreta Bašinskienė, Dr. Aušra Rūtelionė

Kaunas University of Technology



Description of the work

The product being developed is a slow-cooked fish broth made from several types of fish, using by-products left after filleting, thereby contributing to the principles of a circular economy. The broth is prepared from natural ingredients, without artificial additives, and is enriched with collagen. To meet different consumer preferences, four flavor variations are offered: Lithuanian Classic, Mexican Heat, Eastern Essence, and Mediterranean Tradition.

The product stands out in a market dominated by meat- and vegetable-

based broths, offering a lighter, more innovative alternative. It is designed for busy, active individuals and those who prioritize healthy eating, valuing quality, natural ingredients, and convenience in their daily lives.

Technical or other problems that are solved with the work

The product addresses several key challenges faced by today's consumers. First, it tackles the lack of time. Preparing a nutritious, slow-cooked broth requires significant time and effort, which leads many people to choose quick but lower-quality alternatives such as stock cubes or highly processed products. This fish broth provides a fast and convenient way to enjoy a high-quality, natural product without compromise.

Second, it responds to the growing demand for healthier choices. Consumers are increasingly seeking food products without artificial additives, with transparent ingredients and added nutritional value. Enriched with collagen and made from natural ingredients, this broth meets these expectations.

Third, the product supports more sustainable consumption. By using fish by-products left after filleting, it helps reduce food waste and creates added value from existing resources.

Finally, there is a lack of natural fish broths on the market. This product fills that gap by offering a lighter alternative to traditional meat-based broths.

Novelty of the work

The novelty of this project lies in the product concept, which combines several important aspects into one solution. Unlike most broths on the market, typically made from meat or vegetables, this product is a slow-cooked fish broth offering a lighter and more distinctive alternative. It also emphasizes circularity by using fish by-products left after filleting, thereby reducing food waste. The broth is enriched with collagen and made exclusively from natural ingredients, without artificial food additives it provides additional functional and nutritional value, particularly important for consumers leading active and conscious lifestyles. An additional point

of differentiation is the availability of four distinct flavors, allowing the product to meet diverse consumer preferences. This results in an innovative, sustainable, and healthier option that stands out in the market.

The benefits and value to the potential users

The product offers for consumers a quick and convenient way to enjoy high-quality, natural fish broth without long preparation. It is made from natural ingredients and contains no artificial food additives, meeting the needs of healthier eating. Collagen enriches the fish broth, making it not only a nutritious food product but also a product associated with supporting skin, joints, bones, and connective tissue. A variety of flavors allows the product to be tailored to individual preferences. In addition, the product contributes to sustainability by responsibly utilizing fish raw materials. It is an innovative and convenient alternative to traditional broths, combining quality, taste, and functionality for everyday use.



Vivus – an innovative energy gel with honey and natural extracts of fu nctional/medicinal plants

Field of science Chemical Technologies
Type of innovation Food (new food products and ingredients)

Lavija Sadauskaitė
Joana Linkutė
Marija Vaišvilaitė
Kasparas Alkevičius

Head: Dr. Loreta Bašinskienė, Dr. Aušra Rūtelionė

Kaunas University of Technology



Description of the work

Vivus is a natural energy gel being developed as a healthier alternative to synthetic-composition products in the sports nutrition market. During the project, a comprehensive energy gel market analysis was conducted, along with research into consumer segments and competitors, and market gaps were identified. It was found that the majority of products currently on the market are dominated by synthetic carbohydrate sources and food additives. To address this problem, the Vivus formula uses natural honey as the primary carbohydrate source, combined with a composition of extracts from five functional plants: green tea, rhodiola (Rhodiola), ginseng (Panax), maca (Lepidium meyenii), and guarana (Paullinia cupana). The composition includes guarana and green tea extracts, which provide energy and stimulate metabolism, maca and ginseng, which enhance endurance and stress resistance, and rosea rhodiola,

which aids in bodily recovery. During the product development process, a marketing communications plan was prepared, qualitative research was conducted with target consumers, and the brand and visual identity were created. Vivus is designed not only for professional athletes but for every physically active person seeking fast, natural energy.



Technical or other problems that are solved with the work

Energy gels currently on the market are often characterized by unnatural compositions and unappealing taste, which is why many consumers avoid them or opt for less convenient alternative solutions. The product being developed solves this problem by offering an energy gel enriched with natural functional plant extracts and improved taste, which helps to quickly and easily avoid energy dips. An additional advantage is the convenient packaging that can be opened with one hand, which is especially important during active pursuits.

The target market for the product includes athletes, busy individuals and those engaged in intense mental work, as well as anyone who wants to quickly and conveniently get an extra boost of energy. Unlike energy drinks, the product being developed is focused not only on fast results but also on long-term well-being. The energy gel market in Europe is continuously growing due to increasing interest in health and an active lifestyle, which gives this product significant growth potential.

Novelty of the work

Most energy gels on the market contain synthetic carbohydrates and food additives, and are often characterized by an unpleasant taste. Vivus

addresses this problem fundamentally – honey, as the primary carbohydrate source, replaces synthetic maltodextrin and ensures a steady energy supply. The composition of five functional plant extracts – green tea, rhodiola, ginseng, guarana, and Peruvian maca – provides additional functional value that no competing product in Europe offers. This is not just another gel with sugar – it is a next-generation product that combines fast energy with the benefits of natural adaptogens, which supply the body with antioxidants, protect against inflammation, reduce both long-term and physical as well as psychological stress, and strengthen immunity.

The benefits and value to the potential users

The product contains natural carbohydrates that are rapidly absorbed, providing a quick energy boost. Natural functional plant extracts help sustain not only physical endurance but also mental performance, concentration, and overall well-being. Thanks to its balanced composition, energy is released steadily, making it suitable for both sports and an intensive workday. Its convenient form allows it to be consumed anywhere and anytime – during a workout, at work, or while traveling. The product is designed for a healthier choice, delivering energy without unnecessary artificial additives, thereby creating long-term benefits for the body and improved everyday well-being.



Coffee Kombucha – A Probiotic Drink from SCOBY Fermentation for Gut Health. Where probiotics meet your morning routine

Field of science Chemical Technologies
Type of innovation Food (new food products and ingredients)

Akila Ramesh
Balaji Jeyakumar
Yahya Mabchour
Armand Faliph
Daria Verzhbitska

Head: Dr. Loreta Bašinskienė

Kaunas University of Technology

Description of the work

This project aims to develop a novel coffee based kombucha beverage in order to create a balanced and consumer acceptable functional drink. Coffee Kombucha is a probiotic drink produced by fermenting the brew coffee along with the SCOBY (Symbiotic Culture of Bacteria and Yeast). Coffee was selected as unique nitrogen rich base with caffeine, antioxidants and a distinctive flavour. In order to provide more flavour and aroma, natural fruit extracts, syrups and spices were infused during the



secondary fermentation process. The optimized formulation resulted in a sparkling, tangy, and aromatic beverage that offers digestive health benefits alongside the familiar sensory experience of coffee. Overall, the product demonstrates strong potential as a unique functional beverage, combining the complexity of coffee with refreshing notes, while offering opportunities for further refinement and standardization.

Technical or other problems that are solved with the work

"Coffee Kombucha" aims to solve the problem of the need for healthier functional beverages. Now a days, many consumers are searching for beverages that will not only be appealing to their taste buds but also beneficial to their health. Many people prefer beverages that are healthy for the body and do not contain harmful ingredients such as excessive sugar concentration and artificial preservatives. The consumers are also in search of beverages that have a natural boost and help in promoting good health. "Coffee Kombucha" is a functional drink which provides the consumers with a naturally brewed beverage that contains probiotics and caffeine in its natural form. Hence, it is ideal for health-conscious individuals, students, and professionals who desire a refreshing drink. Additionally, it fits into the current trend of clean-label food products. The target groups are young adults and urban consumers, who prioritize their health and wellness. Functional beverages are gaining popularity at a rapid rate globally, especially in areas where consumers are aware of their gut health and the concept of sustainable consumption.

Novelty of the work

The novelty of the project is the application of the unique concept in creating a beverage based on kombucha using roasted coffee beans as a major fermentation substrate. While the previous studies have focused on coffee leaves and coffee cherry by-products, this product is based on fermenting roasted coffee beans using a SCOBY culture. Additionally, the key challenge is the adaptation of the SCOBY to grow and function effectively in a non-tea medium. When compared to other beverages, the product produces beneficial compounds like probiotics & B vitamins that contribute to improving health while providing a natural caffeine boost for

alertness and long-lasting energy levels. These beneficial components are produced without any artificial substance due to the presence of a SCOBY culture, which is the main key for the fermentation process.

The benefits and value to the potential users

Probiotic supplementation: live cultures of bacteria and yeast included in the beverage improve digestive health.

Energy booster: caffeine present in coffee gives a natural boost without any synthetic components.

Antioxidant properties: antioxidants present in coffee maintain cellular function of the body.

Reduced sugar: during fermentation sugar is reduced since some of it is consumed by bacteria and yeast making the beverage an excellent low-sugar choice compared to traditional soda drinks.

Aids digestion: various acids such as acetic, gluconic, and lactic that are formed during fermentation process help in digestion.

Clean label: it is free from preservatives, artificial flavours and colours.

Alternative for high sugary drinks: it serves as a functional beverage for people seeking alternatives to sugary carbonated drinks and energy beverages.

root&rise: A probiotic-fermented ginger drink with fruit and berry juices. Rooted in nature. Raised by fermentation

Field of science Chemical Technologies
Type of innovation Food (new food products and ingredients)

Gabija Mikailaitė
Vaida Mankutė
Pijus Mikalauskas
Simas Matas Pakerys

Head: Dr. Loreta Bašinskienė

Kaunas University of Technology

Description of the work

To offer consumers a functional, naturally derived alternative to traditional soft drinks, a fermented beverage made from ginger root was developed. This ingredient was chosen for its anti-inflammatory and antioxidant properties, as well as its beneficial effects on digestion. Probiotic lactic acid bacteria were selected for fermentation; these convert added sugars into organic acids, imparting a mildly tart, refreshing taste and improving microbiological stability. The beverage is enriched with inulin to maintain the activity of the lactic acid bacteria present in the beverage throughout its shelf life. Sugar is used to balance the strong spiciness of ginger and as a substrate for fermentation, ensuring proper activity of the lactic acid bacteria. To enhance the sensory qualities of the beverage, fruit juices and purees are used in secondary fermentation, providing natural sweetness, color, and aroma. The final product is a carbonated, refreshing beverage with a distinct ginger flavor and notes of fruit and berries.

Technical or other problems that are solved with the work

Most fermented beverages on the market are alcoholic and are produced

through yeast fermentation, a process that produces ethanol. Such products can be harmful to the body, especially when consumed regularly or in large quantities. The beverage proposed in this study is non-alcoholic, as ginger root fermentation is carried out using probiotic lactic acid bacteria, which do not produce alcohol but ensure a safe and functional fermentation process. This results in a product suitable for a broader consumer group and for daily consumption. Lactic acid bacteria not only improve the beverage's microbiological stability but can also have a positive effect on the human gut microbiota, contributing to the maintenance of a balance of beneficial bacteria, improved digestive system function, and overall well-being. Ginger root contains many bioactive compounds with antioxidant and anti-inflammatory properties. Additionally, the beverage's production process utilizes water-soluble dietary fiber—inulin which acts as a prebiotic and promotes the growth and vitality of beneficial microorganisms. This can contribute to improved digestion and the regulation of metabolic processes. This functional beverage can also be consumed as a healthier alternative to carbonated soft drinks, which typically lack additional functional benefits. For these



reasons, this beverage is suitable for anyone seeking to improve gut and digestive function, as well as those looking for a refreshing non-alcoholic fermented beverage. Thus, this functional beverage is suitable for consumers of all age groups, and according to market research, the demand for non-alcoholic fermented beverages is steadily increasing every year.

Novelty of the work

Many of the fermented ginger drinks available on the market are sold as concentrates, not ready for consumption, or as single-serve drinks. The fermented ginger drink developed here is ready to drink as a refreshing beverage in a larger container. Additionally, there are few beverages on the market enriched with probiotic bacteria that maintain a stable concentration throughout their shelf life. For this reason, the technological solution employed is the addition of soluble dietary fiber (inulin). Although inulin does not serve as the primary source of dietary fiber in the beverage, it is essential as a technological aid to ensure the viability of lactic acid bacteria. The resulting fermented beverage possesses functional properties, while its sensory characteristics are enhanced by the addition of various juices and purees.

The benefits and value to the potential users

This fermented ginger drink offers consumers not only a refreshing taste but also additional functional benefits. Ginger root is a natural source of bioactive compounds with antioxidant and anti-inflammatory properties. Probiotic lactic acid bacteria can help maintain a balanced gut microbiota, while inulin, acting as a prebiotic, promotes the growth of beneficial bacteria and maintains their viability throughout the shelf life. This drink is suitable for consumers seeking healthier, natural, and functional alternatives in their daily diet, thereby improving digestive and gut function

Sustainable Next-Generation Functional Cosmetic Products

Field of science Chemical Technologies
Type of innovation Material or technological process innovation

Ugnė Tarasaitytė
Dr. Viktorija Eisinaitė
Valentin Stephane Leclerq
Modesta Jurkštaitė
Gabija Jonavičiūtė

Head: Dr. Odeta Baniukaitienė

Kaunas University of Technology (KTU); Artua University

Description of the work

The project involves the development of sustainable functional cosmetic products in the form of tablets and membranes. These innovative formats include concentrated, water-activated cleansers, shampoos, toothpaste, shaving foams, masks, and serums. This approach significantly reduces plastic consumption, minimizes packaging volume, and improves transportation efficiency, thereby lowering environmental impact. The products ensure precise dosing and extended shelf life due to a reduced risk of microbial contamination. They respond to the growing consumer demand for more sustainable, compact, and environmentally friendly cosmetic solutions.

Technical or other problems that are solved with the work

The modern cosmetics industry faces major environmental challenges, including high consumption of plastic packaging, excessive transport of water in products, and inefficient use of resources. Liquid cosmetic products are often heavy, take up space, and generate large amounts of packaging waste.

The products being developed - tablets and membrane-form products - aim to address these issues by creating concentrated solutions, reducing plastic use, and optimizing transport costs. The target market includes environmentally conscious consumers looking for more sustainable, compact and convenient everyday cosmetic solutions. The products may also be relevant to the hotel, SPA, travel and wellness sectors.

This market is growing rapidly: the sustainable cosmetics segment is valued globally at tens of billions of US dollars and shows stable growth driven by plastic-reduction initiatives and increasing consumer demand for more sustainable products.

Novelty of the work

The novelty of the solution lies in transforming the form of cosmetics from traditional liquid products into concentrated tablets and membranes. This form eliminates excess water, reduces plastic use, and optimizes logistics. Unlike most products on the market, these products are activated only before use, ensuring more precise dosing and greater product stability. Alternative packaging options, such as recycled paper, cardboard, glass, or metal, further reduce environmental pollution. This is an innovative solution based on sustainability and functionality that meets the needs of the next generation of cosmetics consumers.



The benefits and value to the potential users

Users are offered a more convenient, sustainable, and efficient way to use cosmetics. Tablets and membranes enable precise dosing, reduce waste, and help avoid excessive consumption. Their compact form makes transport and storage easier, making the products convenient for travel. A lower risk of microbial contamination also supports a longer shelf life. By using recyclable or biodegradable packaging, the negative environmental impact is reduced. The products also simplify daily care while maintaining high effectiveness and ease of use, increasing comfort and enabling more efficient use of resources.

Chia seed pudding

Field of science Chemical Technologies
Type of innovation Food (new food products and ingredients)

Daria Verzhbytska
Armand Louis Pierre Faliph

Head: Dr. Loreta Bašinskienė

Kaunas University of Technology

Description of the work

The aim of the project was to create a healthy product from yogurt and chia seeds, which will have a positive impact on digestion and make chia seeds more acceptable for people who are sensitive to the consistency of the product.

Chia seed pudding has 2 main components: yogurt and chia seeds. From chia seeds there are omega-3 fatty acids, minerals, and a lot of dietary fibers. Those components have even higher availability because seeds are turned into powder. Yogurt provides alive probiotic bacteria into the product and organic acids that are also good for digestion. Also adding chia seeds to the yogurt reduces its water content, so product shelf life is increased.

Technical or other problems that are solved with the work

Developed product increases the acceptability of chia seeds by people who are sensitive to the consistence of food.

When chia seeds are added to the yogurt, the slime is formed. There is a problem that many people can't consume such a product because of this unappealing texture. Those people are forced to look for new sources of dietary fiber. Based on this, our team decided to make a new product that will contain chia seeds but will not have an unfavourable mouthfeel.

The second goal was also to create a new product that will have a positive impact on the digestion system. Chia seed pudding contains not only dietary fibers but also omega-3 fatty acids, minerals, probiotic bacteria and postbiotic organic acids which positively impact digestion.

Novelty of the work

There is no such product as ready to eat chia seed pudding in the market. It is very striking to combine dietary fiber products and probiotic microorganisms and other postbiotic compounds. Those compounds are cooperating and have a good effect on the digestion system. Developed product can be used as a healthy dessert with no added sugar and additives.

The benefits and value to the potential users

Potential users of chia seed pudding – people who are trying to eat healthy or have some problems with digestion. Developed product contain no added sugar and additives. Only natural compounds are used for the production, and it has a lot of health benefits.

Product contain proteins, probiotic bacteria and other compounds that positively impact digestion. Also, it can be a source of omega-3 fatty acids and minerals such as Ca, Mg, P, Fe and K.

Product cannot be described as a low-calorie food. But the nutritional value is good, and it can be used for improving digestion or as a healthy dessert, so in some cases it is also suitable for people who want to lose weight.



Innovative Solar Photocatalysis Solution for Wastewater Treatment

Field of science Chemical Technologies
Type of innovation Design solution (product design, user experience design concept, architectural design, fashion design)

Emilija Mockutė
Patricija Kirvelaitytė

Head: Dr. Martynas Tichonovas

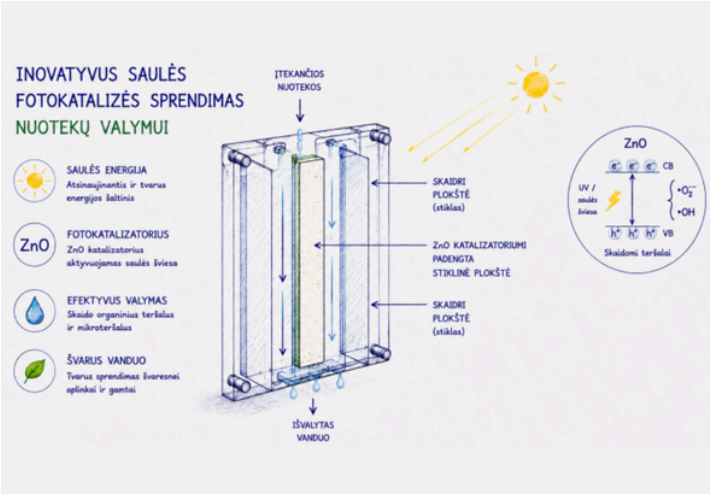
Kaunas University of Technology

Description of the work

An innovative sunlight-activated photocatalytic pilot device has been developed for tertiary wastewater treatment. The system uses a glass plate coated with a ZnO catalyst that, under sunlight, breaks down difficult-to-remove micropollutants such as pharmaceuticals, phthalates and other organic compounds that remain after conventional treatment. The solution is intended as an energy-efficient and environmentally friendly technology for improving wastewater quality.

Technical or other problems that are solved with the work

Conventional wastewater treatment technologies are unable to effectively remove many persistent micropollutants, including pharmaceuticals, endocrine-disrupting compounds, and phthalates. These contaminants remain in treated wastewater and enter rivers, lakes, and groundwater, posing risks to ecosystems and human health. Existing advanced treatment methods are often energy-intensive, expensive, or require additional chemicals. The developed solar photocatalytic reactor addresses this problem by using sunlight and a ZnO-coated glass catalyst system to degrade hazardous organic micropollutants in an energy-efficient and environmentally friendly way. The technology is designed for



quaternary wastewater treatment and aligns with the updated EU Urban Wastewater Treatment Directive requirements regarding micropollutant removal and sustainable treatment solutions. The target market includes municipal wastewater treatment plants, environmental engineering companies, and industrial facilities seeking sustainable advanced water treatment technologies. Increasing environmental regulations and demand for green technologies create strong future growth potential for this market.

Novelty of the work

The novelty of this solution lies in combining solar-driven photocatalysis with a ZnO-coated glass plate reactor designed specifically for quaternary wastewater treatment. Unlike conventional photocatalytic systems that often rely on suspended nanoparticles or energy-intensive UV sources, this reactor uses immobilized ZnO catalyst layers activated by natural sunlight, reducing energy consumption and minimizing catalyst leakage into treated water. The reactor design enables wastewater to flow vertically between transparent glass plates, maximizing light exposure, and catalyst contact efficiency. The technology targets persistent micropollutants such as pharmaceuticals and phthalates that are difficult to remove using conventional biological treatment methods. Additionally, the solution is designed for easy integration into existing wastewater treatment infrastructure, providing a sustainable, low-maintenance, and chemical-free treatment alternative.

The benefits and value to the potential users

The proposed technology offers wastewater treatment plants and industrial users a sustainable and energy-efficient solution for removing persistent micropollutants. The reactor operates using solar energy, reducing electricity consumption, and operational costs. Unlike many advanced treatment systems, it does not require additional chemical reagents and can be integrated into existing treatment infrastructure. The ZnO-coated glass catalyst system enables effective degradation of pharmaceuticals and other hazardous contaminants while minimizing environmental impact. The solution supports compliance with future EU wastewater regulations and contributes to cleaner surface waters and safer ecosystems. Additionally, the technology promotes green innovation and sustainable water management practices.

Plant-based Fibrous Scaffolds for Cultivated Meat

Field of science Chemical Technologies
Type of innovation Food (new food products and ingredients)

Eidvylė Gasiulytė
Ingrida Pauliukaitytė

Head: Dr. Darius Čiužas, Dr. Edvinas Krugly

Kaunas University of Technology

Description of the work

As global meat demand continues to grow and sustainability, ethical and food safety challenges become increasingly important, cultivated meat is emerging as one of the most promising alternatives to traditional animal farming. However, one of the key challenges remains the recreation of the natural structure of muscle tissue. Plant-based proteins, such as zein, soy and wheat gluten proteins, are considered promising materials to produce fibrous scaffolds for cultivated meat.

The aim of this work is to develop edible plant-protein-based scaffolds that can imitate the structure of natural muscle tissue. The scaffolds are produced using electrospinning, a technology that enables the formation of a cell-supportive microenvironment resembling natural conditions in the body. By adjusting the solution composition and processing parameters, scaffold morphology can be controlled to provide the structure, fibrous texture, and integrity characteristic of meat. The developed system could serve as a sustainable and cost-effective platform for cultivated meat production.

Technical or other problems that are solved with the work

In rapidly developing economies, population growth and economic expansion are increasing the demand for meat. Growing global meat

demand, together with environmental, ethical and food safety challenges, is driving the search for alternative protein sources. Cultivated meat is one of the most promising directions, as it can reproduce meat-like texture and, biologically, is real meat containing muscle cells. However, its development is limited by the difficulty of recreating the natural structure of muscle tissue.

Grown cells alone are not sufficient – without a three-dimensional scaffold and aligned fiber organization, the product resembles a cell mass rather than real meat tissue. Recreating the texture, integrity and mechanical strength characteristic of whole meat is especially challenging.

The developed protein-based scaffold addresses the lack of food-safe, edible and biologically active structural materials. Currently, scaffolds used for cultivated meat production are either non-edible or insufficiently functional and therefore do not meet sustainability and safety principles of cultivated meat or the requirements of the European Union “Novel Food” regulation.

Thus, as interest in animal welfare, sustainable food and technological food production solutions grows, there is an increasing global need to develop innovative, safe and sustainable food products, such as plant-based meat alternatives and cultivated meat.

Novelty of the work

The laboratory-grown meat sector is attracting increasing investment. The European Parliament study “Alternative protein sources for food and feed” analyses alternative protein sources, including cultivated meat, and their potential to support sustainable food production and supply chains in the European Union.

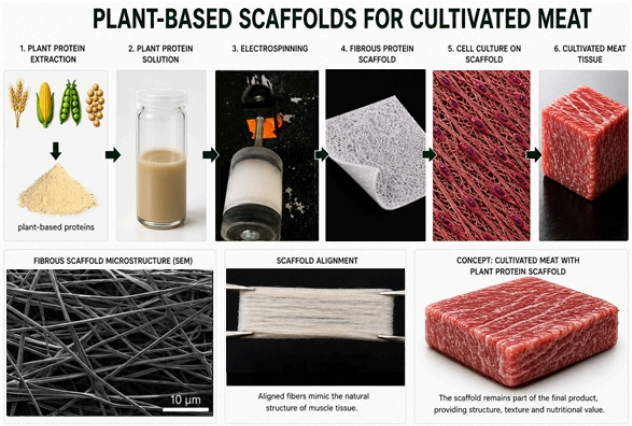
Various types of scaffolds are used in cultivated meat research, including hydrogels, microcarriers, porous three-dimensional structures and other approaches. However, these systems have limitations. For example, hydrogels are too soft and lack suitable sites for cell attachment, while

microcarriers require an additional cell separation cell. In contract, electrospun scaffolds are not merely a temporary support material but can remain as part of the final product, providing meat-like structure and fibrous texture while enriching it with plant proteins.

The benefits and value to the potential users

The edible scaffold could support the development of structured cultivated meat products with a texture and composition closer to natural muscle tissue. By providing a three-dimensional protein matrix, it would help improve the quality, structural integrity, and consumer acceptance of the final product.

Since the scaffold is made from edible plant proteins, it would not need to be removed from the final product and could remain as part of the structural protein matrix. This would simplify the production process, enhance the nutritional value of the product, and facilitate its application in food technologies. Furthermore, such a system would allow better control over the product's composition, texture, safety, and nutritional value, while offering consumers new products enriched with plant proteins.



DESIGN AND MECHANICS

TRL 7 – System prototype demonstrated in an operational environment.

eSharkTek — Interactive Projection Mapping & Smart RFID and AI-Powered Gobo Safety System

Field of science Design and Mechanics
Type of innovation Hardware solutions (electronic devices, robotics, computer hardware and equipment, wearable devices, etc.)

Anupriya Srinivasan Rettagunta

Head: Charan Narayan Sridhar

Kaunas University of Technology

Description of the work

eSharkTek MB presents two integrated innovations for transforming physical spaces. First, an advanced projection mapping and real-time motion tracking platform that turns any surface into an interactive experience — visitors engage through natural body movement, no controllers needed. Second, AI-powered gobo projectors with embedded RFID safety technology that ensures only authorized users can operate equipment, monitors usage in real time, and prevents misuse in public environments. Both solutions are fully working, already deployed in real-world venues, and designed to serve entertainment centers, educational facilities, and corporate events. Together they represent a complete smart venue technology ecosystem.

Technical or other problems that are solved with the work

Problem 1 — Lack of engagement: Traditional spaces such as entertainment centers, classrooms, escape rooms, and corporate venues struggle to deliver memorable, interactive experiences. Static displays and passive presentations fail to captivate today's audiences, particularly younger generations who expect dynamic, participatory digital content. The global immersive entertainment market is projected to exceed $15

billion by 2030, yet accessible, affordable solutions for mid-sized venues remain scarce.

Problem 2 — Safety and access control in public projection environments: Gobo projectors deployed in public or semi-public spaces pose real liability risks when unmonitored — equipment can be tampered with, misused, or operated by unauthorized persons. Venue operators currently have no intelligent, automated way to control and audit projector usage. eSharkTek solves this with an AI-driven RFID layer embedded directly into the projector hardware, enabling real-time authorization checks, usage logging, and automatic anomaly alerts. Target markets include entertainment venues, museums, schools, escape rooms, and corporate spaces across Europe.

Novelty of the work

eSharkTek is unique in combining two innovations within a single company offering. The interactive projection mapping system uses a proprietary real-time motion tracking engine that requires no wearables or hand-held devices, making it significantly more accessible than competing solutions. The AI-powered RFID safety integration in gobo projectors is, to our knowledge, the first of its kind on the European market — competitors offer either creative AV installations or separate access control systems, never both unified in one product. The modular architecture of both solutions allows rapid deployment across different venue sizes and types, drastically reducing setup time and cost. This combination of immersive experience creation and intelligent safety infrastructure opens the door to regulated sectors — schools, public institutions, museums — that standard AV providers cannot serve.

The benefits and value to the potential users

eSharkTek delivers two high-value outcomes for venue operators and institutions. The interactive projection mapping platform dramatically increases visitor engagement, dwell time, and return visits — directly boosting revenue without requiring structural changes to existing spaces. Content is fully customizable and remotely updatable. The AI + RFID gobo safety system eliminates liability risks associated with public projector

deployment, reduces maintenance costs through automated monitoring, and makes high-powered projection equipment suitable for unsupervised environments such as school classrooms and public exhibitions. Together, both solutions give clients a complete, intelligent venue technology stack — from immersive audience experience to secure, smart equipment management — in one partner relationship.



Kovarnis “Meshstream” – a wearable mesh communication system for secure and reliable communication on the move

Field of science Design and Mechanics
Type of innovation Hardware solutions (electronic devices, robotics, computer hardware and equipment, wearable devices, etc.)

Kostas Čaplinskas
Mantas Indrašius

Head: Ginas Baladinskas

Kovarnis (KTU Startup Space team)

Description of the work

MeshStream is a modular LoRa-based mesh communication system designed for secure and reliable data transmission in challenging environments. The system is built for scenarios where traditional communication infrastructure becomes unreliable or unavailable — such as border regions, combat zones, remote areas, or mobile operations. The solution combines a self-healing mesh network, high-bandwidth streaming capabilities, and a chain-of-trust security architecture. Each device acts as a network node capable of relaying data while supporting mission-specific expansion modules such as AI cameras, routers, sensors, or swarm computing units. MeshStream is designed for defence, security, drone operations, IoT, and broader dual-use applications.

Technical or other problems that are solved with the work

Current communication systems often become unreliable or cease to function entirely in environments where infrastructure is unavailable, signals are disrupted, or connectivity must be maintained within networks of moving assets. This challenge is particularly relevant in border security, defense operations, drone missions, search and rescue activities, and

remote IoT applications. The loss of communication disrupts data transmission, coordination, and situational awareness, potentially leading to critical consequences.

“MeshStream” addresses this problem by creating a decentralized, self-healing LoRa mesh network in which each device can operate as a communication node and automatically relay data through alternative routes. The system also enables higher-bandwidth communication channels to be activated on demand for transmitting video streams and sensor data.

The target market includes defense organizations, border security agencies, drone operators, and industrial IoT applications. In addition, the solution demonstrates strong potential in civilian use cases, such as search and rescue operations, expeditions, and remote monitoring of natural environments and disasters. The dual-use communications market is valued at more than EUR 160 billion, while the LoRa and LoRaWAN device market is projected to exceed EUR 30 billion by 2031.

Novelty of the work

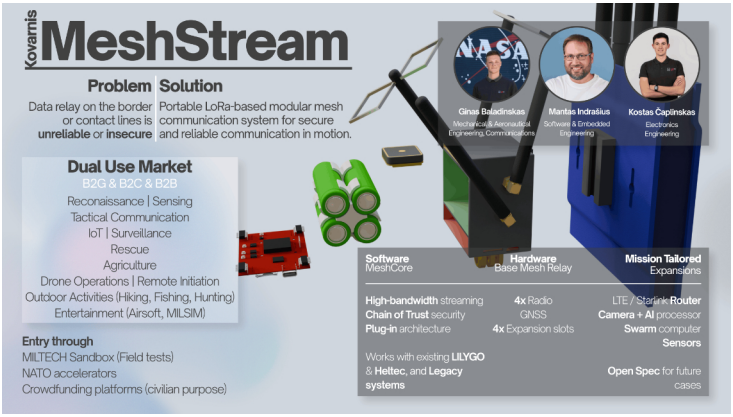
“MeshStream” stands out by integrating modular hardware, a LoRa mesh network, high-speed data transmission, and an open software architecture into a single, unified system. Unlike many existing solutions on the market, the system is not restricted to a single hardware manufacturer or a closed ecosystem. It supports integration with existing LoRa devices, ATAK, NATO SAPIENT, streaming protocols, and other equipment that provides standard interfaces.

Each device is equipped with expansion slots that enable the connection of AI-powered cameras, sensors, routers, and other mission-specific modules. The open architecture also allows users and organizations to develop their own modules and tailor the system to their specific operational requirements.

The benefits and value to the potential users

“MeshStream” provides users with secure, reliable, and highly adaptable communication in environments where traditional systems are ineffective or vulnerable. Its self-healing mesh network ensures that data reaches its destination even if part of the network becomes unavailable. The modular architecture enables the system to be easily tailored to different mission requirements, ranging from drone operations and surveillance to IoT deployments and search-and-rescue activities.

The solution supports integration with existing platforms and standards, including ATAK, LoRaWAN, and legacy equipment, allowing organizations to leverage their current infrastructure. Its open architecture reduces dependence on a single vendor and provides the flexibility to expand and customize the system according to specific operational needs.



Perkūnas Racing Team KTU – Student-Built Formula Student Race Car

Field of science Design and Mechanics
Type of innovation Hardware solutions (electronic devices, robotics, computer hardware and equipment, wearable devices, etc.)

Head: Benas Lukosevicius, Deivid Mico

Kaunas University of Technology

Description of the work

Perkūnas Racing Team KTU is a student-led Formula Student race car project developed at Kaunas University of Technology. The team aims to design, manufacture, and test a KTU Formula Student internal combustion race car for international engineering competitions. The project covers the full vehicle development process, including chassis, suspension, drivetrain, braking system, electronics, aerodynamics, and safety systems. The team has already manufactured the chassis, prepared the engine, fuel tank, and many key components, while the current focus is on vehicle assembly, testing, and preparation for Formula Student competitions in Europe. The project gives students real hands-on experience in automotive engineering, manufacturing, project management, and teamwork.



Technical or other problems that are solved with the work

Formula Student projects address the gap between theoretical engineering education and real-world product development. While many students acquire a strong theoretical foundation during their studies, they have limited opportunities to gain practical experience in designing, manufacturing, testing, budgeting, and managing complex engineering systems under clearly defined requirements and deadlines. Perkūnas Racing Team KTU addresses this challenge by developing a full-scale educational engineering platform in the form of a Formula Student race car designed and manufactured by students.

The target audience includes engineering students, prospective employers in the automotive, transportation, manufacturing, and mobility sectors, as well as the wider university community. The project enables students to gain hands-on experience in CAD design, structural engineering, powertrain integration, electronics, manufacturing processes, testing, cost planning, and technical documentation. At the same time, it contributes to strengthening the image of Kaunas University of Technology (KTU) as an institution that promotes practical engineering and innovation.

The Formula Student community in Europe is extensive and continues to grow, and this project has the potential to evolve into a long-term KTU engineering team that attracts students, sponsors, researchers, and industrial partners.

Novelty of the work

The novelty of the project lies not only in the vehicle itself, but also in the establishment of the first comprehensive Formula Student development platform at Kaunas University of Technology (KTU). Unlike a conventional student project, it represents an interdisciplinary engineering system developed in accordance with international Formula Student regulations. The project encompasses mechanical design, electronics, manufacturing, safety systems, technical documentation, testing, and elements of business planning.

The team is developing a fully functional Formula Student race car powered by an internal combustion engine, featuring a custom-designed chassis, integrated powertrain, suspension components, fuel system, electronics, and future aerodynamic enhancements. Furthermore, the project establishes a foundation for future KTU Formula Student vehicles, enabling subsequent teams to refine, test, and utilize the platform for the development of new engineering solutions.

The benefits and value to the potential users

The primary value of the project lies in providing practical engineering education. Students gain hands-on experience by developing a functioning race car from the initial concept and design stages through to manufacturing, assembly, and testing. The project helps participants develop competencies in CAD design, manufacturing processes, structural analysis, vehicle dynamics, electronics, teamwork, budgeting, and project management.

For industry partners, the team serves as a direct connection to highly motivated students who enter the job market with valuable practical engineering experience. For Kaunas University of Technology (KTU), the project enhances international visibility through participation in Formula Student competitions, strengthens the university's reputation for innovation, and establishes a foundation for future student projects, research initiatives, and collaborations with industry.





TrynGo

Field of science Design and Mechanics
Type of innovation Design solution (product design, user experience design concept, architectural design, fashion design)

Ugnė Sasnauskaitė
Luka Šturma
Gedas Užemeckas
Gvidas Santockis

Head: Dr. Rita Jucevičienė, Vykintė Miciūtė

Kaunas University of Technology

Description of the work

A Tinder style platform where user swipes clothes to create monthly clothing package from 5 selected items. The user of the app wears the clothes for the entire month, and at the end of the month, they might return them and receive a new package selected for the following month.

Technical or other problems that are solved with the work

Our business addresses the problems of fast fashion, overconsumption, and the limited affordability of expensive clothing. People often buy new clothes, wear them only a few times, and then leave them in the wardrobe or throw them away. This creates large amounts of textile waste and encourages unsustainable consumption. At the same time, not everyone can afford to buy new or more expensive clothing frequently, although they want to look stylish and change their image.

Our clothing subscription app allows customers to choose five garments for EUR 80 per month, wear them for one month, then return them and choose new ones the following month. This allows users to continuously refresh their wardrobe, try different styles, avoid spending large amounts on new

purchases, and contribute to more sustainable clothing use.

Novelty of the work

The novelty lies in several elements. First, clothing is selected using a Tinder-like swipe principle: users quickly swipe through clothing suggestions and mark them as liked or disliked, making selection simpler, faster and more engaging. Second, the subscription model replaces purchasing users to pay EUR 80 per month and receive five selected garments, which they return the following month before choosing new ones. Third, the service combines sustainability and fashion by encouraging clothing reuse, reducing excessive purchasing and textile waste. The app can also collect information on user size, style, favorite colors and choices to provide increasingly ppersonalized suggestions. Finally, the entire process is managed in one app, from choosing clothes and ordering the subscription to tracking delivery, returning garments, and selecting new items for the next month.

The benefits and value to the potential users

The business provides potential users with value through cost savings, convenience, style renewal, and sustainability. The main value for users is the ability to refresh their wardrobe every month, try new desired clothes, and look stylish without continuously purchasing new garments. Benefits include lower clothing expenses, a constantly updated style, a convenient app, the ability to try more expensive or more varied garments, and fewer unnecessary clothes in the wardrobe.

Alex7fit – motorized resistance-training device

Field of science Design and Mechanics
Type of innovation Hardware (e.g. electronic device, robotics, computer hardware, wearable technology, etc.)

Augustė Lukošiūtė
Timas Akelis

Head: Dr. Valdas Grigaliūnas

Kaunas University of Technology (KTU) and MB "Inosportas"

Description of the work

Alex7fit is a system designed for sports and rehabilitation. Unlike traditional machines, this device generates resistance using an electric motor, which enables precise control of the load and real-time data tracking.

Technical or other problems that are solved with the work

Traditional training machines use a fixed weight that cannot be adjusted during exercise, which often leads to improper movement and increases the risk of injury. By using a motorized system, the load can be adjusted precisely and in real time, allowing it to adapt to changes in the user's strength or movement. Various attachments add versatility to how the device can be mounted and used, while real-time data tracking enables personalized training and improves overall effectiveness.

Target market and customers are sports performance centers, physiotherapy clinics, and individual users who want smarter, data-driven training. It is designed for athletes looking to improve performance, patients recovering from injuries, and fitness enthusiasts who want professional-level feedback at home. The global market for fitness and rehabilitation equipment is large and growing every year, especially the segment focused on smart, connected devices. As more people look for

personalized training and technology-enhanced rehabilitation, demand for adaptive systems is increasing quickly.

Novelty of the work

The solution stands out from existing options through the number of operating modes and the range of generated force. It offers a wider range of operating modes and a broader power range, enabling reliable performance in both low-power and high-demand conditions. It also provides strong scalability and smooth integration with different setups. A flexible control system allows users to adapt the device to various training or operational needs with ease. The device also has a durable, long-lasting design built to withstand intensive use and challenging environments, ensuring consistent performance and extending the system's overall lifespan.

The benefits and value to the potential users

Alex7it creates a clear value to both performance and rehabilitation users. For coaches and physiotherapists, it provides precise control of resistance and real-time data, making training safer and easier to personalize. They can track progress objectively and adjust programs based on actual measurements.

For athletes and everyday users, the system ensures more effective workouts by adapting to their strength and movement. This helps them train with better technique, reduce injury risk, and improve results faster. Because one device can replace multiple machines, it also saves space and expands training possibilities.



SAKAVA: Hazardous Photopolymer Resin Waste Collection System for Small-Scale Producers

Field of science Design and Mechanics
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Aivaras Sendžikas

Head: Aivaras Sendžikas

Kaunas University of Technology

Description of the work

SAKAVA is a subscription-based hazardous waste collection service for small-scale 3D printing makers, dental technician laboratories, and creative professionals generating photopolymer resin waste. The system provides purpose-built HDPE containers, collects them via EV fleet, and returns a compliance certificate after every swap. SAKAVA creates the first systematic dataset on photopolymer waste volumes in the region, enabling future circular economy infrastructure that currently cannot exist without this data.

Technical or other problems that are solved with the work

Small-scale producers in the photopolymer economy - 3D printing enthusiasts, dental technology laboratories and creative studios - generate chemically hazardous resin and solvent waste classified under UN 3082, but lack a dedicated collection system, compliance pathway or opportunity to recover material value. Currently, this waste illegally enters municipal waste streams, is poured into drains or accumulates at workplaces without a clear disposal route. Existing hazardous-waste infrastructure is designed for large industrial producers: minimum quantities, industrial pricing and regulatory complexity make it inaccessible to small operators.

The target market is the growing community of desktop resin printer users, dental technology laboratories and small creative studios in Lithuanian cities, estimated at several thousand active generators in Kaunas and Vilnius alone, with no existing legal disposal option. The regulatory gap is documented: Ameralabs, a Kaunas-based resin producer, classifies its TGM-7 product with H360D reproductive toxicity and H410 category 1 aquatic toxicity hazard statements, yet small users have no accessible legal disposal route. SAKAVA addresses this infrastructure gap where it actually exists.

Novelty of the work

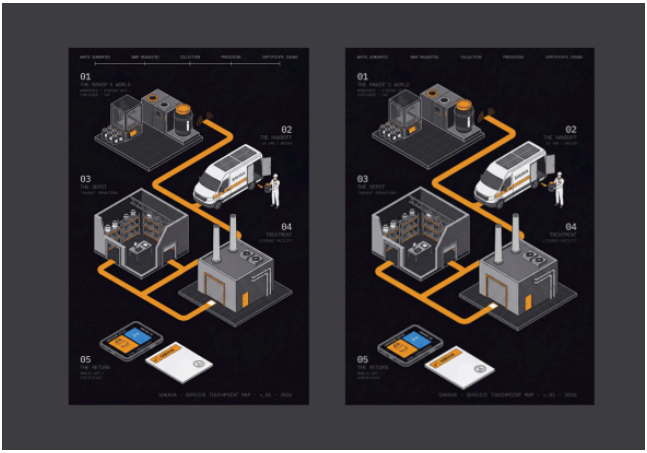
No existing service in Lithuania or the wider Baltic region provides dedicated hazardous-waste collection adapted and priced for small-volume photopolymer producers. Industrial hazardous-waste contractors require minimum quantities and charge industrial prices. SAKAVA's novelty operates on three levels: a two-stream container system designed specifically for photopolymer waste with NFC-enabled chain-of-custody tracking; a subscription and exchange-fee model economically accessible to individuals and micro-enterprises; and an aggregated data platform generating the region's first systematic dataset on this waste stream. The amber-related brand identity (Sakava, from the root of resin) and Baltic materials-heritage narrative further position the intervention as a culturally rooted circular-economy solution rather than a standard logistics service. It has been experimentally confirmed that collected resin waste can be mechanically processed and used as a secondary material, demonstrating circular-economy potential beyond waste collection alone.

The benefits and value to the potential users

Subscribers receive two purpose-built containers for resin and IPA waste, electric-vehicle collection on request and a compliance certificate after each exchange, without needing regulatory knowledge or logistics management. For makers, dental technology laboratories and studios, the certificate serves as documented proof of responsible waste disposal for subsidy applications, customer communication and professional accreditation. The subscription model removes upfront costs, NFC-

enabled exchange requests remove friction, and the data platform returns aggregated waste-impact data, making each subscriber's contribution visible. For the first time, small operators can fulfil their legal hazardous-waste obligations through a service designed at their scale.





Remotely Controlled Hexapod Robot with Integrated Vision System

Field of science Design and Mechanics
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Amelija Kalonaitytė

Head: Dr. Marius Rimašauskas

Kaunas University of Technology

Description of the work

Manual pipeline inspection is a dangerous practice. Workers are often exposed to low-oxygen environments, toxic gases, biological hazards, and conditions where tripping and slipping are common. Robotic solutions can help automate inspections, but their high prices often limit broad adoption. This creates a need for low-cost robotised system for pipeline inspection, such as the designed remotely controlled hexapod robot. The robot can be controlled over Wi-Fi, moves at a speed of 0.034 m/s, and can ascend inclinations of up to 40 degrees – whether the surface is wet, dry, or covered in debris. The robot is equipped with an adjustable camera with a flash feature, capable of capturing images and saving them into micro-SD card. Its six-legged design provides good stability on uneven terrain making it an affordable alternative to commercial inspection robots.

Technical or other problems that are solved with the work

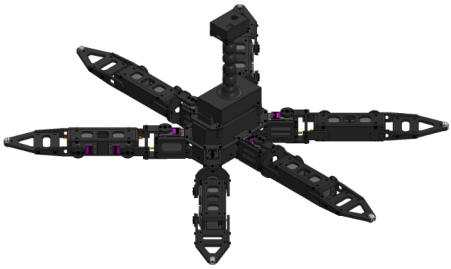
Manual pipeline inspection exposes workers to toxic gases, low oxygen environments, chemicals, biological waste, and slippery surfaces – dangerous conditions. Commercial robotic inspection systems exist, but their cost can be quite high, putting them out of reach for small businesses all over the world. Therefore, this project addresses the problem by creating a low-cost robot, capable to execute pipeline inspections.

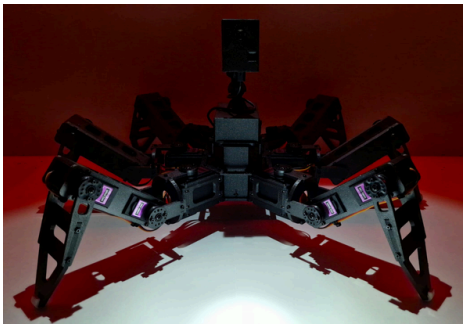
Novelty of the work

The novelty of the work lies in applying a hexapod platform to confined-space pipeline inspection – an area where legged robots are still rare. The robot combines six-legged locomotion, an integrated vision system, and remote control into one compact, low-cost prototype. Its speed and climbing abilities are comparable to the commercial inspection robots sold by retailers, yet its cost is roughly 15 times lower.

The benefits and value to the potential users

The project can increase the automation of pipeline inspection, thereby improving worker safety, by reducing the need for manual entry into hazardous confined spaces. The robot is easily customizable – its Lego-like design allows for easy modification of parts, resizing of the platform, and adjustments for different pipe diameters or inspection purposes. The controls are intuitive, making operation possible even for less-skilled users. Most importantly, its low cost makes robotic inspection accessible to everyone.





Protonic: An Integrated EMG-Controlled Bionic Hand for Low-Cost Prosthetics

Field of science Design and Mechanics
Type of innovation Hardware (e.g. electronic device, robotics, computer hardware, wearable technology, etc.)

Dániel Papp

Head: Dániel Papp

Kaunas University of Technology

Description of the work

Protonic: An Early-Stage Prototype for Individual-Digit Bionic Control

Protonic is a student-led engineering project focused on developing an affordable, functional bionic prosthetic. Currently in its initial prototyping phase, the project explores the use of non-invasive EMG sensors to capture muscle signals and translate them into motion. Unlike many entry-level designs that use a single motor for the entire hand, Protonic features independent finger actuation.

Using a 3D-printed chassis and integrated micro-servos, this prototype serves as a proof-of-concept for high-dexterity control on a budget. By isolating movements for each finger, we are laying the groundwork for a prosthetic that can eventually perform complex daily tasks. This stage of the project is dedicated to refining signal accuracy and mechanical reliability, proving that sophisticated prosthetic technology can be developed through accessible, iterative student innovation.

Technical or other problems that are solved with the work

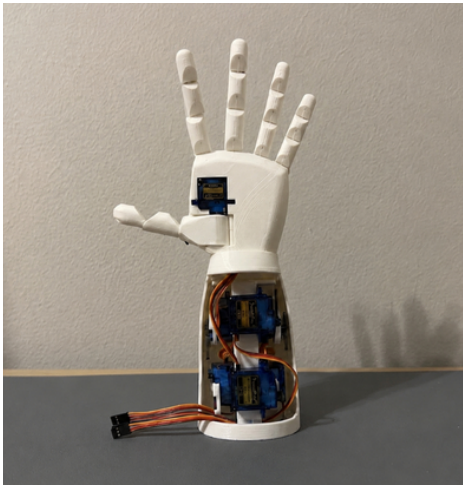
A huge problem for people with limb loss is that high-end bionics usually require invasive surgery or nerve remapping, which is scary, risky, and

incredibly expensive. This creates a “fear of the unknown” and keeps life-changing tech out of reach for the average person. As students, we see a gap where prosthetics are either cheap "plastic hooks" or €50,000 medical devices.

Protonic is designed to be a non-invasive, over-the-counter alternative. We want to create a hand that you could essentially buy at a pharmacy and set up yourself. By using surface EMG sensors that just sit on the skin, we eliminate the need for any doctors or surgery. This “plug-and-play” approach slashes costs for everyone – from the manufacturer to the customer – because you aren't paying for hospital stays or specialized surgeons. We are targeting the growing $1.5B prosthetic market, but focusing on the millions of people who need a functional, low-risk tool they can actually afford. Protonic is about making bionics as simple and accessible as buying a pair of glasses.

Novelty of the work

As a student project, the novelty of Protonic isn’t in expensive specialized parts, but in how we’ve engineered high-level dexterity using everyday components. While most entry-level or DIY prosthetics use a single motor to move the whole hand as a “claw”, our prototype features independent finger actuation. We’ve developed a custom pulley system and sensor mapping that lets the user move each finger separately.



Furthermore, we are moving away from the “medical implant” mindset. Our novelty is a non-invasive, wearable approach that requires zero surgery. By proving that multi-digit coordination can be achieved with 3D-printed parts and consumer electronics, we are creating a "plug-and-play" bionic that is practical, repairable, and accessible to anyone.

The benefits and value to the potential users

The primary value of Protonic is the restoration of intuitive agency without the trauma of medical surgery. By using external EMG sensors, users can control the hand using their own muscle intentions, significantly reducing the learning curve.

Key User Benefits:

Non-Invasive: No recovery time or surgical risks; it is as easy to wear as a sports brace.

Pharmacy Accessibility: Designed to be sold and maintained without expensive medical infrastructure.

True Dexterity: Individual digit control allows for complex gestures like pointing, typing, or holding a phone.

Low-Cost Maintenance: Using 3D-printed parts and standard electronics means repairs are fast and affordable for the student or home user.

3D Printed Strain Sensors for Affordable Structural Health Monitoring of UAVs

Field of science Design and Mechanics
Type of innovation Hardware (e.g. electronic device, robotics, computer hardware, wearable technology, etc.)

Elshada Jasper

Head: Dr. Martynas Lendraitis

Kaunas University of Technology

Description of the work

Low-cost strain sensors, 3D printed from conductive PLA filament, embedded directly into a UAV arm during fabrication to monitor its structural condition in real time. Several conductive filament materials and sensor geometries were tested head-to-head before the best-performing combination was selected and taken through full mechanical validation. Three sensors were integrated into the arm during printing: two longitudinally to capture bending strain from propeller thrust, and one at 45° to detect torsion and bending from motor torque. The sensors responded cleanly to both loading conditions, with measured strains matching theoretical and simulation results within 5 to 15%. No bonding, no adhesives, no separate assembly step. The sensor becomes part of the structure.

Technical or other problems that are solved with the work

Drones and other lightweight structures can fail silently as small cracks or overloads go undetected until it's too late. Traditional strain sensors are expensive, require specialist bonding, and can't be easily fitted to complex shapes. This solution puts 3D printed strain sensors directly onto a UAV arm, detecting dangerous bending and torsion loads in real time using nothing more than a standard FDM printer and conductive filament. Target

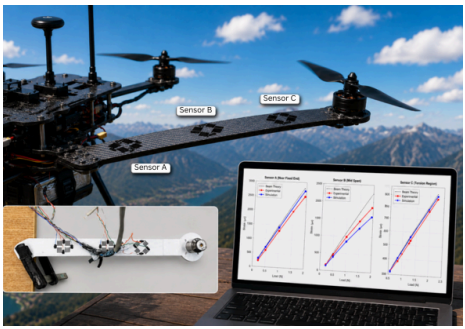
users are UAV developers, small engineering teams, and research labs that need structural monitoring without the cost or complexity of conventional sensing systems.

Novelty of the work

Unlike conventional strain gauges that are bonded onto a surface as a separate component, these sensors are printed as an integral part of the structure itself, eliminating the bonding process entirely. The use of conductive PLA in a full Wheatstone bridge configuration provides built-in temperature compensation, something rarely implemented in 3D printed sensor research. Rather than testing a single design, multiple materials and geometries were systematically compared, resulting in an optimised solution backed by real experimental data. The achieved gauge factor of 1.27 is competitive with commercially available printed sensors, and the integration into a functional UAV arm under realistic loading conditions moves this beyond a laboratory concept into a practical engineering application.

The benefits and value to the potential users

Any team with a 3D printer can fabricate and deploy these sensors with no specialist skills, no expensive adhesives, and no commercial sensor procurement. The design went through a full selection and testing process across materials and layouts, so users get a proven, optimized solution rather than a starting point. The sensors are embedded during printing, meaning no separate assembly step and no risk of sensor detachment during operation. The system reliably detects both bending and torsion with clean signal response, and measured strains matched theoretical and simulation models within 5 to 15%, confirming practical reliability without complex calibration. For UAV manufacturers this means early warning of structural overload. For research teams it means affordable, repeatable structural health monitoring straight out of the printer.



Smart NFC Scooter Charging Station

Field of science Design and Mechanics
Type of innovation Hardware (e.g. electronic device, robotics, computer hardware, wearable technology, etc.)

Gerson David Pinto Chica
Emre Teker
Martin Xavier Gomez Salazar
Wendy Giovanna
Andino Villalta

Head: Dr. Valdas Grigaliūnas

Kaunas University of Technology

Description of the work

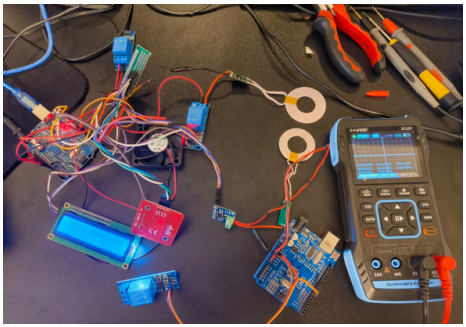
Prototype for an NFC-based charging station for public and private electric scooters, designed as an affordable and reliable alternative to existing expensive charging systems. Similar to street charging stations for electric cars, this system allows scooter users to activate charging through an NFC top-up method.

Technical or other problems that are solved with the work

The product solves the lack of affordable, accessible, and reliable charging infrastructure for electric scooters.

Many public and private scooter users do not have convenient places to charge their scooters outside, especially in city streets, campuses, residential areas, and shared mobility zones. Existing charging systems can be expensive, complex, or designed mainly for electric cars rather than small electric vehicles.

This prototype offers a simpler solution: an NFC-based scooter charging station that allows users to activate charging easily with an NFC card or top-up system. It aims to make scooter charging more practical, cheaper to install, and easier to use in public or private spaces.



Novelty of the work

The novelty of this work is the development of a low-cost NFC-based charging station specifically designed for public and private electric scooters.

The benefits and value to the potential users

The main benefit for users is easy and convenient access to scooter charging in public or private spaces.

Potential users can charge their electric scooters without needing to carry chargers everywhere, search for indoor sockets, or rely only on home charging.

High-Speed FPV Medical Emergency Delivery Drone: Reaching Victims Before Ambulances

Field of science Design and Mechanics
Type of innovation Hardware (e.g. electronic device, robotics, computer hardware, wearable technology, etc.)

Michael Tannoury
Gvidas Rakauskas
Isaac Oluwalana Oluwamuayomikun
Mantas Petravičius
Muhammad Azaan Amjad
Aadharsh Asok Kumar

Head: Gediminas Monastyreckis

Kaunas University of Technology

Description of the work

The high-speed FPV emergency drone delivers life-saving medical equipment such as AEDs and trauma kits directly to incident sites in under 2 minutes, traveling at speeds exceeding 130 km/h. Integrated with the 112 dispatch system and operated via real-time FPV control, the drone complements rather than replaces ambulances, putting critical equipment in bystanders' hands during those crucial first minutes before professional help arrives.

Technical or other problems that are solved with the work

In rural Lithuania, ambulance response times frequently exceed 27 minutes, often reaching even longer in the most remote locations. When every minute counts, this delay can be fatal.

Cardiac arrest is one of the most time-critical medical emergencies. Survival rates drop by 7 to 10% for every minute without defibrillation, and

after 10 minutes without intervention, survival falls below 10%. In rural areas, where an ambulance may still be over 20 minutes away, bystanders are left with no equipment and no way to help.

Our primary target market is Lithuanian Emergency Medical Services, operating over 100 substations nationwide, with expansion potential across rural EU regions facing identical challenges. The European medical drone delivery market was valued at 0.12 billion USD in 2024 and is projected to grow at 21% CAGR through 2033, driven by increasing demand for faster emergency response and rural healthcare access.

Novelty of the work

Unlike existing solutions such as Everdrone, which rely on slower autonomous platforms traveling at 60 to 75 km/h, our FPV drone operates at speeds exceeding 130 km/h, cutting response times to under 2 minutes. No dedicated emergency drone solution currently operates in the Lithuanian market, making our product the first of its kind targeting Lithuanian EMS institutions directly. The system integrates with the 112 dispatch system, features a tool-free payload compartment accessible by untrained bystanders, and is available at a fraction of the cost of European enterprise alternatives. Speed, affordability, local market focus, and direct 112 integration set us apart.

The benefits and value to the potential users

For Emergency Medical Services in Lithuania, our drone delivers measurable, immediate value. Instead of waiting 27 or more minutes for an ambulance in rural areas, life-saving equipment such as an AED reaches the incident site in under 2 minutes. This directly increases cardiac arrest survival chances by ensuring defibrillation happens within the critical window.

For bystanders at the scene, the drone removes the barrier of not having the right equipment, empowering them to act immediately. For EMS organizations, the system reduces pressure on ambulance resources without requiring additional vehicles or personnel. The subscription-based



operational model means institutions receive fully managed, pilot-operated deployment with maintenance included, requiring no internal drone expertise. The result is faster response, better outcomes, and a stronger emergency infrastructure overall.

SenCAN: Sensor Calibrations Anywhere by Anyone and at Anytime!

Field of science Design and Mechanics
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Tyrone Machado
Prashant Rai
Naeim Ebrahimi Toulkani

Head: Dr. Reza Ghabcheloo

Tampere University, Finland

Description of the work

1SenCAN software solution for autonomous Mobile Work Machines (MWMs) enables fully automated, sensor-agnostic, and multimodal sensor calibration (camera, lidar, radar, IMU, and GNSS)- by Anyone, Anywhere, & Anytime. No physical targets or experts are needed! Simply move the machine briefly, upload the trajectory data to SenCAN, and receive accurate calibration within minutes. Potential customers reduce CAPEX by 150–200 k€/year and OPEX by 5–10 k€/year, through reduced downtime, remote maintenance, and improved safety (>520 k€/accident avoided). SenCAN targets a 420 M$+ market by tapping into the the autonomous MWM market (projected 280B$ by 2035) and Robotaxis/Roboshuttles (projected 400B$ by 2035), thereby enabling massive scalability across mining, ports, agriculture, construction, forestry, and urban mobility.

Practically relevant and theoretically solid — we are building the future of autonomous mobile machinery! We advance the future of autonomous mobile machinery by creating cutting-edge algorithms for operator assistance, teleoperation, and autonomous operations, while educating

and empowering future robotics engineers with practical, industry-relevant skills.

Technical or other problems that are solved with the work

Firstly, mobile work machines (MWMs) are huge and require similar sized infrastructure for calibration. This makes remote and in-field calibration almost impossible. Thus, calibration doesn't scale, and neither does costs. Secondly, MWMs have a high variety. A single autonomous MWM can have up to 30 different sensors.

Thus, as MWMs add sensors, calibration becomes the single point of catastrophic failure. Lastly, calibration depends on rare robotics and mathematics talent, and the talent just isn't there. Worldwide, there are more than 15 open positions for calibration engineers. Thus, talent scarcity, not technology, is the biggest bottleneck. On the other hand, the market for sensor calibration is expected to be roughly 4.5 billion USD by 2035.

The MWM market is expected to be roughly 8550 billion USD in 2035, while the autonomous MWM market is expected to be roughly 280 billion USD. The challenge is to develop autonomous mobile work machines (MWMs) which operate safely, robustly, and effectively in real-world, safety-critical environments. Unlike automobile, MWMs need to handle uncertainty, control complex cyber-physical systems in real time, and collaborate smoothly with human operators to accomplish certain work tasks, e.g., excavation, loading, dumping, etc. This requires algorithms that are both, theoretically sound and practical enough for deployment in real-world scenarios. However, there is a gap between academic robotics research and industry needs, as well as a shortage of engineers trained to bridge theory and practice.

Novelty of the work

Comparing the KPIs that matter: speed, operational simplicity, and expertise required, our solution matches and/or outperforms the competition. Our potential competitors mainly originate in the automotive industry. Their thinking does not transfer to MWMs. Our deep

understanding of MWMs gives us a clear, evidence-driven lead, locked in with an ongoing patent application. With industrial PhDs forged across Europe: at Bosch Rexroth, Liebherr, TII Kamag, Volvo Construction Equipment, and reinforced by an industry-driven steering group who believes in our vision, we've built credibility, access, and practical insight that take years to earn and are difficult to replicate.

As a research group with access to cutting-edge research infrastructure, our unique and execution-ready team combines business acumen, deep applied research, and privileged access within European Mobile Work Machine ecosystems. Our research projects and industry collaborations are secured through competitive national and international funding programs. We have a history of successful research collaborations spanning several roles: project coordinator, project beneficiary, and advanced research/academic partner.

The benefits and value to the potential users

Our potential customers get a fast, sensor-agnostic, infrastructure-free solution that cuts €130k in annual CAPEX in R&D, reduces downtime in maintenance and commissioning, from 4 hours to 30 minutes, and avoids €520k per accident, thereby improving safety. Additionally, our solution directly supports European technological sovereignty and long-term economic resilience, by automating critical know-how and reducing reliance on scarce, highly skilled talent.

Potential users, i.e., the MWM industry, can engage in multidisciplinary research collaborations with our research group. This enables early access to our cutting-edge research infrastructure (10.000 sq.m. proving grounds with 60 sq.m. control stations equipped with high-speed network connectivity) and research results. Exploitation of these research results can enhance new and competitive offerings within the MWM industry user's product/software/technology portfolios.

“SIVO” – Stable Movement in the Most Challenging Environments

Field of science Design and Mechanics
Type of innovation Hardware solutions (electronic devices, robotics, computer hardware and equipment, wearable devices, etc.)

Gustė Mickytė
Justas Vanagas
Nandas Brazaitis

Head: Dr. Vaida Jonaitienė, Gražvyda Račkauskaitė

Kaunas University of Technology

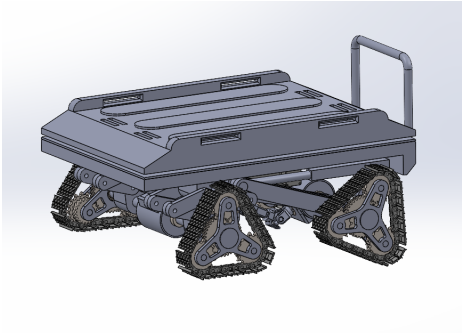
Description of the work

SIVO is developing an innovative modular transport system for the efficient transport of EPAL pallets in difficult conditions. The solution allows you to safely overcome uneven surfaces, stairs, thresholds, and other infrastructure obstacles, while maintaining the horizontal stability of the load. The system is focused on improving occupational safety, efficiency of logistics processes, and reducing physical strain on workers in the industrial, laboratory, and warehousing sectors.

Technical or other problems that are solved with the work

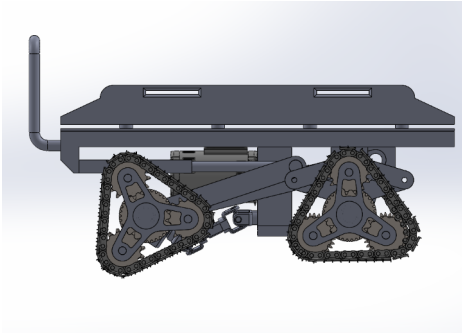
Traditional EPAL pallet transportation solutions, such as pallet trucks and trolleys, are designed for smooth, warehouse-type surfaces. However, in real working environments – including manufacturing facilities, laboratories, hospitals, and older buildings – various infrastructural obstacles are common. These include stairs, thresholds, and uneven floor surfaces, where conventional solutions either become ineffective or pose significant safety risks.

As a result, employees are often forced to improvise by relying on manual handling or repeatedly transferring loads between different transport methods. This increases the risk of workplace injuries, reduces operational efficiency, and compromises the integrity of the transported goods.

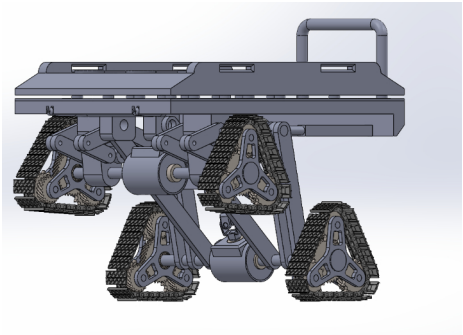


Novelty of the work

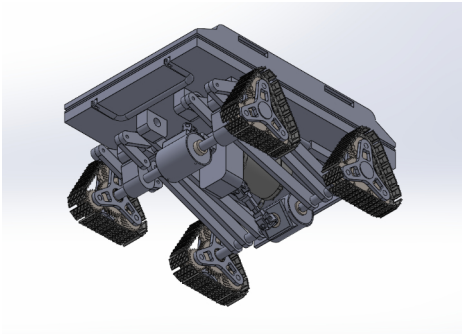
SIVO – Stable Movement in the Most Challenging Environments.

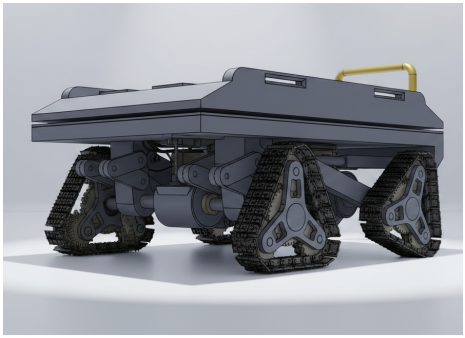


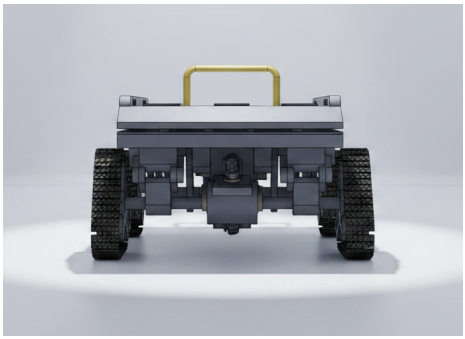
SIVO is developing an innovative modular transportation system designed for the efficient handling of EPAL pallets under demanding operating conditions. The solution enables the safe transportation of loads across uneven surfaces, stairs, thresholds, and other infrastructural obstacles while maintaining horizontal load stability throughout the entire movement process.



Unlike traditional transportation solutions, SIVO focuses not only on moving cargo but also on improving workplace safety, increasing the efficiency of logistics operations, and reducing the physical strain placed on employees. The system's modular architecture allows it to be







adapted to the specific needs of industrial, laboratory, and warehousing environments, where safe and stable cargo handling is essential even in the most challenging conditions.

The benefits and value to the potential users

The SIVO system directly addresses three key challenges faced by logistics teams in laboratory, healthcare, and industrial environments:

Employee safety – The system eliminates the need for hazardous manual handling of loads across stairs and uneven surfaces, reducing the risk of workplace injuries and supporting compliance with EU occupational safety requirements.

Cargo protection – Its active horizontal stabilization system ensures that sensitive laboratory and medical equipment remains stable during transportation, preventing impacts and excessive tilting that could result in damage, malfunctions, or financial losses.

Operational efficiency – The modular design enables a single device to accommodate loads of varying sizes, reducing the need for multiple specialized transportation solutions and improving resource utilization.

“Iron Winch” – An Unmanned Aerial Vehicle Launch System

Field of science Design and Mechanics
Type of innovation Hardware solutions (electronic devices, robotics, computer hardware and equipment, wearable devices, etc.)

Juras Pajaujis
Martynas Barzda
Lukas Baikauskas
Ornela Rakauskaitė
Rokas Cikanavičius
Kajus Šimanskis

Head: Gražvyda Račkauskaitė, Dr. Vaida Jonaitienė

Kaunas University of Technology

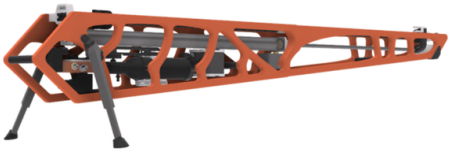
Description of the work

A pneumatic unmanned aerial vehicle (UAV) launch system designed for fixed-wing UAVs weighing 10–50 kg. The system provides the initial launch velocity of 20 m/s required for takeoff and can be adapted to different UAV models. The product was developed with particular emphasis on versatility, ease of transportation, and rapid deployment.

The aluminum frame structure was designed using a generative design tool to optimize both weight and structural strength. Guide rails integrated into the upper section ensure stable drone movement during launch, while the internal structure houses a pneumatic mechanism that generates the launch force. The system automatically returns to the launch position for subsequent use, thereby accelerating the launch process.

Technical or other problems that are solved with the work

Most existing unmanned aerial vehicle (UAV) launch systems are designed







for specific drone models, are relatively complex, and require lengthy preparation times before deployment. Their use in diverse operating environments is further limited by restricted transportability and insufficient reliability under challenging weather conditions or uneven terrain.

The “Iron Winch” UAV launch system addresses these limitations through a versatile and practical design. The catapult can be adapted to accommodate a variety of drone models without the need for additional or interchangeable components. The system can be disassembled into two sections, facilitating easier transportation and deployment in the field.

The launch angle can be adjusted using the front support legs, which also enhance system stability during operation. In addition, the system automatically returns to its launch position after deployment, enabling faster turnaround times and improving the efficiency of repeated launch operations.

Novelty of the work

“Iron Winch” distinguishes itself from existing market solutions by combining versatility, mobility, and ease of use within a single system. Most UAV catapult systems currently available are designed for specific drone models or narrow weight ranges, meaning that adapting them to different aircraft often requires additional components or complex adjustments. Furthermore, many existing systems are heavy, difficult to transport, and require lengthy setup procedures.

“Iron Winch” has been developed using generative design tools to achieve

a lightweight yet robust structure that can be easily disassembled, rapidly assembled, and conveniently transported in a two-part configuration. This design approach enhances both portability and operational efficiency without compromising structural integrity.

The pneumatic launch mechanism and adjustable launch angle enable reliable operation under a variety of environmental conditions and on uneven terrain. In addition, the system automatically returns to its launch position after deployment, reducing turnaround times and accelerating repeated launch operations.

By integrating these features into a single platform, “Iron Winch” offers a practical and adaptable launch solution for a wide range of unmanned aerial applications.

The benefits and value to the potential users

The “Iron Winch” unmanned aerial vehicle launch system provides users with a versatile, mobile, and reliable solution for fixed-wing drones in the 10–50 kg class. The system can accommodate various drone models without requiring additional or interchangeable components, thereby reducing both acquisition and operational costs.

Its rapid assembly, automatic return to the launch position, and ease of transportation enable more efficient operations across different locations. An adjustable launch angle and stabilizing support legs ensure safe and dependable performance under challenging weather conditions and on uneven terrain. The lightweight yet durable aluminum construction further enhances the system’s mobility and long-term durability.



These features make the solution suitable for a wide range of military and civilian applications, including surveillance, infrastructure inspection, search and rescue operations, and aerial mapping missions.

“Propeller Thrust Vector Control Through Angular Acceleration Modulation”

Field of science Design and Mechanics
Type of innovation Hardware solutions (electronic devices, robotics, computer hardware and equipment, wearable devices, etc.)

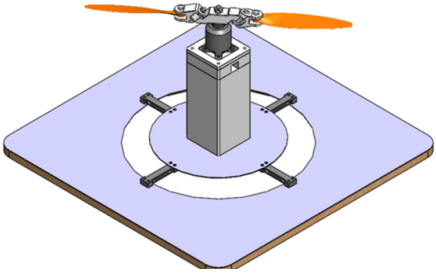
Matas Zakarevičius

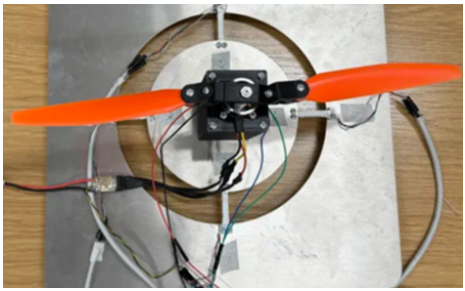
Head: Dr. Martynas Lendraitis

Kaunas University of Technology

Description of the work

This project examines the possibility of controlling the direction of propeller thrust using flexibly attached blades and precise control of propeller rotation. The suggested method allows for control of the thrust direction without direct mechanical control.



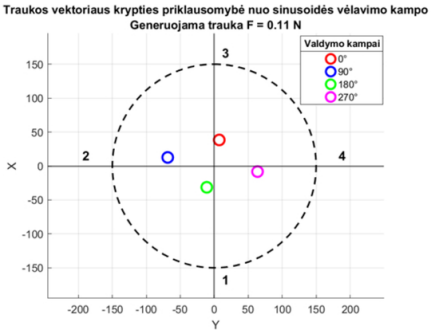


Technical or other problems that are solved with the work

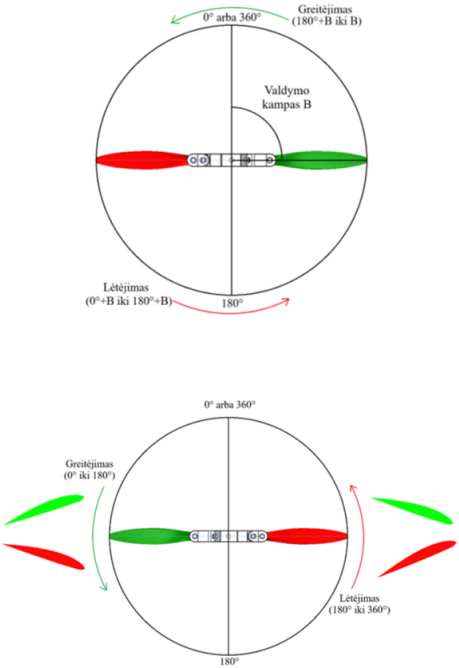
Unmanned aerial vehicles (UAVs) are increasingly being used across a wide range of applications, from routine monitoring and aerial imaging to the execution of more complex tasks. As a result, there is a continuous search for methods that can improve drone control while simplifying their design and enhancing maneuverability.

One of the most critical elements of such systems is thrust vector

control. Conventional approaches typically rely on multiple rotating rotor systems or tilt mechanisms that redirect the propeller in the desired direction. However, these solutions increase system complexity, weight, and energy consumption. As the number of components grows, so does the likelihood of mechanical failures and control inaccuracies.



For this reason, there is a strong need for simpler solutions that preserve controllability while reducing structural complexity. One such approach involves a propeller with flexible blade mounting mechanisms. Its operating principle is based on adjusting the blade pitch angle according to the rotor's rotational regime, eliminating the need for an additional mechanical tilt mechanism to control thrust direction.



The target market includes unmanned aerial vehicle manufacturers, defense industry companies, and research institutions seeking simpler and more reliable single-rotor control solutions.

Novelty of the work

Unlike existing solutions that rely on mechanical swashplate mechanisms to control thrust direction, the approach proposed in this project alters the thrust vector by controlling the propeller's angular acceleration in combination with flexibly mounted blades. This method preserves the

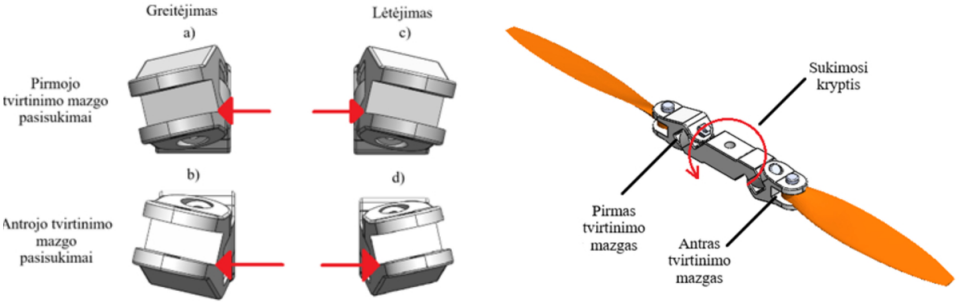
simplicity of a single-rotor system while enabling changes in thrust direction without the need for additional mechanical components.

By eliminating complex tilt mechanisms, the proposed solution reduces structural complexity, lowers the number of moving parts, and has the potential to improve reliability and ease of maintenance. This innovative control concept offers a lightweight and efficient alternative for applications requiring precise thrust vectoring in unmanned aerial systems.

The benefits and value to the potential users

The proposed solution enables thrust vector control without the use of conventional helicopter swashplate mechanisms. As a result, the system incorporates fewer moving parts, reducing the likelihood of mechanical failures and simplifying maintenance requirements.

The simplified design also contributes to a lower structural weight and facilitates more efficient manufacturing processes. By minimizing mechanical complexity while maintaining controllability, the solution has the potential to improve the reliability, cost-effectiveness, and operational efficiency of single-rotor unmanned aerial systems.



“Waterway” – An Atmospheric Water Harvesting Device Operating Under Conditions of Low Relative Humidity and Temperature Fluctuations

Field of science Design and Mechanics
Type of innovation Design solutions (product design, user experience design concepts, architectural design, fashion design, etc.)

Saulė Kazlauskaitė

Head: Dr. Kristina Žūkienė, Dr. Renatas Šukys

Kaunas University of Technology

Description of the work

“Waterway” is a device designed to collect water from the air where access to water is limited. A composite hydrogel made of hydroxypropyl cellulose and lithium chloride is used to collect water. The device operates passively, requiring no additional energy sources. At night, the device collects water through sorption process. Air entering the device is filtered in stages: a primary filter traps large particles. Then, high – efficiency particulate filter removes at least 99.97% of airborne particles as small as 0.3 μm. Lastly, carbon filter removes odors, hydrogen sulfide, volatile organic compounds, and ammonia. During



the day, water desorption process takes place. Solar heat warms the device – the transparent cover allows sunlight to pass through, creating a greenhouse effect. Water evaporates, then condenses on the cover and flows into a collection tank. The user must adjust the position of the ventilation openings – leaving them closed during the day and open at night.

Technical or other problems that are solved with the work

Billions of people, particularly in developing regions, continue to face limited access to safe drinking water. For example, in underserved areas of Koudougou, Burkina Faso, low-income households often lack autonomous access to water and are forced to rely on public boreholes located far from residential communities. Transporting water back home is physically demanding and time-consuming. This burden can hinder children's educational development, while adults lose valuable time that could otherwise be devoted to income-generating activities. As a result, the lack of reliable access to drinking water traps vulnerable populations in a recurring cycle of poverty.

Beyond the social and economic consequences, water scarcity and water quality remain critical challenges. The safety of water obtained from public boreholes or wells is not always guaranteed, meaning that the only available source of water may also become a source of disease and health complications.

Although traditional water resources—such as rivers, lakes, and groundwater—are often scarce or inaccessible, alternative water sources can be explored. One promising approach is the harvesting of moisture from the atmosphere. Even in some of the world's driest environments, the air contains water vapor. For example, relative humidity levels in the Sahara Desert typically range between 20% and 30%. This demonstrates that, in arid regions where access to conventional water resources is extremely difficult or impossible, atmospheric water harvesting could provide a viable solution to the pressing global challenge of water scarcity.

Novelty of the work

The most common atmospheric water harvesting systems currently available on the market operate based on active air cooling and the condensation of water vapor. The main limitations of these technologies include high energy consumption, significant acquisition and maintenance costs, and poor performance under conditions of low relative humidity, where water production efficiency becomes extremely limited.

For this reason, the development of passive systems utilizing moisture-absorbing materials is of great importance in creating sustainable atmospheric water harvesting solutions capable of operating in arid environments, including desert conditions.

Within this market context, “Waterway” distinguishes itself through its ergonomic design, which takes into account not only ease of use but also the characteristics of the local environment in which the device is intended to operate. The materials selected for the system provide a balanced combination of affordability, environmental sustainability, and functional performance.

By integrating passive water harvesting principles with user-centered and environmentally conscious design, “Waterway” offers a promising alternative to conventional atmospheric water generation technologies, particularly in regions where access to traditional water sources is limited and climatic conditions are challenging.

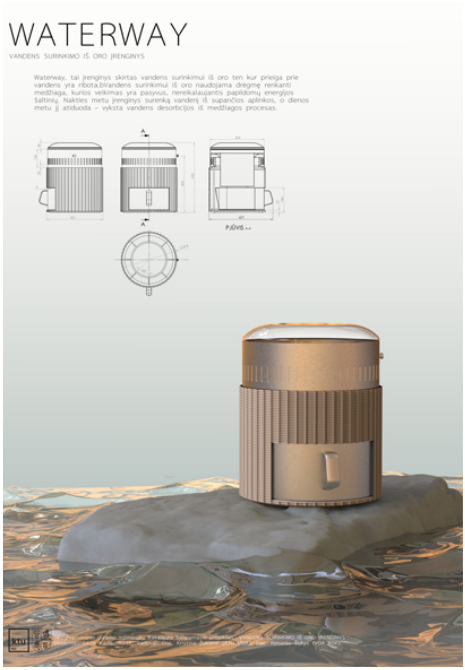
The benefits and value to the potential users

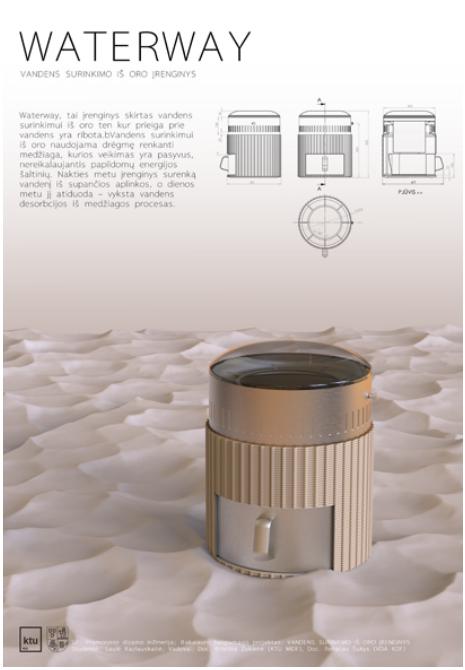
The atmospheric water harvesting device would provide users with access to a consistent and reliable source of high-quality drinking water. This solution has the potential to directly improve public health, as the availability of sufficient quantities of clean water can reduce illnesses associated with dehydration and the consumption of contaminated water.

Because the process of extracting water vapor from the air is not dependent on proximity to traditional water sources, the device can be

installed directly within users' residential environments. This eliminates the challenge of traveling long distances to collect water. Consequently, time previously devoted to transporting water can instead be invested in education, income-generating activities, or other personal and community pursuits.

By improving access to safe drinking water while reducing the social and economic burden associated with water collection, the proposed solution contributes not only to better health outcomes but also to enhanced quality of life and greater opportunities for individual and community development.





“Aletheia” – An AI Agent-Based Tool for Detecting Disinformation and Verifying Sources

Field of science Design and Mechanics
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Lina Gečaitė
Rustam Habibov
Viktorija Kuzabavičiūtė
Mykhailo Soroka
Martynas Turčinskas

Head: Dr. Mikas Binkis

Kaunas University of Technology

Description of the work

Aletheia is an AI-powered platform for detecting misinformation and evaluating source credibility in real time. The system analyses submitted text or URLs, fact-checks claims against live web sources, and determines whether content may be AI-generated. Results are presented clearly through a conversational chat interface.

Technical or other problems that are solved with the work

The rapid spread of disinformation and AI-generated content on the internet poses an increasing threat to society's ability to critically evaluate information. This challenge is particularly relevant in academic environments, including schools and universities. Educators and researchers often lack the time required to manually verify extensive lists of references and sources submitted by students as part of their academic work.

Existing tools, such as GPTZero and Originality.ai, primarily focus on

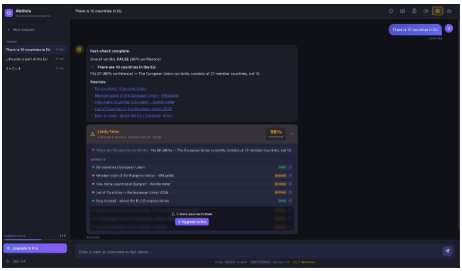
plagiarism detection or identifying AI-generated text. However, they do not assess the credibility of cited sources or provide comprehensive fact-checking capabilities. As a result, there remains a significant gap in tools designed to support the evaluation of information reliability.

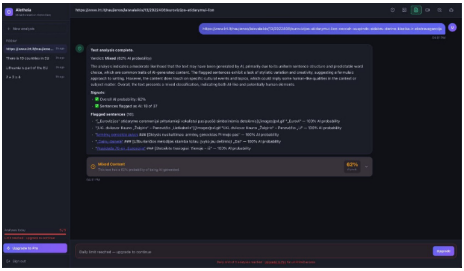
The target market includes Lithuanian and international higher education institutions, schools, and research organizations that require a fast and trustworthy solution for assessing source credibility. As technological advancements increasingly surpass human capacity to manually process and verify large volumes of information, society must adapt by leveraging artificial intelligence as a supporting tool that enhances—rather than replaces—critical thinking and informed decision-making.

Novelty of the work

Unlike existing solutions on the market, Aletheia combines multiple functionalities within a single platform: fact-checking based on live internet sources, source credibility assessment, and the detection of AI-generated content. Users can submit either a block of text or a URL and receive a comprehensive analysis supported by referenced sources.

Current competitors typically address only one aspect of this challenge, focusing either on plagiarism detection or AI-generated text identification without evaluating the reliability of sources or providing in-depth fact-checking capabilities. Meanwhile, traditional fact-checking platforms operated manually by experts offer a high degree of accuracy but are often too slow and resource-intensive to process large volumes of information efficiently.





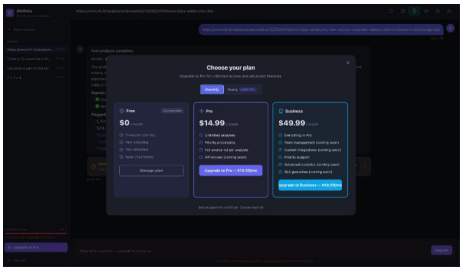
Aletheia bridges this gap by delivering a fast, automated, and multifunctional solution designed for a broad audience. By integrating source verification, factual validation, and AI-content analysis into a single workflow, the platform enables users to assess information more efficiently while supporting informed and critical decision-making.

The benefits and value to the potential users

"Aletheia" saves time and reduces the risk of misinformation. In academic settings, educators can quickly verify whether the sources cited in students' work are credible and genuinely exist. Students and researchers can use the tool to assess and improve the quality of their work before submission and evaluation.

The system operates as a conversational assistant, making it intuitive, fast, and accessible without requiring specialized technical expertise. Its user-friendly approach lowers the barrier to effective source verification and encourages broader adoption across educational environments.

Future development plans include the introduction of API access, enabling institutions to integrate Aletheia directly into their existing systems, such as learning management platforms, content management systems, or student assignment submission portals. This would automate the source verification process and allow large volumes of academic work to be processed efficiently, further enhancing the reliability and integrity of academic outputs.







ECONOMY, SOCIAL SCIENCES AND HUMANITIES

New Art Centre – a living contemporary art centre in Kaunas

Field of science Economy, Social Sciences and Humanities
Type of innovation Design solutions (product design, user experience (UX) design concepts, architectural design, fashion design, etc.)

Head: Edvinas Batulevičius

Naujo meno centras, VšĮ

Description of the work

The idea of establishing a contemporary art center in Kaunas has existed for several decades. Today, we are finally undertaking the realization of this vision as an independent non-profit organization with a long-term perspective on contemporary art and a concrete, authentic plan for its implementation.

The New Art Center, as a living contemporary art institution in Kaunas, aims to strengthen the cultural and economic value of art, encouraging active engagement. The initiative is not a one-off project, but a long-term process encompassing content integrity, audience development, artist support, and the activation of the art market.

Our first step in this process is the gallery “PASSWORD_1”, which since July 2025 had launched its practical activities and real-world testing of this chosen direction. A horizontal infrastructure is now being developed, allowing for gradual growth and the deployment of accessible, publicly oriented contemporary art spaces in Kaunas. This is the New Art Center.



Technical or other problems that are solved with the work

In Lithuania, the contemporary art field has long developed in a fragmented manner, lacking a structure capable of consistently connecting artists, audience development, patronage, and market activity. Art often exists separately from sustainable economic mechanisms, limiting both artists' opportunities and the broader development of the cultural sector.

The field remains heavily dependent on government funding, while existing business models fall behind global standards, relying on complex cultivation of a small circle of dedicated collectors. Although this model operates well within a broader art ecosystem, it is often inaccessible and unsustainable for new cultural and art sector participants working independently. At the same time, the field lacks programs designed to foster establishment and long-term development of new non-governmental organizations as state-supported initiatives tend to operate within narrow frameworks.

The New Art Center addresses these challenges by developing an independent non-profit model (NGO) in which art is neither isolated from the market (an unintended consequence of the avant-garde movements) nor subordinated to it. Rather than competing, it aims to activate the entire ecosystem by facilitating art circulation, promoting patronage as active participation in cultural development, and contributing to the formation of a mature art market in Kaunas and within the Baltic region.





Novelty of the work

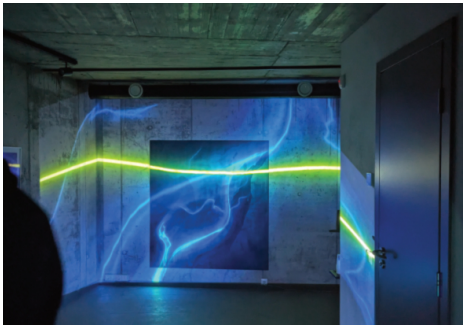
The novelty of the New Art Center lies not in a building, but in its implementation model within the cultural and artistic landscape. The initiative is developed as an independent, non-profit, horizontally structured institution, enabling spaces to be opened in stages based on real needs, allowing activities to grow organically, specialize over time, and develop both the art market and institutional sustainability.

Non-profit principles are combined with the conscious activation of the art market, strengthening art's value both culturally and economically. This approach reframes patronage as partnership and participation in a broader cultural process and value creation rather than a response to deficit, creating a foundation for the sustainable development of contemporary art in Lithuania and on the international stage.

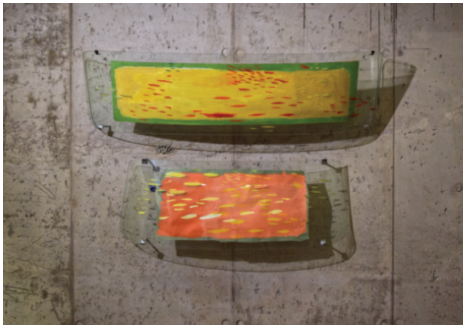
The benefits and value to the potential users

The New Art Center creates value not through a single outcome, but through a sustained process. For artists, this means a fair and

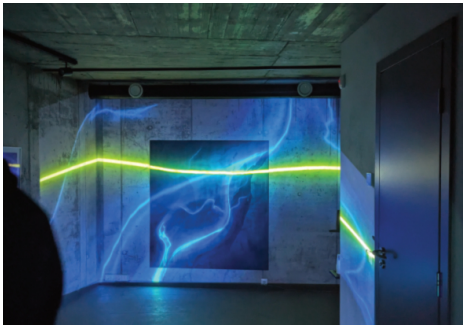














supportive environment in which creative work can be developed, presented, and gradually established within a broader context.

For cultural organizations and galleries, the Center becomes a collaborative partner contributing to increased art circulation and market development. Patrons are offered meaningful engagement, becoming part of long-term cultural value creation rather than one-time donors. For art market participants, the Center enables international activity and provides access to state-formed mechanisms that encourage private-sector participation in cultural growth.

For Kaunas, the Center represents a vibrant, public contemporary art space that strengthens the city's cultural identity and international visibility.

APEX – An AI image detection tool

Field of science Economy, Social Sciences and Humanities
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Dija Urbanskaitė
Ihor Holdanskyi
Dainius Kirsnauskas
Masum Hossain
Rusnė Venslauskaitė

Head: Dr. Mikas Binkis

Kaunas University of Technology

Description of the work

We are developing an online tool to identify photos generated by artificial intelligence. The product will be an easily accessible website aimed at journalists and other users concerned about the reliability of information. The system will be based on accumulated data and a trained AI model that will analyze the submitted images and determine their authenticity.

Our solution is distinguished by two main features. First, pixel-level analysis will make it possible to detect even partially generated images, when only a certain part of the photo has been changed by AI. Secondly, bulk upload will allow you to upload several photos at once and get a common result, thus significantly speeding up the verification process. With such combination only a few tools exists on the market, so our solution solves an important problem of misinformation and the reliability of visual content.

Technical or other problems that are solved with the work

Our tool addresses the rapidly growing problem of misinformation associated with AI-generated images. As artificial intelligence technologies continue to advance, distinguishing authentic photographs from fabricated or partially manipulated ones is becoming increasingly difficult, posing significant risks to journalism, public communication, and public trust.

Existing solutions on the market are often limited: they typically require images to be examined individually or lack the capability to accurately detect cases where only part of an image has been generated or altered using AI. As a result, the verification process becomes time-consuming and not always reliable.

The tool we are developing enables users to quickly and efficiently analyze large volumes of images while more accurately identifying even partial AI-generated modifications. By doing so, it helps combat misinformation and contributes to ensuring the reliability and trustworthiness of visual content.

Novelty of the work

The novelty of our work lies in the combination of two functionalities within a single tool. The first is a bulk image upload feature that enables users to verify multiple images simultaneously. This significantly improves efficiency, particularly when large volumes of visual content need to be analyzed.

The second is pixel-level analysis, which makes it possible to detect not only fully AI-generated images but also those in which only specific parts of the image have been altered using artificial intelligence. This represents a complex challenge that existing tools are largely unable to address effectively.

By integrating these two capabilities into a single, easy-to-use web-based tool, our solution offers a novel and practical approach that delivers clear value to its users.

The benefits and value to the potential users

Our tool provides significant practical value to journalists, editorial teams, and other information verification professionals. It enables them to quickly and reliably determine whether an image has been generated by artificial intelligence, thereby reducing the risk of misinformation.

Its key benefits are improved efficiency and greater accuracy. The bulk upload functionality allows multiple images to be verified simultaneously, significantly accelerating the verification process. Meanwhile, pixel-level analysis helps detect even subtle edits or partially AI-generated content that conventional tools may fail to identify.

As a result, users can make more informed decisions, enhance the credibility of their work, and contribute to maintaining higher standards of information quality.



“TutorProxy” – An AI solution for automating tutoring workflows and managing student progress. By tutors, for tutors

Field of science Economy, Social Sciences and Humanities
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

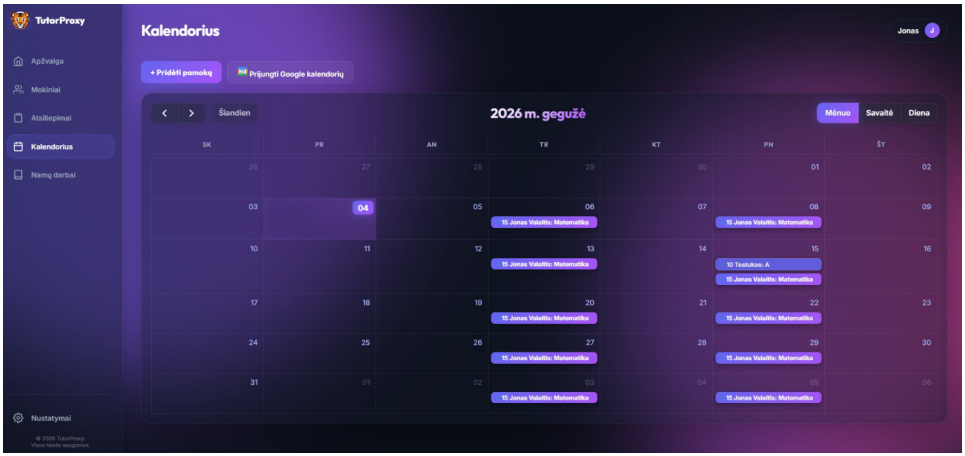
Jonas Valaitis
Viktorija Šaliūnaitė
Jonas Valaitis

Head: Viktorija Užmiškytė

Kauno kolegija Higher Education Institution (KK)

Description of the work

“TutorProxy” is an AI-powered digital platform designed to automate tutoring workflows, analyze learning progress and ensure effective communication with parents. The system enables tutors to quickly record session outcomes, assessing student effort, engagement, and progress through structured scales. Collected data is automatically processed into



clear, visual insights, including topic mastery charts, homework tracking and individual goal monitoring. The platform also generates professional, personalized feedback for parents, reducing administrative workload, and ensuring consistent communication. By transforming raw data into actionable insights, TutorProxy supports data-driven decision-making, enhances student motivation, and improves the overall quality of educational services.

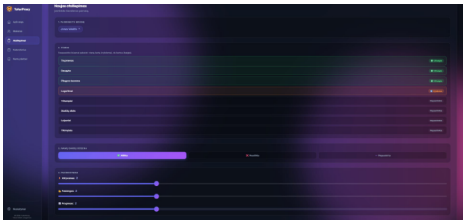
Technical or other problems that are solved with the work

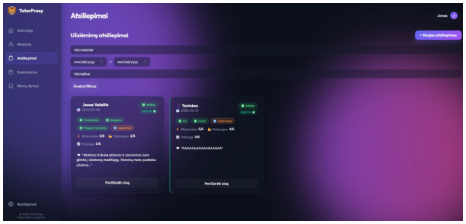
In tutoring practice, providing feedback is typically a manual and non-standardized process. Preparing feedback after each lesson usually takes between 10 and 20 minutes, creating an additional administrative burden that is not directly related to the teaching process. As a result, feedback is often delivered inconsistently, while the information provided may be difficult to compare and insufficiently structured.

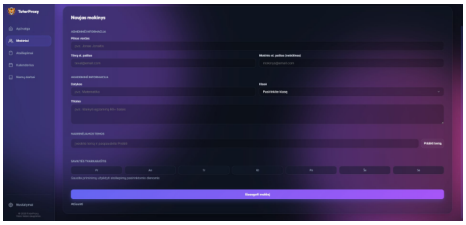


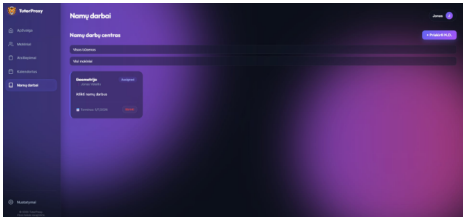
Parents frequently lack clear insights into their child's academic progress, and students do not have a consistent system for monitoring their own development. The target market includes tutors working independently or with small groups, as well as their clients—students and parents—who value regular, transparent, and well-structured feedback on learning outcomes.

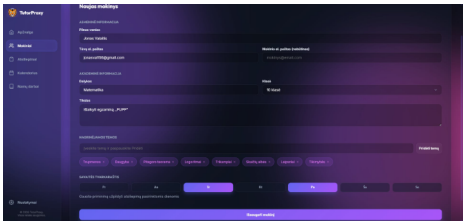
The market potential is driven by the continued growth of the supplementary education sector.











The global EdTech market has exceeded EUR 140 billion and is projected to grow by more than 10% annually in the coming years. Increasing competition in the education sector and the growing demand for personalized learning are driving the need for tutoring services while simultaneously increasing demand for digital solutions that support learning management and communication.

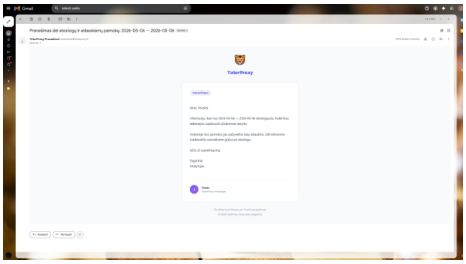
Novelty of the work

"TutorProxy" addresses a clear gap in existing educational technology solutions. While the market offers a wide range of tools for content delivery and administrative management, there is a lack of systems that enable the consistent and comparable assessment of individual student progress within the context of private tutoring. As a result, evaluation remains fragmented, difficult to interpret, and of limited value for informed decision-making.

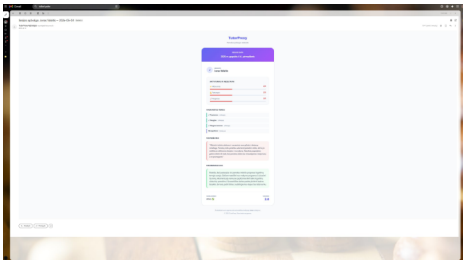
The novelty of the proposed solution lies in modelling the learning process as a continuous, data-driven phenomenon. The platform captures not only learning outcomes but also process indicators, such as student engagement, effort, topic comprehension, and the emotional learning environment. These data are structured into a comparable format and transformed into meaningful

feedback through the application of artificial intelligence.

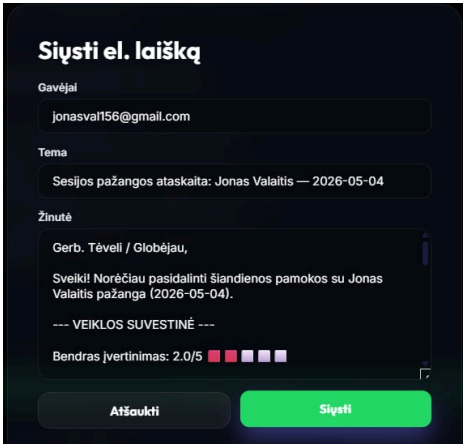
In this way, the proposed solution introduces a new practical approach to learning assessment in the tutoring sector. It shifts the focus from episodic recording of results to continuous, data-driven progress analysis that can be applied consistently across different educational contexts.



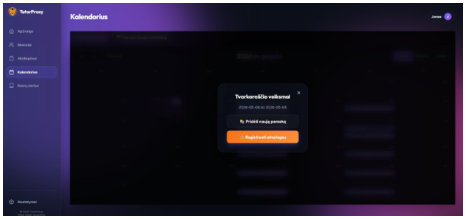
The benefits and value to the potential users

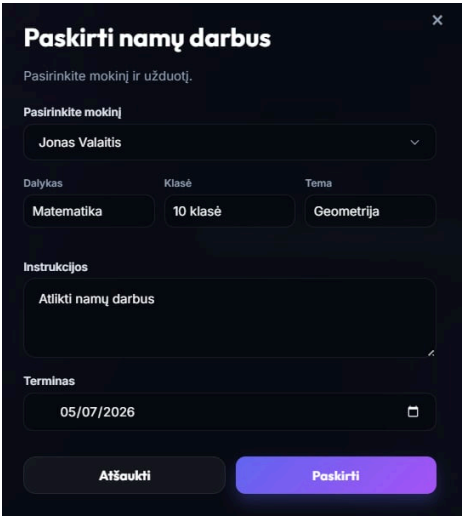


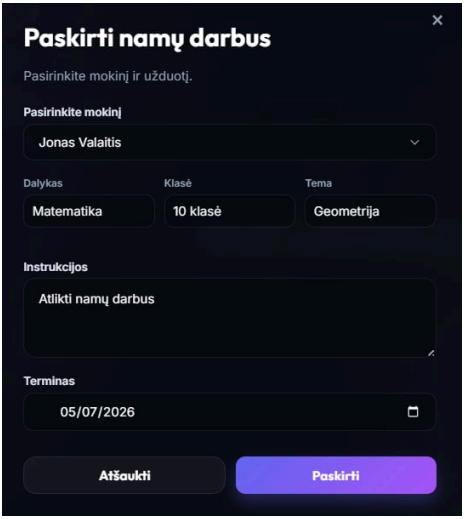
"TutorProxy" creates value by enhancing the quality, credibility, and competitiveness of tutoring services. The platform enables the collection and interpretation of data related to student progress, providing a foundation for more objective assessment and more informed educational decisions. This helps tutors better demonstrate the outcomes of their work and differentiate their services in a competitive market.



Structured and visually presented feedback increases service transparency and strengthens trust between tutors and parents, which is a key factor in client retention and the development of long-term relationships. Students benefit from clear progress tracking, which is







associated with higher engagement and more consistent learning outcomes.

In this way, “TutorProxy” contributes to improving educational quality and promotes a data-driven approach to the learning process.

„LOGBAG“ – daugkartinė tretinė pakuotė, eliminuojanti vienkartinę plastiko plėvelę logistikoje

Field of science Economy, Social Sciences and Humanities
Type of innovation Design solutions (product design, user experience design concepts, architectural design, fashion design, etc.)

Audrius Janulaitis
Matas Vyšniauskas

Head: Jokūbas Puodžiukas

Kauno kolegija Higher Education Institution (KK)

Description of the work

“LOGBAG” is a reusable tertiary packaging solution designed for Euro pallets, replacing single-use plastic stretch wrap in logistics. The packaging is easy to apply and secure, ensuring stable load containment and protection against moisture, dust and mechanical damage during transportation. During unloading, it can be quickly removed, folded and prepared for reuse, reducing packaging time and waste. A transparent cover allows product identification without removing the packaging. Made from recyclable HDPE plastic. “LOGBAG” supports more sustainable logistics processes and cost optimization.



Technical or other problems that are solved with the work

In the logistics sector, millions of

tonnes of single-use plastic wrap are consumed each year as tertiary packaging for load stabilization. A significant proportion of this material is not recycled. Mechanical damage incurred during transportation, together with labels made from mixed materials attached to the wrap, often renders it unsuitable for recycling. As a result, much of it ends up in landfills or is incinerated. This contributes to increased CO_2 emissions, promotes the use of fossil-based raw materials, and creates additional waste management costs for businesses.

“LOGBAG” addresses this challenge by replacing single-use plastic wrap with reusable tertiary packaging that can be used repeatedly, significantly reducing the amount of waste generated.

The target market consists of the B2B segment, including manufacturing, retail, e-commerce, and logistics companies seeking to optimize their packaging processes and achieve sustainability objectives.

The European packaging market is valued at more than EUR 150 billion, while demand for sustainable solutions continues to grow rapidly due to evolving EU regulations and increasing corporate focus on environmental responsibility. This creates substantial growth potential for “LOGBAG” in both Lithuanian and international markets.





Novelty of the work

The novelty of “LOGBAG” lies in its innovative application of the tertiary packaging concept within logistics processes by transitioning from a single-use to a reusable model and implementing the principles of the circular economy.

The solution was developed based on an analysis of logistics processes and existing market alternatives, which revealed that the currently dominant single-use plastic wrap is inefficient from both environmental and operational perspectives. At the same time, most reusable alternatives fail to provide comprehensive protection and are insufficiently adapted to intensive warehousing conditions.

“LOGBAG” integrates several functionalities within a single solution. Its closed construction provides protection against environmental factors, the transparent surface enables easy identification of goods, and the ergonomic fastening system improves operational efficiency. The solution is designed for standardized Euro pallets, ensuring high adaptability and strong scalability potential across the European market.

The benefits and value to the potential users

“LOGBAG” creates clear economic, operational, and environmental value for its target users. From an economic perspective, the solution reduces long-term costs associated with purchasing single-use plastic wrap, waste management, and environmental taxes by transitioning to a reusable packaging model.

At the operational level, “LOGBAG” optimizes packaging processes by reducing loading and unloading times, requiring no additional technological investments, and improving workforce productivity while simultaneously lowering the risk of cargo damage.

From an environmental perspective, the solution contributes to reducing plastic waste and CO_2 emissions, helping companies achieve their sustainability objectives and comply with EU environmental requirements. In turn, this strengthens corporate reputation, enhances competitiveness, and creates added value throughout the supply chain.



Elevory; a web-based employee engagement platform for recognition, learning, and rewards

Field of science Economy, Social Sciences and Humanities
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Kadir Batuhan Sayan
Safiyya Baba-zada
Dovran Eymirov
Emine Mariam Youssef
Avinash Ravi Prakash
Mecit Bedel

Head: Dr. Asta Tarutė

Kaunas University of Technology

Description of the work

Elevory is a web-based B2B SaaS employee engagement platform that centralises recognition, micro-learning, goal tracking, and team challenges into one digital environment. Employees earn Rewards & Recognition (RR) points by completing micro-modules, endorsing colleagues, joining team challenges, and participating in volunteering activities, progressing through transparent levels to unlock organisation-defined rewards. Administrators manage rewards and monitor engagement analytics through a dedicated admin portal. Built on React, Django, and PostgreSQL, Elevory is designed for medium and large enterprises and is currently at prototype stage with a confirmed pilot partner.



Technical or other problems that are solved with the work

Many organisations, including our challenge-giver Hoptrans, struggle with inconsistent and informal employee recognition. Achievements are not celebrated in a structured way and there is no transparent system for rewarding employees. According to Gallup (2023), approximately 77% of employees worldwide are not engaged at work, which is costing the global economy around €8.8 trillion annually in productivity losses. In Lithuania, rising salaries (growing ~9% annually) and a low unemployment rate intensify competition for skilled talent, making employee retention a pressing concern for organizations. Elevory targets medium and large enterprises with 50+ employees, a segment that faces clear engagement challenges due to organisational complexity and has sufficient resources to adopt digital HR solutions. The Lithuanian and EU market for HR technology continues to grow, supported by digital transformation trends and SaaS adoption.

Novelty of the work

Unlike existing competitors such as Bonusly, Motivosity, Lattice, or Culture Amp, which focus on individual features such as recognition or performance management in isolation, Elevory integrates peer recognition, gamified XP-based progression, micro-learning, team challenges, volunteering tracking, and an admin analytics portal into one coherent system. The platform is specifically designed with full customisability for each organisation: administrators define their own reward catalogue and challenge types. Elevory also differentiates through a transparent level system, giving employees clear visibility into how points are earned and how levels are calculated, addressing a key gap identified in our consumer survey of 81 respondents across multiple industries.

The benefits and value to the potential users

Elevory brings all key drivers of employee engagement into one single platform. Employees benefit from transparent recognition, a clear progression system with levels and rewards, micro-learning modules for skill development, team challenges for cross-department collaboration, and peer endorsements that celebrate contributions. Managers and HR

administrators gain real-time analytics on engagement levels, such as motivation level, and top-performing employees. The platform reduces employee turnover costs, improves motivation, and supports data-driven HR decision-making. Priced at €2.50 per user per month is competitive with leading alternatives and it offers a measurable return on investment through improved retention and productivity, particularly for organisations already facing high recruitment and onboarding costs.

ELECTRICITY, ELECTRONICS, AND ENERGY

SafeClip – motorcycle helmet safety where protection doesn't rely on memory or human error

Field of science Electricity, Electronics, and Energy
Type of innovation Hardware solutions (electronic devices, robotics, computer hardware and equipment, wearable devices, etc.)

Modestas Raila
Dovydas Aleknavičius
Emilis Vitas Navickas

Head: Laura Kuchalskienė

Panevėžys Kazimieras Paltarokas Gymnasium, Kaunas University of Technology (KTU)

Description of the work

SafeClip is a universal smart add-on for helmet straps, alerting riders with an audible signal if they start moving without the strap properly fastened. The innovation goes beyond a clip-on – a dedicated smart strap with integrated fastening detection is also in development. This solution ensures safety doesn't depend on human memory and aims to become a new safety standard in the EU and worldwide. SafeClip is patent-pending, actively prototyped, supported by partners, and designed for future integration with helmet manufacturers.



Technical or other problems that are solved with the work

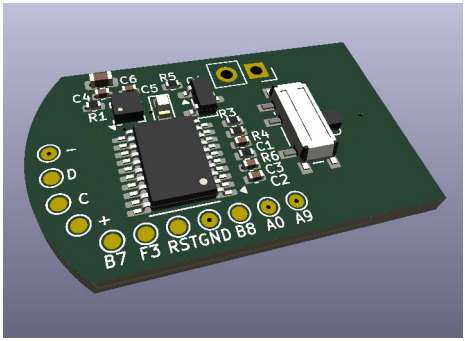
The main problem our product solves is the safety risk caused by unfastened or improperly fastened helmets. Studies show that around 10% of motorcycle-related head injury deaths are linked to helmets



being unfastened or incorrectly fastened during accidents. Even when a rider wears a helmet, forgetting to secure the strap can make the helmet ineffective, greatly increasing the risk of severe injury or death. SafeClip is designed to help solve this overlooked but critical problem. The device is universal, easy to use, and compatible with most helmets without requiring permanent modifications. It is intended for motorcyclists, moped and ATV riders, and e-scooter riders, while a dedicated version for cyclists is planned for future development. The potential market is enormous and continues to grow rapidly. Around 85 million motorcycle helmets are sold globally every year, reflecting a large and expanding user base that depends on proper helmet protection. As urban mobility and personal transportation continue to grow, more riders need practical and reliable safety solutions. SafeClip aims to reduce human error and help ensure that helmets provide the protection they are designed for when it matters most.

Novelty of the work

SafeClip is a novel solution addressing a frequently overlooked safety issue: incorrectly fastened helmet straps. In other transport sectors, similar safety reminders and intelligent fastening systems have already been developed and widely adopted, such as smart seatbelt technologies in cars that detect usage and encourage correct fastening. However, in the motorcycle and micro-mobility helmet market, no comparable universal solution currently exists. Existing innovations focus mainly on helmet impact protection rather than ensuring proper fastening before use. SafeClip fills this gap by introducing a preventive approach that targets user behavior at the critical moment before riding. It brings a level of safety assistance to helmet use that is already common in automotive systems but still missing in motorcycle safety equipment.



The benefits and value to the potential users

SafeClip provides riders with greater safety, confidence, and peace of mind by helping ensure that a helmet is properly fastened before every ride. The device reduces the risk caused by human error, forgetfulness, or incorrectly secured helmet straps, which can make helmets ineffective during accidents. Its universal and easy-to-use design allows compatibility with most helmets without permanent modifications, making it practical for everyday use. SafeClip can help prevent serious injuries, encourage safer riding habits, and increase awareness about correct helmet use. For families and parents, it also offers reassurance that loved ones are using their helmets correctly and receiving the protection helmets are designed to provide.

Universal RISC-V Microcontroller with Peripherals and Internal Memory, Openly Published under the Apache 2.0 Licence

Field of science Electricity, Electronics, and Energy
Type of innovation Hardware (e.g. electronic device, robotics, computer hardware, wearable technology, etc.)

Manfredas Lamsargis
Rokas Briedis
Dovydas Liutkus

Head: Dr. Mindaugas Žilys

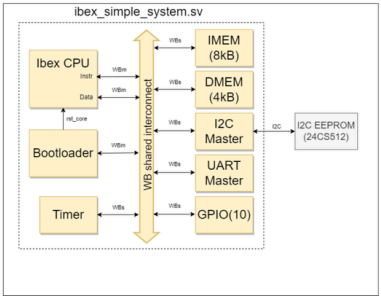
Kaunas University of Technology

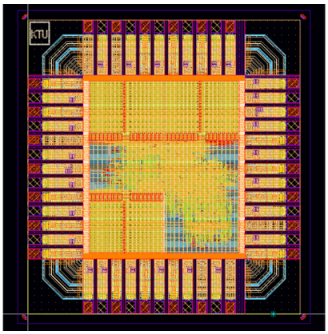
Description of the work

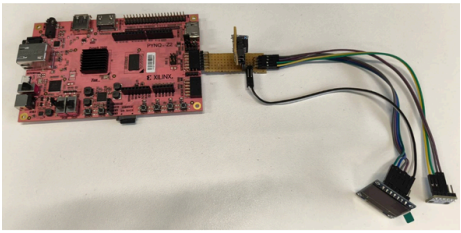
A 32-bit microcontroller based on the single-core Ibex RISC-V architecture, which supports RV32IM instructions, features 8 KB of SRAM for instruction storage and 4 KB of SRAM for data storage. It includes a bootloader module and the following peripherals: 10 GPIO (General Purpose Input/Output) pins, a UART (Universal Asynchronous Receiver-Transmitter) module, a programmable interrupt-driven 16-bit timer, and an I2C (Inter-Integrated Circuit) module. All peripheral interrupts are supported and also system supports nested interrupts.

Technical or other problems that are solved with the work

Modern ASIC design is becoming increasingly complex. In less than three decades, transistor dimensions have shrunk from micrometres to nanometres. Although the industry is constantly evolving and has access to the most advanced technologies, this knowledge is poorly accessible in education. Young students who want to deepen their understanding of SoC design face many barriers. This project opens the door by providing the essential tools needed to start working on more complex designs. The







system is simple enough to help users navigate a complex project and understand the basics of the workflow, yet advanced enough to provide deeper knowledge of how such systems are designed, built and maintained at a fundamental level. Tools are provided for workflows with open-source tools as well as commercial industry-standard tools. The project aims to make the SoC design workflow more accessible and less closed to students and others interested in the foundations of digital design.

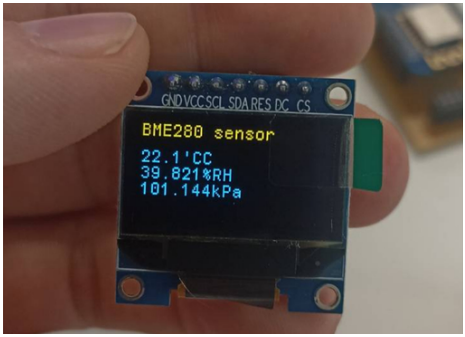
Novelty of the work

This is the first system of its kind in the history of KTU. There are currently no comparable projects mature enough to be used for educational purposes in digital electronics design and programming. The first version of the design has also been submitted for manufacturing, with the product expected at the end of this autumn. The project is currently unique in Lithuania, and its code, provided for educational purposes, is publicly available.

The benefits and value to the potential users

The project provides accessible design source code that can be freely modified and studied. It includes many software examples that provide the necessary foundation for writing programs for the design, as well as scripts that automate much of the manual work, so users can focus on the design

itself rather than routine workflow tasks. The project also includes design tests that introduce users to digital hardware and software testing and provide deeper knowledge in this area. The project is already used in KTU M-Lab ProtoLab modules, where students apply this digital design in their projects and learning.



Highly Integrated Electronic Module with SiP Architecture

Field of science Electricity, Electronics, and Energy
Type of innovation Hardware (e.g. electronic device, robotics, computer hardware, wearable technology, etc.)

Dominykas Mendelis
Šarūnas Jankauskas

Head: Dr. Mindaugas Žilys

Kaunas University of Technology

Description of the work

This paper presents a highly integrated hybrid SiP (System-in-Package) module designed for energy management and electronic system testing applications. The developed platform integrates components based on different technologies: a GaN MOSFET for power electronics, an LDO voltage regulator, and EEPROM memory. This heterogeneous integration solution allows digital, analog, and power functions to be combined into a single compact module. During the project, a prototype was implemented on a test board to evaluate the system's functionality, reliability, and integration efficiency. Testing and characterization methods are also examined, allowing for the evaluation of the applicability of SiP solutions in the fields of microelectronics and power management. This solution demonstrates the potential of advanced packaging technologies in reducing system size and increasing functional density.

Technical or other problems that are solved with the work

Electronic systems often require many different functions, such as power management, voltage regulation and memory, to be combined. Today these are usually implemented as separate components on a PCB, making the system larger, more complex and harder to test. Our solution integrates

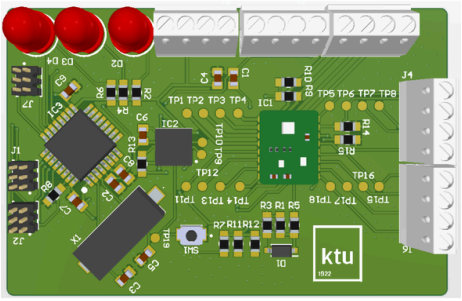
these functions into one small module, making the system more compact, simpler and easier to verify. The product is intended for electronics companies developing devices for IoT, automotive electronics, industrial control and energy systems, as well as engineers and research laboratories engaged in prototyping. This market is large and rapidly growing due to the demand for smaller, more efficient and more functional devices. For this reason, the need for such integrated solutions will continue to increase.

Novelty of the work

The novelty of this work lies in the practical integration of different functions into a single test SiP platform that can demonstrate and evaluate their operation in one system. Instead of using separate components and only theoretically combining them, a working prototype has been created that allows system behaviour to be observed under real conditions. It is also important that the platform is oriented not only towards a final device but also towards the testing and development stage. This practically applied combination of integration and testing makes it possible to understand system capabilities and limitations more quickly, which is not often implemented in similar projects.

The benefits and value to the potential users

This SiP module provides value by enabling several important functions that would normally be implemented separately to be combined in one compact device. It reduces the required board space, simplifies device design, and helps reduce development and testing time. For users, especially electronics companies and engineers, this means faster prototyping, easier system verification, and a lower risk of errors. The solution is particularly useful when developing small, efficient, and functional devices where interconnect distances and energy consumption are important.



Lockwave Systems: Advanced Encoding Technology for Mesh Radio Communications

Field of science Electricity, Electronics, and Energy
Type of innovation Hardware (e.g. electronic device, robotics, computer hardware, wearable technology, etc.)

Audrius Raišutis
Kipras Petrauskas
Donatas Valinčius
Aidas Laurišas
Ugnius Bartnikas

Head: Dr. Renaldas Raišutis

KTU Engineering Lyceum

Description of the work

The product is a secure, dual-band digital walkie-talkie system built on the ESP32 platform. It employs the Codec2 speech codec to efficiently transmit voice over extremely narrow RF channels – even in conditions where conventional communication tools fall short. All transmissions are protected by AES-256-GCM encryption, ensuring a high level of privacy and data integrity. Frequency-Hopping Spread Spectrum (FHSS) and mesh networking capabilities are currently under active development, and once completed, will transform our device into a fully self-sufficient, hard-to-detect tactical communication solution.

Technical or other problems that are solved with the work

Modern communication tools – mobile phones and commercial walkie-talkies – rely on centralized infrastructure: cell towers, internet networks, or unencrypted radio frequencies. In crisis situations, remote environments, or sensitive operations, this dependency becomes a critical vulnerability. While secure radio solutions do exist on the market, they typically lack

mesh networking capabilities or come at a prohibitively high price – commercial military-grade devices cost $2,000–$15,000+ per unit. Our solution fills this gap: the system operates fully autonomously without any external infrastructure, encrypts all transmissions using AES-256-GCM, and supports dual-band radio – all at a fraction of the cost of competing solutions.

First responders and civil protection services

Journalists and activists operating in high-risk environments

The global tactical communications market was valued at between $14.1B and $20.5B USD in 2023 and is projected to grow to approximately $24B USD by 2030.

Novelty of the work

Unlike existing solutions, our system combines several previously separate features into a single affordable device. Commercial secure radios cost thousands of dollars, while hobbyist solutions like Baofeng lack robust encryption, and Meshtastic – although supporting encryption – is designed for text and data transmission rather than real-time voice communication and does not support frequency hopping. We offer a dual-band architecture, AES-256-GCM encryption, Codec2 speech compression optimized for narrow-band channels, complete infrastructure independence, and an open, modifiable platform. Additionally, Frequency-Hopping Spread Spectrum (FHSS) integration is planned, which will make the signal significantly harder to detect or intercept – all at a highly accessible price point.

The benefits and value to the potential users

We empower users to communicate securely and independently – in places where conventional solutions fail or pose a risk. AES-256-GCM encryption ensures that all conversations remain confidential even in hostile environments. The dual-band architecture allows users to choose between speed and range depending on situational needs. The system

requires no external infrastructure whatsoever, operating in complete autonomy. Most importantly, all of this is achievable at an accessible price point.



Team Radar

Field of science Electricity, Electronics, and Energy
Type of innovation Hardware (e.g. electronic device, robotics, computer hardware, wearable technology, etc.)

Domantas Savickas
Dr. Andrius Chaziachmetovas
Kostas Čaplinskas
Nojus Šabasevičius

Head: Dr. Darius Gailius

Kaunas University of Technology

Description of the work

This project is an autonomous position visualization device that lets team members see each other's location and direction in real time, even where there is no mobile network or internet. Each device figures out its own position using satellites and then shares it with the others over a long-range LoRa radio link. The result is shown on a small screen as a compass with teammates marked on it. The device mounts on an airsoft weapon at an angle that lets the user see the information whether aiming or simply walking. The work involved designing a circuit board, choosing the right parts, writing the software, and 3D-printing a case. Tests showed that positions are tracked within about a meter, heading direction within roughly 15 degrees, and the device runs for at least 80 hours on a single charge. It can also be useful in hiking, search-and-rescue, or logistics.



Technical or other problems that are solved with the work

Knowing where your teammates are sounds simple, but it becomes surprisingly hard the moment you step away from cell towers and Wi-Fi. In forests, mountains, disaster zones, or conflict areas, the usual tools – phones, mapping apps, voice radios – either stop working or only let you describe positions in words, which is slow and prone to mistakes. Even in airsoft games, where players are not far apart, it is easy to lose track of your own team, mistake a teammate for an opponent, or shoot the wrong person. This is a well-known problem in real military operations too.

Alternatives exist, but each has drawbacks. Smartphone-based systems demand the user to look down at a screen, which is dangerous when something else needs attention. Military headsets are heavy, expensive, restrict vision, and can even glow in the dark and give away the user's position. High-end positioning systems usually need extra equipment or infrastructure to work.

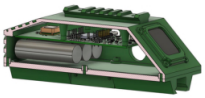
This project tries to fill that gap: an autonomous position visualization device that figures out where it is, shares that with the rest of the team over long-range radio, and shows the information in a simple, glanceable way – without depending on anything else.

Novelty of the work

There are already apps and military systems that do similar things, but none quite the same way. Most of them either need a smartphone, need an internet connection, are bulky and expensive, or require the user to look away from what they are doing. This project combines positioning, long-range radio, direction sensing, and a glanceable display into a single compact unit that works completely on its own – no phone, no base station, no network. Extra care was taken to make the compass behave correctly even when mounted near metal and a motor, which normally throw off magnetic sensors. Every part of the system was designed in-house, from the circuit board and enclosure to the software, making the device transparent, repairable, and easy to extend in the future.

The benefits and value to the potential users

The biggest benefit is awareness without distraction. Instead of pulling out a phone or asking over the radio, the user just glances at a small display mounted on their weapon and immediately sees where their teammates are. The angled screen lets this work whether aiming, scanning the area, or just walking. Because the radios used are long-range and very efficient, the device runs for around 80 hours on a single charge – enough for multi-day events without recharging. There is no need for cell coverage, no need to pair with a phone, and no monthly subscription. Beyond tactical games, the same idea is useful for hikers in remote areas, search-and-rescue teams, and small logistics groups working off the grid.







RadSeek EDU - The First Geiger Counter Built for Secondary School Physics Education

Field of science Electricity, Electronics, and Energy
Type of innovation Hardware (e.g. electronic device, robotics, computer hardware, wearable technology, etc.)

Zineb Benmya
Ąžuolas Saulius Balbieris
Antanas Balodas
Abdeslam Kabli
Oleksii Reshetkov
Yehor Timshyn

Head: Dr. Darius Gailius

Kaunas University of Technology

Description of the work

RadLearn is a hands-on educational radiation detector designed for secondary school students. It detects real alpha, beta and gamma radiation particles and displays live CPM readings on a built-in LCD screen. The transparent acrylic case lets students see every component inside the device the Geiger-Müller tube, high voltage circuit, microcontroller, and buzzer while it is running. A companion mobile app has two modes: Learn, which labels each component and explains what it does and how the circuit works, and Measure, which shows live radiation data streamed from the device via Bluetooth. Students can point at any part and understand its role in the whole system. The goal is to make nuclear physics and basic electronics feel real, not just theory in a textbook. Students do not just read about radiation particles they see the device react to them in real time.

Technical or other problems that are solved with the work

Physics teachers in Lithuanian and European secondary schools cannot give students hands-on experience with real radiation measurement. Two categories of products exist today,both are wrong for the classroom.

Professional Geiger counters from brands such as Berthold, Mirion and Ludlum cost €300–€1,000+. They exceed any secondary school STEM equipment budget and are designed for industrial or medical use, not curriculum teaching. They also show nothing about how they work internally the electronics are hidden and inaccessible.

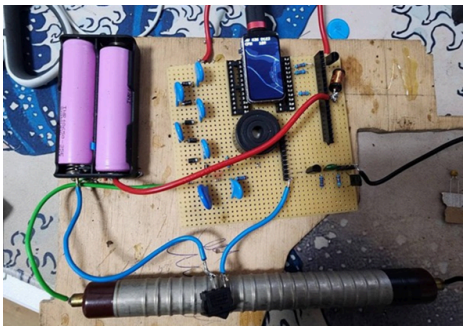
Cheap devices on Amazon and AliExpress cost €20–€80. They are uncalibrated, unreliable, have no educational interface, no transparent design, no Bluetooth connectivity and no curriculum alignment. They cannot be used as a teaching tool.

The result: nuclear physics remains theoretical for most secondary school students. They learn about radiation from textbooks and simulations, never from direct measurement of real particles.

Our target market is private secondary schools and gymnasiums in Lithuania with a dedicated STEM lab budget approximately 120 institutions nationally, with 35 in Kaunas and Vilnius as our Year 1 addressable target.

Validated by direct interviews with physics teachers in March 2026 confirmed price range €100–€200.

The global radiation detection market is $1.3 billion (2024), growing at 7–9% annually. The dedicated educational segment is currently $0, no product exists designed specifically for secondary school curriculum use. RadSeek EDU addresses this gap at €149.



Novelty of the work

RadSeek EDU is the only Geiger counter in the world designed from the ground up for secondary school physics curriculum use. Three features make it unique at any price point.

First: a transparent acrylic case that lets students see every component Geiger-Müller tube, Cockcroft-Walton HV multiplier circuit, ESP32-C6 microcontroller, buzzer while the device is live and counting.

Second: a dual-mode companion app. The Measure mode receives live CPM and μSv/hr data streamed from the device via Bluetooth 5 and displays real-time radiation readings on the student's phone. The Learn mode shows an interactive exploded view of the device students tap any component on screen, see its label, read what it does, and understand how it connects to the rest of the circuit. No existing radiation instrument combines real measurement with integrated component education in a single app.

Third: custom HV regulation firmware holding the rail at 388V ±5V via ESP32 PWM at 25 kHz with a Cockcroft-Walton multiplier. CPM validated against a real radioactive source at KTU laboratory.

Background 60–70 CPM, source test 260 CPM. Prototype cost: €140.09. Price: €149.

The benefits and value to the potential users

For students: direct hands-on experience measuring real alpha, beta and gamma radiation with a calibrated instrument. The transparent case and Learn app mode transform the device into a complete electronics education tool students see every component working in real time, not just a black box producing numbers. Nuclear physics becomes observable, not theoretical.

For physics teachers: a complete ready-to-use curriculum tool device, companion app, teacher guide, and workshop support. Saves 2–4 hours of

lesson preparation per semester. Eliminates external laboratory rental at €150 per visit twice per year.

For schools: cost-benefit ratio 2.24:1 in Year 1. Total annual cost €198 (device + app licence) versus €444 saved in lab rental and teacher time. Payback period approximately 5 months.



“ORION” – A Brushless Motor Electronic Speed Controller (ESC)

Field of science Electricity, Electronics, and Energy
Type of innovation Hardware solutions (electronic devices, robotics, computer hardware and equipment, wearable devices, etc.)

Head: Karolis Žukauskas

Description of the work

The main goal of this project is to develop a miniature brushless motor electronic speed controller (ESC) board for drones, built exclusively from Western-made components, capable of operating with 6S LiPo batteries and handling at least 50 amps of current.

Technical or other problems that are solved with the work

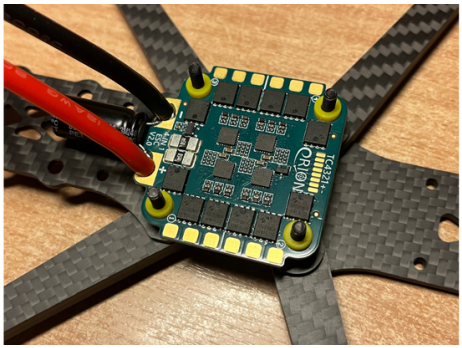
Today, drones and unmanned aerial vehicles represent one of the fastest-growing sectors of the global technology industry. From cinematography and infrastructure inspection to agriculture and defense applications, drones are becoming increasingly integrated into everyday life. As their adoption expands, the use of reliable and high-quality electronics becomes essential to ensure operational performance and public safety.

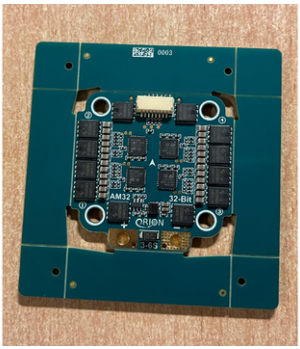
One of the most critical components of any drone is the electronic speed controller (ESC), which regulates the operation of the electric motor by controlling the high currents flowing through the motor windings. This function requires robust power electronics capable of withstanding substantial electrical loads while efficiently dissipating the heat generated during operation.

Ensuring the reliability and performance of ESC systems is therefore crucial for maintaining the efficiency, safety, and durability of unmanned aerial platforms operating in demanding environments.

Novelty of the work

The majority of drone electronics currently available on the global market are manufactured in China. Given today's geopolitical environment, the uninterrupted availability of critical technological components cannot always be guaranteed, and supply chain dependencies may create strategic vulnerabilities. Access to essential products could potentially be influenced by broader geopolitical interests, affecting the resilience of industries that rely on these technologies.





For this reason, it is increasingly important to strengthen domestic and regional technological capabilities and promote greater industrial independence. Developing locally sourced and manufactured solutions contributes to supply chain security, reduces reliance on a limited number of external suppliers, and enhances strategic autonomy.



In this context, ORION represents not only a high-performance electronic speed controller but also a step toward building a more resilient and self-sufficient ecosystem for unmanned aerial technologies. By utilizing Western-sourced components and focusing on reliable, locally supported engineering solutions, the project addresses both technical requirements and broader supply chain considerations.

The benefits and value to the potential users

The product is assembled exclusively using Western-manufactured components, ensuring a stable supply chain and reliable operational performance. This approach reduces dependence on uncertain sourcing channels and enhances the long-term availability and maintainability of the system.

In addition, the electronic speed controller has been specifically optimized to withstand high electrical currents and efficiently dissipate the heat generated during operation. These characteristics improve the overall reliability and thermal performance of the system, even under demanding operating conditions.

As a result, drones equipped with the ORION ESC can achieve longer flight times, sustain higher loads, and maintain stable performance during intensive use, making the solution suitable for both commercial and mission-critical applications.

HEALTH SCIENCES

AI for AMD progression

Field of science Health Sciences
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Aistė Varoniukaitė

Head: Dr. Gintarė Šakalytė, Prof. Vilma Jūratė Balčiūnienė

Lithuanian University of Health Sciences (LSMU)

Description of the work

Age-related macular degeneration (AMD) remains the leading cause of central visual acuity loss, resulting in reduced patient quality of life, more frequent visits to healthcare institutions, and—due to treatment costs—a significant burden on the healthcare system. The identification and integration of already known and newly emerging imaging biomarkers using simple imaging techniques, particularly optical coherence tomography (OCT), can support everyday clinical practice by individualizing monitoring intervals. However, this still requires manual evaluation of the obtained images, which demands human resources and time. Some artificial intelligence (AI) models are already capable of detecting OCT imaging biomarkers with high sensitivity and specificity, and new algorithms are being developed to predict the risk of disease progression. Yet most studies are conducted in U.S. and Western European populations, even though this risk may vary due to the multifactorial pathogenesis of retinal diseases, influenced by a combination of genetic, environmental, and lifestyle factors. Therefore, it is important to use AI to assess imaging biomarkers that drive retinal disease progression in different regions and to enable broad AI integration within local healthcare infrastructures.

Technical or other problems that are solved with the work

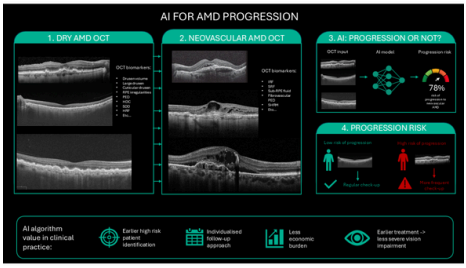
Clinical practice still requires manual evaluation of the obtained images, which demands human resources and time. With AI algorithm, progression risk identification (low/high) would stratify those patients which need more frequent check-up and those who can have check-up's less frequently and save visits. As AMD remains multifactorial disease, many genetic, environmental and lifestyle factors that differ in different regions can influence the disease activity. The algorithm would be implemented in ophthalmologist's everyday practice and help in decision making by early AMD progression risk stratification.

Novelty of the work

Many new AI based algorithms are created to recognize OCT biomarkers thus none are validated for AMD risk progression till this day due to complexity and multifactorial nature of the disease. Inclusion of multimodal imaging and metadata details are key for high specificity and sensitivity for future algorithm development and risk progression analysis.

The benefits and value to the potential users

Patients at high risk of progression to sight treatening neovascular AMD may be monitored more frequently than every 6-12 months and patients with low risk can be monitored less than once a year. This individualised follow-up approach would have less economic burden with less uneccessary visits and earlier vision threatening disease diagnosis. Earlier treatment of neovascular AMD leads to less central vision loss.



Ultrasound-Controlled Microlaboratory: Fewer Reagents, Fewer Errors, More Speed

Field of science Health Sciences
Type of innovation Hardware (e.g. electronic device, robotics, computer hardware, wearable technology, etc.)

Diana Ragaišė
Marta Kulyk

Head: Dr. Lukas Žemaitis

Kaunas University of Technology

Description of the work

The ultrasound-controlled microlaboratory is a microfluidic chip system designed to perform sensitive biological reactions using precisely controlled ultrasonic mixing. It aims to reduce reagent consumption, minimise manual pipetting errors, speed up reactions and improve repeatability in biotechnology, diagnostics, DNA sequencing sample preparation and future DNA data storage technologies.

Technical or other problems that are solved with the work

In modern biotechnology and diagnostic laboratories, many processes are still performed manually: reagents are pipetted, mixed and transferred between vessels, while reactions take place in relatively large volumes. This increases the consumption of expensive reagents, extends analysis time and creates a risk of human error. The problem is especially relevant in DNA sequencing sample preparation, DNA data storage technologies and diagnostics, where small quantities of sensitive biological reagents must be controlled precisely.

The ultrasound-controlled microlaboratory aims to transfer such reactions to a microfluidic chip where mixing is performed using precisely controlled

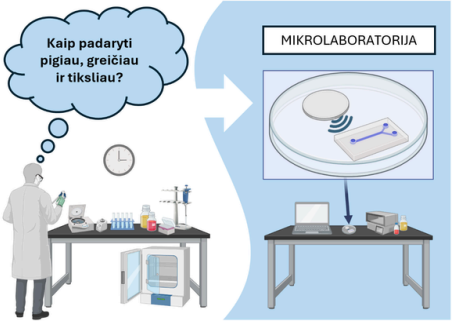
ultrasound. The target market includes biotechnology companies, diagnostic laboratories, DNA sequencing service providers, research centres and, in the future, developers of DNA data storage technologies. The microfluidics market is growing rapidly as laboratories seek solutions that automate processes, reduce reagent volumes, speed up reactions, and improve result repeatability.

Novelty of the work

Most micromixing solutions rely on complex channel geometries, mechanical components, electric fields, or additional reagents. Such methods are not always suitable for sensitive enzymatic and DNA preparation reactions. The novelty of our solution is controled ultrasonic micromixing on a chip, where mixing is generated locally without moving mechanical parts and without additional chemicals. The technology can be controlled by changing the parameters of the ultrasonic signal, allowing the mixing intensity to be adapted to a specific reaction. This makes it possible to create not only a single micromixer, but an entire programmable microlaboratory system suitable for DNA data storage, sequencing sample preparation, and diagnostics.

The benefits and value to the potential users

For users, this technology would enable sensitive biological reactions to be carried out in smaller volumes, using fewer expensive reagents, and generating less waste. Automated ultrasonic mixing could reduce manual work, pipetting errors, and differences between operators. Faster and more uniform mixing could make reactions more efficient and results more reproducible. For diagnostic laboratories, this would mean faster sample preparation; for biotechnology companies, lower development and production costs; and for DNA data storage technologies, a path towards more compact, automated and cost-efficient systems.



AI-assisted echocardiographic analysis in patients at risk of cardiac amyloidosis

Field of science Health Sciences
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Paulius Bučius

Head: Dr. Eglė Ereminienė

Institute of Cardiology at the Lithuanian University of Health Sciences (LSMU)

Description of the work

This project aims to evaluate the applicability of the AI-based echocardiographic analysis tool Ligence Heart for assessing patients who are at increased risk of cardiac amyloidosis. The study focuses on echocardiographic features associated with cardiac amyloidosis risk, particularly left ventricular hypertrophy, diastolic dysfunction and left ventricular longitudinal strain. The main objective is to establish feasibility of AI-based assessment. The method could later be applied to large-scale echocardiographic and clinical datasets to identify patients who may benefit from additional diagnostic testing for cardiac amyloidosis.

Technical or other problems that are solved with the work

Cardiac amyloidosis is often diagnosed late in clinical practice because its early signs may resemble other cardiac conditions. Echocardiographic abnormalities such as left ventricular hypertrophy or diastolic dysfunction do not always automatically lead to further diagnostic evaluation for amyloidosis. As a result, some patients who could benefit from targeted assessment for cardiac amyloidosis may remain unidentified within the high volume of routine echocardiographic examinations. Therefore, there is a need for an automated, reliable, and clinically grounded approach that

could support the identification of potentially at-risk patients. The project creates practical value by supporting earlier recognition of patients with cardiac amyloidosis “red flags” and by improving the efficiency of the diagnostic pathway in clinical cardiology.

Novelty of the work

The novelty of the project does not lie in developing a new AI algorithm itself, but rather in the clinical validation and application of an existing AI echocardiography tool to a specific and under-recognized condition - cardiac amyloidosis. The project connects clinical cardiology, echocardiography, AI validation, and optimization of early diagnostic pathways.

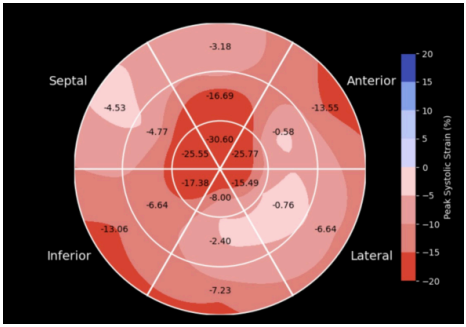
The benefits and value to the potential users

The novelty of the project does not lie in developing a new AI algorithm itself, but rather in the clinical validation and application of an existing AI echocardiography tool to a specific and under-recognized condition - cardiac amyloidosis. Value for potenial users:

Clinical value: potential to support earlier suspicion and diagnosis of cardiac amyloidosis

Organizational value: potential to automate the review of large echocardiographic datasets

Patient benefit: reduced risk that patients with relevant warning signs remain unnoticed.



Aortic Valve Digital Twin Simulator

Field of science Health Sciences
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Dr. Tomas Krilavičius
Dr. Ričardas Krištolaitis
Monika Katilienė
Anton Volčok

Head: Dr. Karolis Gedvilas, Dr. Serik Aitaliyev

Vytautas Magnus University (SustAInLivWork), Lithuanian University of Health Sciences

Description of the work

The Aortic Valve Digital Twin Simulator is an innovative patient-specific computational platform designed to optimize planning of aortic valve replacement procedures. By integrating clinical and echocardiographic data, the system creates a virtual digital twin of a patient's heart and simulates different surgical and transcatheter treatment strategies before intervention. Using artificial intelligence and predictive physiological models, the platform estimates outcomes such as hemodynamic performance, complication risk, functional recovery, and long-term survival. The solution enables personalized, data-driven decision-making for heart teams, improves treatment precision, and has strong potential to reduce complications and improve patient outcomes. The platform represents a next-generation precision cardiology solution combining digital twin technology, computational medicine, and AI for real-world clinical application.

Technical or other problems that are solved with the work

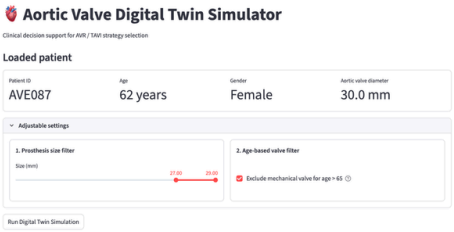
Current planning of aortic valve replacement procedures remains highly

complex because clinicians must choose between multiple surgical and transcatheter treatment options, valve types, sizes, and implantation strategies while predicting patient-specific risks and long-term outcomes. Existing clinical decision-making is largely based on physician experience, population-level evidence, and generalized treatment guidelines, which cannot fully account for the unique anatomy, physiology, and clinical condition of each patient. As a result, patients may experience complications such as conduction disturbances, suboptimal valve performance, repeat interventions, prolonged recovery, or reduced long-term survival.

The Aortic Valve Digital Twin Simulator addresses this unmet clinical need by enabling personalized and predictive treatment planning. The platform creates a virtual patient-specific model of the heart and simulates multiple intervention strategies before the procedure is performed. By predicting hemodynamic outcomes, complication risks, ventricular remodeling, and functional recovery, the system supports data-driven and individualized clinical decision-making. This approach can help heart teams select the safest and most effective treatment strategy for each patient, improve procedural precision, reduce uncertainty and complications, and ultimately improve patient outcomes and healthcare efficiency.

Novelty of the work

The novelty of the Aortic Valve Digital Twin Simulator lies in its ability to combine patient-specific digital twin technology, artificial intelligence, and computational cardiovascular modeling into a single clinical decision-support platform. Unlike current treatment planning approaches that rely mainly on generalized guidelines and physician experience, the simulator enables virtual testing of multiple valve replacement strategies before intervention in an individual patient's digital heart model. The platform predicts both short- and long-term outcomes, including hemodynamics, complication risk, and functional recovery, allowing quantitative comparison of treatment options. This creates a new paradigm for precision cardiology by transforming aortic valve replacement planning from experience-based decision-making to predictive, personalized, and data-driven medicine with strong real-world clinical application potential.



The benefits and value to the potential users

The Aortic Valve Digital Twin Simulator provides significant value for both heart treatment teams and patients by enabling more precise, personalized, and data-driven treatment planning. For clinicians, the platform supports objective comparison of different valve replacement strategies, helping reduce procedural uncertainty, optimize intervention decisions, and potentially decrease complications and repeat procedures. The simulator can improve workflow efficiency and strengthen confidence in complex clinical decision-making. For patients, the technology offers safer and more individualized care tailored to their specific cardiac anatomy and physiology. By predicting treatment outcomes before intervention, the platform has the potential to improve long-term survival, reduce complication risks, shorten recovery time, and enhance overall quality of life. The solution represents an important step toward precision and predictive cardiovascular medicine.

AI algorithm for aortic stenosis grading using spectrographical murmur analysis

Field of science Health Sciences
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Edvinas Ščefanavičius
Vaida Mizarienė
Dovydas Verikas
Laurynas Miščikas
Saulė Oliandtraitė
Žygimantas Skučas
Paulius Grybauskas

Head: Dr. Gintarė Šakalytė, Dr. Vidas Raudonis

Institute of Cardiology, Lithuanian University of Health Sciences (LSMU)

Description of the work

Aortic stenosis (AS) is a growing concern in today's aging population, affecting approximately 3–4% of individuals aged 75 and older in Europe and the USA. This prevalence rises sharply with age, reaching about 10% in those over 80 years old, making it one of the most common and serious valve diseases in the elderly population. AS is a progressive disease that, when left undiagnosed or untreated, leads to reduced quality of life, poor mobility, dizziness, fainting, and even sudden cardiac death. Severe untreated aortic stenosis carries a high risk of death, with nearly 45% of patients not surviving four years without proper treatment, underscoring the urgent need for earlier diagnosis and care. Current diagnostic methods, such as transthoracic echocardiography, are expensive, time-consuming, and require specialized expertise, making them inaccessible in many primary care settings where early detection is essential. Auscultation, a cost-effective and widely used method in primary care,

offers an alternative for detecting heart murmurs. However, despite its high specificity for detecting aortic stenosis, it has low sensitivity and diagnostic accuracy, as it heavily depends on the clinician's experience and the patient's characteristics. The proposed project addresses this critical unmet need by developing an AI-driven diagnostic system for AS detection. The system will combine advanced heart sound analysis algorithms designed for primary care settings. Spectrogram analysis—a robust method that visualizes heart sound frequency and intensity changes over time—will be utilized to extract detailed acoustic patterns indicative of AS. The AI-driven diagnostic solution will automate the analysis, bypassing the need for manual spectrogram interpretation.

Technical or other problems that are solved with the work

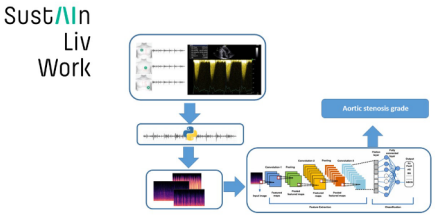
For healthcare providers, the AI-based diagnostic system simplifies the detection of AS in primary care settings, eliminating the need for specialized expertise. This allows general practitioners to identify AS more effectively, reducing diagnostic uncertainties and unnecessary referrals to specialists. By streamlining diagnostic workflows, the solution ensures faster access for patients who truly need specialist care, addressing long waiting times and easing the burden on specialty clinics. Healthcare systems benefit from improved resource allocation and cost efficiency. Early diagnosis in primary care prevents complications that often lead to costly emergency interventions and hospitalizations. In emergency department settings, the system aids in rapidly identifying AS, improving patient outcomes and reducing strain on healthcare resources. Additionally, the solution addresses the socioeconomic burden by decreasing unnecessary specialist consultations, improving referral accuracy, and minimizing delays in care. Crucially, there is currently no commercially available device or AI software specifically designed to detect and quantify AS severity using heart auscultation data. This project fills that gap by integrating advanced AI technology with a practical diagnostic system tailored for primary care. It transforms existing diagnostic practices, ensuring a more efficient, patient-centered, and equitable approach to managing aortic stenosis.

Novelty of the work

Currently, in cardiology, artificial intelligence is most commonly used for the interpretation of various parameters derived from echocardiography, computed tomography, and angiography. Relatively little attention has been given to the interpretation of audible spectral sound waves of the aortic valve; however, there are some studies exploring the application of AI in the analysis of murmurs associated with valvular diseases. The novelty of this project is based on the aim to go beyond the current boundaries of artificial intelligence applications—shifting from binary pathology detection to quantitative assessment of the severity of aortic stenosis. To date, most studies applying AI to spectrogram analysis are limited to detecting heart murmurs or valvular diseases, typically framing the task as a classification problem of “normal vs. pathological.” A direct relationship with the hemodynamic severity of aortic stenosis remains unresolved. The essence of this project is the development of a model designed not only to detect aortic valve stenosis but also to determine its severity, thus enabling optimization of patient flow according to subsequent monitoring and treatment strategies.

The benefits and value to the potential users

The value of this solution lies in its potential to transform early detection of aortic valve stenosis through a low-cost, non-invasive, and scalable approach. It empowers frontline clinicians with decision-support tools, facilitates timely referral pathways, and contributes to more efficient allocation of healthcare resources. Ultimately, this may lead to improved clinical outcomes by reducing delays in diagnosis and treatment.



INFORMATION TECHNOLOGIES

Leaflet – The application allows its users to easily and conveniently find events taking place nearby

Field of science Information Technologies
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

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Giedrius Mikelaitis
Erikas Padelskas
Audrius Bertašius
Evita Gaidauskaitė
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Head: Dr. Vaidotas Drungilas

Kaunas University of Technology

Description of the work

The goal is to bring together currently scattered information about leisure activities in one place. The system allows users to conveniently search for events by location, time and price, and organizers to publish events themselves. A user survey revealed a great need for an interactive map and accurate filtering tools. The system is focused on active youth, in order to simplify leisure planning, increase the accessibility of events and ensure the accuracy of information on a unified platform.

Technical or other problems that are solved with the work

Our product addresses a key challenge in the events market: fragmented event discovery. Event information is currently dispersed across multiple websites and social media platforms, making it difficult for potential attendees to gain a complete overview of available activities. Our solution centralizes this information, ensures its accuracy, and provides intuitive

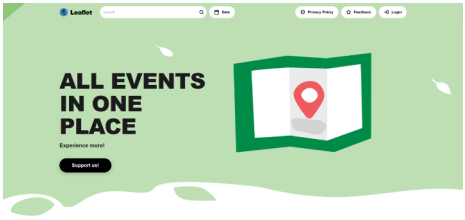
tools that enable users to quickly and effortlessly discover events and plan their leisure time.

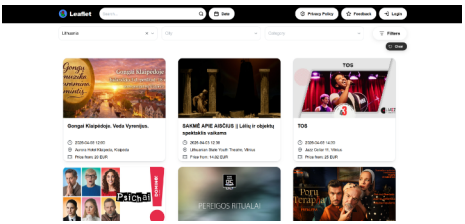
Novelty of the work

The system not only automatically aggregates event data but also allows organizers to manage and update the information themselves. Additional value is created through an interactive map and advanced filtering features, which significantly simplify the leisure planning process and provide users with a unique, personalized experience.

The benefits and value to the potential users

It was observed that event announcements are published across different websites and social media platforms, resulting in fragmented information that is often not shared across all available channels. In addition, details about the same event may vary between different listings. As a result, potential attendees may fail to find the events they are looking for or may be misled by inconsistent information. Our solution enables event organizers to publish and manage event information within a single system, making it easier for users to find relevant events, search and filter activities based on their interests, and access accurate information. At the same time, organizers can efficiently promote and administer their event listings through one centralized platform.





An artificial intelligence-based learning system for programmers to improve their skills

Field of science Information Technologies
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Ainaras Kazlauskas
Laurynas Zavjalovas
Kamilė Vaškytė
Povilas Jankauskas
Justas Stončius
Oskaras Kakštys

Head: Dr. Vaidotas Drungilas

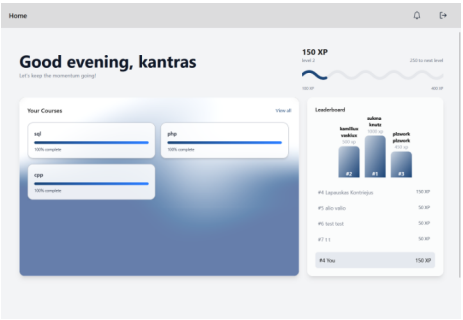
Kaunas University of Technology

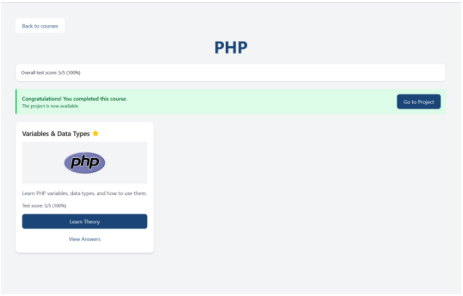
Description of the work

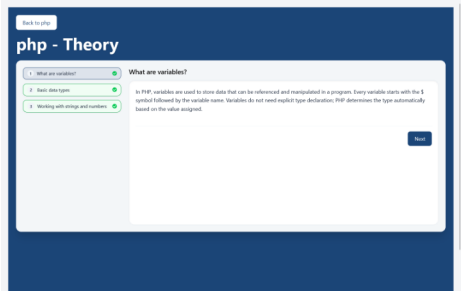
The product is being developed as a commercial learning platform for organizations that aim to encourage employees to acquire new technical skills in the field of programming. The platform will adapt the learning content to the interests of users, offering courses, theoretical parts, tests and interactive coding tasks generated by artificial intelligence. The learning process will be stimulated by gamification elements, such as a point system and leaderboards. The platform will record users' activities, achievements and received ratings.

Technical or other problems that are solved with the work

The core challenge in modern technical education is the lack of individualization within standardized curricula. Students and junior developers often encounter a plateau where generic tutorials no longer serve their specific skill levels, leading to a phenomenon known as “tutorial hell” In this state, learners can mimic syntax but struggle to apply logic to







unique professional scenarios. Our product addresses this by replacing static content with a dynamic, AI-powered feedback loop that identifies specific cognitive gaps in real time, effectively providing a private mentor for every user.

Novelty of the work

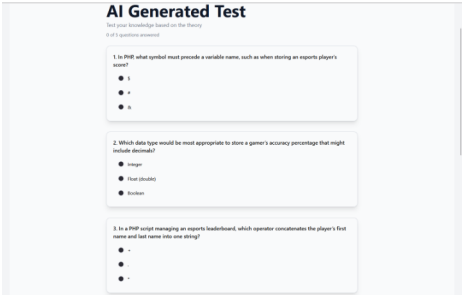
The innovation of this platform lies in its AI-driven task generation, setting it apart from Codecademy, freeCodeCamp, and LeetCode. While these platforms rely on a fixed repository of static problems that every user follows in the same order, our system uses AI to construct personalized coding tasks from scratch. This ensures that a student is never bored by material that is too easy or discouraged by tasks that are too difficult. By focusing on generative challenge creation rather than a pre-written curriculum, the platform offers a truly infinite and tailored learning path. This shift from "consuming content" to "interacting with an evolving syllabus" is the core differentiator in the current market.

The benefits and value to the potential users

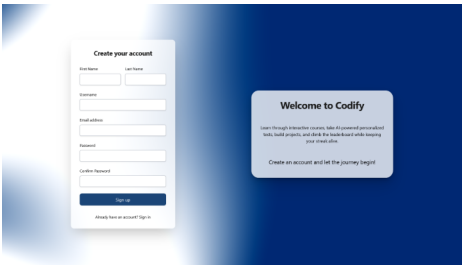
Our platform delivers value by drastically reducing the time required to reach professional proficiency. For students and junior developers, the primary benefit is a shorter learning curve through instant, personalized feedback that mimics a senior engineer's guidance. Instead of wasting hours debugging alone or following irrelevant tutorials, users receive challenges tailored to their specific weaknesses. This creates a high-

efficiency environment where learners build a verifiable, high-quality portfolio. Ultimately, the product increases the user's employability and market value, transforming frustrated beginners into confident, job-ready professionals who can adapt to any tech stack.









Curade - system that turns study materials into personalized courses

Field of science Information Technologies
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Justinas Teselis

Head: Dr. Mikas Binkis

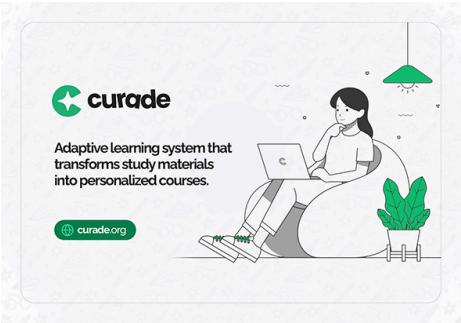
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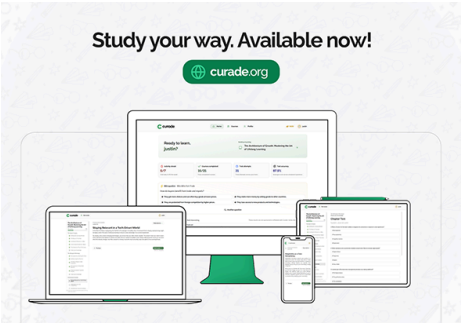
Description of the work

Curade is an adaptive learning system that transforms raw information into structured, interactive courses tailored to a user's background and interests.

When a user uploads a PDF, Curade divides the material into lessons and rephrases concepts using the user's specific interests and experiences. If no file is provided, the system can also create courses from web sources, allowing users to learn almost any topic.

To support knowledge retention, the system automatically creates tests based on the material, including both multiple-choice and open-ended





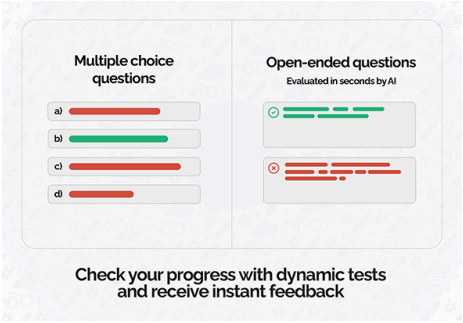
questions. Each answer is evaluated within seconds with detailed feedback, helping users track their progress in real time.

Technical or other problems that are solved with the work

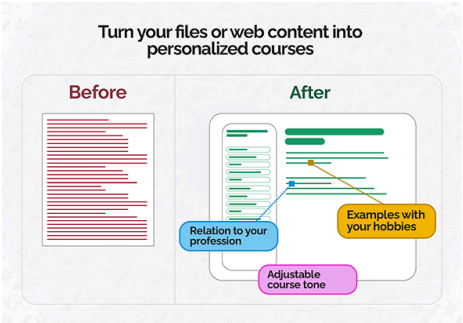
Today, finding information is easier than ever, but actually understanding it is becoming harder. As AI tools become more common, getting quick answers often replaces the effort of learning. People tend to skim, copy, or move on too quickly instead of truly understanding the material. At the same time, most digital learning content still follows a “one-size-fits-all” approach, which often feels irrelevant or unengaging.

We take a different approach. Instead of avoiding AI, we use it in Curade to make learning more engaging. Rather than giving everyone the same static material, the system adapts content to each user. It adjusts how topics are explained, using language, examples, and context that match the user’s interests and goals.

By connecting new ideas to things the user already cares about, learning becomes more intuitive and engaging. Large, complex materials are broken down into smaller, structured parts, making them easier to follow and understand. This helps users stay focused, think more deeply about what they learn, and build knowledge that lasts.



Curade targets learners of all ages who actively engage in self-learning, including children, students, working professionals, and lifelong learners seeking to upskill outside formal education. The broader market is the global e-learning industry, which is currently



valued at over 300 billion USD and continues to grow rapidly due to increasing demand for digital learning solutions.

Novelty of the work

Curade stands out as a fresh approach to education. While platforms offering standardized courses are common, a system that can create highly personalized courses from any PDF or web source in near real time is completely new.

The innovation lies not only in processing text, but in automatically restructuring and adapting it for each individual user. Instead of acting like a static digital textbook, Curade adapts how the material is presented: adjusting explanations, examples, and structure based on the user's background and interests. This turns learning into a more active process, where the content changes to better fit the person using it.

The benefits and value to the potential users

Curade transforms studying from a repetitive chore into a fun, interactive experience. The main value is increased engagement: users learn more effectively because the material is presented in a way that feels relevant to them.

By connecting new information to what users already know, the system reduces the frustration that often comes with complex or unfamiliar topics. Users spend less time trying to make sense of the material and more time actually understanding it. In addition, feedback on open-ended questions provides guidance similar to personal tutoring. This ongoing interaction helps users stay consistent and engaged over time.

KET Tests in a VR Environment Using an AI Instructor

Field of science Information Technologies
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Marijus Domskis
Jorigis Vaikšnoras
Gytis Kaluškevičius
Gvidas Rakauskas

Head: Dr. Tomas Blažauskas

Kaunas University of Technology

Description of the work

The idea developed in this project is to create a virtual reality game for learning traffic rules and taking tests. The main concept is to combine VR technologies with an artificial intelligence-based instructor who would help the student understand the rules, explain mistakes, and facilitate the learning process.

Technical or other problems that are solved with the work

Such a system would allow students to learn in an immersive, realistic environment and receive the necessary assistance that is typically only available with a live instructor. The target market would be: teenagers, high school seniors, and adults who have lost their driver's licenses (aged 16–30).



Novelty of the work

Our project provides users with the opportunity to utilize virtual reality (VR) technology to complete KET tests in an interactive environment. To the best of our knowledge, no comparable VR-based KET testing solutions are currently available on the market.

The benefits and value to the potential users

The proposed solution offers users an engaging alternative to rote memorization by enabling them to learn interactively. Users can both study and play at the same time, making the learning process more enjoyable and effective.

TeamLens: AI-Powered Soft Skills Assessment

Field of science Information Technologies
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Edgaras Miniotas
Ema Kepežinskaitė
Emilija Budinaitė
Ieva Šalašavičiūtė
Matas Lankelis

Head: Dr. Vaidotas Drungilas

Kaunas University of Technology

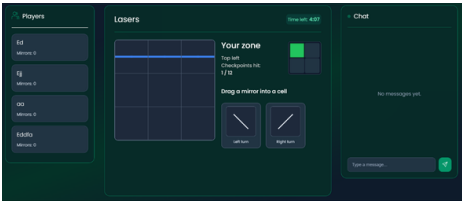
Description of the work

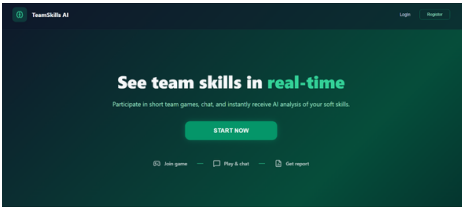
The essence of the planned product is to create an online information system in which integrated artificial intelligence (AI) analyzes users' text communication during team mini-games in real time and, based on linguistic and behavioral indicators, evaluates the soft skills of each participant.

Technical or other problems that are solved with the work

This system addresses a key challenge in personnel management: the subjectivity of employee assessment. Instead of relying on traditional tests, in which individuals may present themselves in a more favorable light, our approach combines team-based games with AI-driven analysis. By observing natural communication in real time, the system minimizes human bias and provides objective insights into the actual skills and dynamics of team members. This enables organizations to identify potential leaders more quickly and cost-effectively, while building stronger teams based on observed behavior rather than assumptions.

Novelty of the work







Most existing solutions for assessing soft skills are designed primarily for recruitment purposes rather than supporting the self-assessment and professional growth of current employees. Competitors typically rely on tests, games, or structured interviews, but they often fail to consider how these skills are demonstrated in real communication scenarios and collaborative teamwork. This creates an opportunity for our system to differentiate itself by offering an assessment approach based on actual textual communication during team-based tasks. Such an approach enables a more accurate and objective evaluation of soft skills while supporting employees' development within their existing workplaces.

The benefits and value to the potential users

This system creates value at multiple levels. Users receive objective, gamified feedback on their soft skills without the stress typically associated with formal evaluations, while companies can make data-driven decisions, saving hundreds of hours in recruitment and team assessment processes and building more emotionally resilient and productive teams. At the societal level, the system promotes a more transparent approach to human skills assessment, where opportunities are based on demonstrated abilities rather than subjective perceptions, thereby encouraging the ethical application of artificial intelligence for the benefit of society as a whole.

“VR Biology” encourages students to actively engage in biology lessons by providing them with an opportunity to learn in a modern and interactive way

Field of science Information Technologies
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

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Justina Naujalyte
Dominykas Šimonis
Julija Urtė Kerdivar
Urtė Jankauskaitė

Head: Dr. Tomas Blažauskas

Kaunas University of Technology

Description of the work

“VR Biologija” is an educational virtual reality game designed for students in grades 5–8 to make biology lessons more engaging and deepen their knowledge. During the game, students interactively learn about the structure of the human body by placing organs in their correct locations and exploring their functions. The product was developed using the Unreal Engine platform and is used on a computer with VR headsets. An integrated artificial intelligence assistant provides support, explains mistakes, and answers questions. The solution is intended to increase student motivation, engagement, and understanding of complex biology topics through a modern, immersive, and interactive way of learning.

Technical or other problems that are solved with the work

Our product addresses low student engagement in biology lessons and the difficulty of understanding human body structure when learning only from

textbooks, pictures, or slides. Traditional teaching methods often do not allow students to clearly understand the location of organs, their functions, and their relationships with one another. “VR Biologija” provides an interactive way of learning, helping students better understand complex topics, become more involved in lessons, and learn in a more engaging way.

Novelty of the work

“VR Biologija” is innovative because it is one of the few Lithuanian virtual reality educational games created specifically for school students. There are very few Lithuanian VR learning products on the market, especially in the field of biology. Unlike many existing foreign solutions, our game is adapted to the Lithuanian education system, curriculum, and language, making it easier for teachers and students to use in schools. The product combines virtual reality, interactive anatomy learning, and artificial intelligence support in one platform. This creates a modern, accessible, and locally relevant learning experience that differs from most current VR biology tools.

The benefits and value to the potential users

“VR Biologija” provides value to students, teachers, and schools by making biology learning more engaging, interactive, and effective. Students can better understand complex topics such as human anatomy through hands-on virtual experiences, which increases motivation and knowledge retention. Teachers gain a modern teaching tool that helps explain difficult concepts more clearly and improves student participation during lessons. Schools benefit by integrating innovative technologies into education and creating a more modern learning environment. The product also supports curriculum-based learning, making it both practical and educationally valuable for everyday classroom use.





Game that promotes a healthy lifestyle - Vegifit

Field of science Information Technologies
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Agnė Milerytė
Agnė Semėnaitė
Dovydas Jonuška
Gabija Daukantaitė
Martynas Vilnius
Osvaldas Daukšys

Head: Dr. Aušra Gadeikytė

Kaunas University of Technology

Description of the work

"Vegifit" is a fitness game for teens and young adults that combines light RPG mechanics with real-world activity tracking. Users earn in-game rewards through physical movement (via step/activity integration), grow "Veggiemons" and use them in turn-based battles against themed enemies across multiple islands (e.g. junk food, smoking, alcohol islands).

Progress is driven by structured tasks and challenges that award experience points and maintain ongoing engagement. The app also features social features, including friend connections, group challenges, leader boards, and cooperative goal setting. Visually, "Vegifit" uses a cute, cozy art style inspired by games like tardew Valley, with a focus on making physical activity more interactive and goal oriented.

Technical or other problems that are solved with the work

Low levels of motivation for physical activity among adolescents and young adults. Many find it difficult to move consistently because the usual

exercise/step goals seem monotonous and quickly become boring.

Low engagement with wellness apps over the long term. Even when they start using activity trackers, the lack of gamified goals, progression, and a clear “for what” mechanism causes users to stop using them.

Lack of social responsibility and shared goals. Movement is often individual, which reduces consistency; challenges from friends and group tasks help maintain motivation.

Novelty of the work

Our game combines existing, proven features into one system:

Integration of steps taken and activity.

Character development and improvement, turn-based battles are well-known game mechanisms.

Group challenges with friends and leaderboards.

There are apps that use these features, but there are none that implement them all.

The benefits and value to the potential users

Increased motivation to move daily: Physical activity is directly translated into in-game progress (tasks, XP, unlocking islands), so steps have a clear purpose.

Easy-to-understand, achievable goals: Tasks (e.g. walk 100 steps in 30 minutes) break activity into small, achievable steps that help form a lasting habit.

A more fun wellness experience: Game elements (growing Veggiemon,

fighting enemies, island themes) reduce monotony compared to typical activity tracking apps.

Social engagement and accountability: friends, group challenges, and shared goals help maintain motivation and encourage return to the app.





"Gira" – A Web-Based Platform for Iteration Planning and Progress Tracking

Field of science Information Technologies
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

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Karolis Žilinskas
Pijus Jovaiša
Simona Skodminaitė
Paulius Urbonas
Dominykas Aleksonis

Head: Dr. Eglė Butkevičiūtė

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Description of the work

The „Gira" platform simplifies IT team workflows – helping to plan sprints, track task progress, and automatically calculate team capacity. Unlike overly complex Jira or too simplistic Trello, „Gira" is built specifically for small and medium IT companies. The key differentiator – you can manage multiple projects at once, have multiple teams within one project, and let each team plan their own sprints. The system automatically calculates each team's velocity. A working prototype has been developed.

Technical or other problems that are solved with the work

"Gira" addresses two key challenges.

First, existing work planning platforms, such as Jira, Trello, and Monday.com, are not optimally suited to the needs of small and medium-sized IT companies. Jira often provides excessive functionality, making it complex and requiring a significant learning curve, while Trello is frequently too

simplistic and lacks tools for team capacity planning. As a result, organizations experience "feature fatigue", where excessive functionality reduces efficiency and user satisfaction.

Second, there is a lack of clear and automated team capacity planning. A survey conducted as part of this project revealed that 41.7% of companies do not use any tools for capacity planning, while most of the remaining organizations rely on Excel or Google Sheets. Consequently, plans often change (33.3% of teams experience changes to their plans on a weekly basis), tasks remain unfinished, and managers lack clear visual insights into team progress.

Novelty of the work

“Gira” differentiates itself through three key aspects.

First, it addresses the problem of "feature fatigue" by offering only the functionalities that are essential for small and medium-sized IT companies. This distinguishes it from Jira, which often provides excessive functionality, and from Trello, which is frequently too simplistic for effective team management.

Second, the platform uniquely combines automatic team capacity (velocity) calculation with a clear visual progress overview. This enables more accurate sprint planning and helps reduce the impact of unexpected changes.

Third, “Gira” offers direct integration with Excel data export, a feature that is highly valued by management but is missing from many comparable solutions. A user survey conducted as part of this project found that 75% of IT companies expressed a need for these capabilities, validating the relevance of the proposed solution.

The benefits and value to the potential users

“Gira” delivers the following benefits:

Time savings – automated planning and progress tracking reduce the

need for manual work using Excel spreadsheets.

More accurate planning – automatic calculation of team velocity based on historical data enables teams to realistically estimate how much work can be completed within a sprint.

Transparency – visual progress summaries (e.g., 22% completed) allow managers and team members to quickly understand the current status of a project.

Lower costs – the subscription fee of EUR 11.99 per month offers a competitive alternative to solutions such as Jira.

Flexibility – the platform enables the management of multiple teams within a single system.



“Gryberio” – A Smart Mushroom Foraging Application for Lithuanian Mushroom Pickers

Field of science Information Technologies
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Ainoras Marčiukaitis

Head: Dr. Mikas Binkis

Kaunas University of Technology

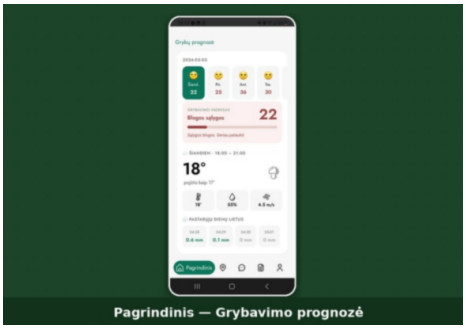
Description of the work

Gryberio is a mobile application designed for mushroom foragers in Lithuania. The app calculates a mushroom foraging index (0–100) based on temperature, humidity, rainfall, and historical weather data. Users can check the foraging index for any location in Lithuania, add foraging spots, use an interactive map with GPS tracking, and start a foraging session that others can join. During a session, users can mark their car's location for easy navigation back. The app also allows users to add friends via unique codes, communicate through a built-in chat system, and use an AI-powered mushroom guide that identifies mushrooms from photos.

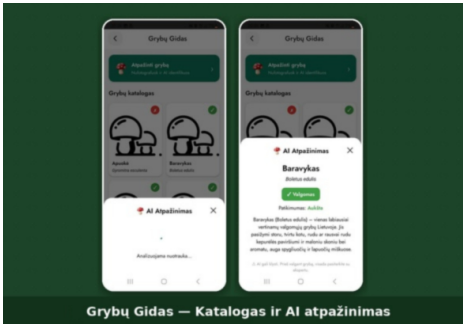
Technical or other problems that are solved with the work

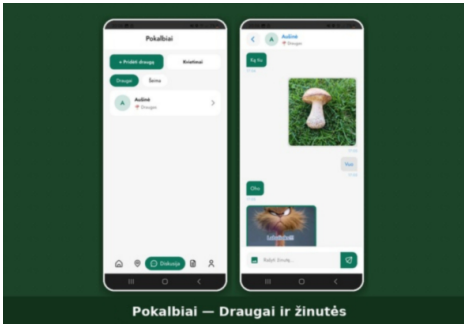
Mushroom foraging is one of the most popular leisure activities in Lithuania, attracting large numbers of people to forests every year. However, mushroom pickers lack a dedicated tool tailored to their needs. Currently, they must check weather conditions separately, rely




Pagrindinis — Grybavimo prognozė


Žemėlapis — Vietos ir grybavimo indeksas


Grybų Gidas — Katalogas ir AI atpažinimas


Pokalbiai — Draugai ir žinutės

on intuition or personal experience, and manage mushroom-picking locations and coordination with companions manually. There is no single platform that combines weather forecasts, mushroom foraging condition assessments, mapping features, communication tools, and mushroom identification.

"Gryberio" addresses this challenge by bringing all these functionalities together in one application. The target market consists of Lithuanian mushroom pickers. The product is designed for both beginners, through features such as AI-powered mushroom identification and a practical guide, and experienced foragers, through forecasting tools, session management, and location marking capabilities. Its long-term potential includes launching the application on Google Play, adapting it for iOS devices, and further enhancing its functionality, particularly in the areas of mapping and guidance.

Novelty of the work

There are currently no dedicated mushroom foraging applications developed specifically for the Lithuanian market. Existing solutions consist primarily of

general weather applications, such as Meteo.lt and Weather.com, or foreign mushroom foraging apps that are not adapted to Lithuania's forests, climate, and mushroom seasons.

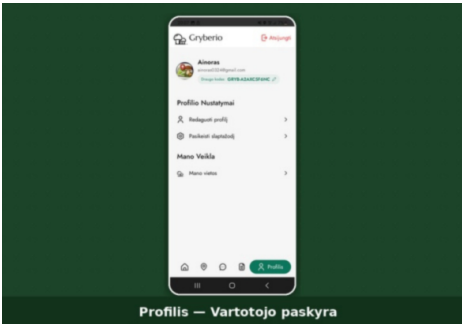
“Gryberio” distinguishes itself in several ways. Its mushroom foraging index is calculated using both historical and forecast weather data, rather than relying solely on current conditions. The session management feature enables users to forage together with family members and friends in real time. In addition, AI-powered mushroom identification is integrated directly into the application. By combining forecasts, mapping tools, community features, and mushroom recognition within a single Lithuanian application, “Gryberio” offers a comprehensive solution tailored to the needs of local mushroom pickers.

The benefits and value to the potential users

“Gryberio” provides mushroom pickers with accurate, data-driven insights instead of relying on guesswork. The mushroom foraging index enables users to quickly assess whether it is worth going to the forest, saving time and avoiding unnecessary trips. AI-powered mushroom identification helps beginners safely identify their findings.

The session management feature allows users to coordinate outings with family members and friends, while the car location marking function solves a practical problem by helping users find their vehicle when returning from the forest. The friends system and built-in chat are designed for communication exclusively with trusted individuals, such as family and close friends, reflecting the fact that mushroom pickers often prefer to keep their favorite locations private.

By bringing all these features together in a single application, “Gryberio” eliminates the need to use multiple separate tools and offers a more convenient and integrated mushroom foraging experience.



Profilis — Vartotojo paskyra

“Thunderclap Labs – Thundereye” – A Drone and Bird Tracking System

Field of science Information Technologies
Type of innovation Hardware solutions (electronic devices, robotics, computer hardware and equipment, wearable devices, etc.)

Dominykas Remeika
Dovydas Jusevičius
Simonas Aukštuolis
Dominykas Mačiulaitis
Julius Barauskas

Head: Ignas Mikolaitis, Miglė Cirtautaitė

Kaunas University of Technology

Description of the work

Thunder Eye is an advanced optical voxel tracking system designed for real-time 3D airspace intelligence. By utilizing multi-camera voxel projection instead of traditional radar, the system detects and identifies low-altitude objects, ranging from military loitering munitions to bird swarms affecting agriculture or aviation. This passive, GPS-independent technology ensures sub-meter accuracy in environments where conventional radar coverage fails, providing a stealthy and precise solution for modern airspace monitoring.

Technical or other problems that are solved with the work

Current airspace surveillance infrastructure in Lithuania and abroad faces a critical “blind spot”: most radar systems can effectively detect objects only from approximately 300 meters above ground level. This allows small drones, such as Shahed-type or FPV drones, as well as birds, to remain undetected. In agriculture, flocks of birds destroy significant areas of crops each year, while in aviation they pose a constant threat to flight safety.

Target market and customers:

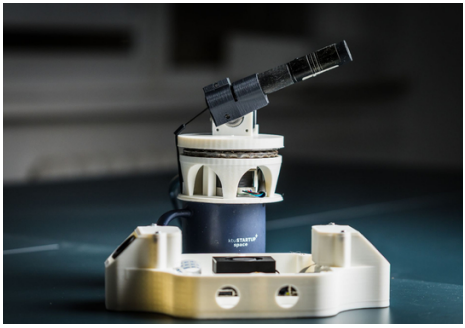
Defense: Military organizations seeking to protect critical infrastructure against drone swarms, including in environments affected by GPS jamming.

Agriculture: Large-scale farms aiming to safeguard crops from bird-related damage.

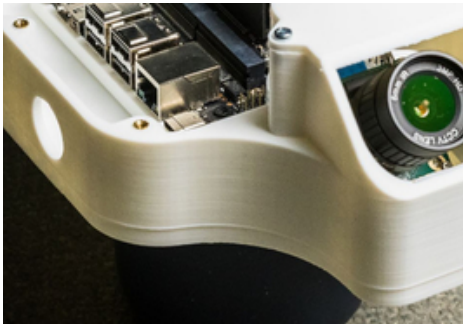
Aviation: Airport operators responsible for maintaining flight safety.

Market potential: The counter-drone and bird control markets are growing by approximately 15–20% annually. As the number of autonomous threats continues to increase, the demand for low-altitude surveillance systems is becoming a critical priority for both governmental and commercial sectors.



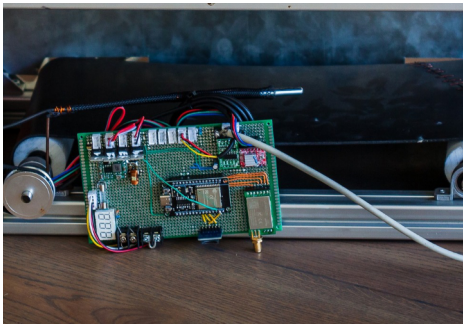






Novelty of the work

Existing solutions on the market typically rely either on expensive radar systems, which have blind spots and emit detectable signals, or on conventional 2D cameras that lack precise depth perception. The novelty of “Thunder Eye” lies in its



multi-camera voxel projection approach. Rather than simply “observing” an image, the system constructs a mathematical 3D model of the sky in real time.

This enables exceptional tracking precision without the need for active signal emission. The proposed solution combines visual identification (PID) with spatial tracking, allowing users not only to determine the exact location of an object but also to accurately identify what it is—for example, distinguishing between a bird and a drone—even in environments affected by severe radio interference.

The benefits and value to the potential users

“Thunder Eye” delivers comprehensive safety benefits and economic value across multiple sectors. For military users, it can be a matter of survival: the system operates passively, meaning it cannot be detected by adversaries through electronic warfare (EW) measures. In the agricultural sector, precise bird tracking enables the automation of deterrence systems, helping preserve up to 10–15% of crop yields that might otherwise be lost. For airports, the value lies in reducing the risk of bird strikes and avoiding costly engine repair expenses.

The core value of the solution is its ability to detect and track what was previously invisible, providing sub-meter tracking accuracy under a wide range of operating conditions.

Analysis of UAV Aerodynamic Properties Using Artificial Intelligence Methods

Field of science Information Technologies
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Eimantas Zaranka
Gintarė Kaminskienė

Head: Dr. Dovilė Kuizinienė, Dr. Justinas Juozas Dainauskas

Vytautas Magnus University SustAInLivWork

Description of the work

This research (RUAV) focuses on enhancing the aerodynamic and aeroacoustic properties of unmanned aerial vehicles (UAVs) to develop quieter and more maneuverable designs. Researchers at Vytautas Magnus University developed an artificial intelligence model based on the MeshGraphNet graph neural network architecture to predict drone propeller parameters. To ensure physical accuracy and prevent “hallucinations”, the model was integrated with Navier-Stokes equations, creating a Physics-Informed Neural Network (PINN). Experiments demonstrated that the model predicts pressure, velocity, and forces with high precision, with errors for key indicators like thrust and torque remaining below 1%. This represents the first application of a graph neural network for drone propeller simulations. The developed pipeline enables fast and reliable predictions that are practically applicable for optimizing UAV designs.

Technical or other problems that are solved with the work

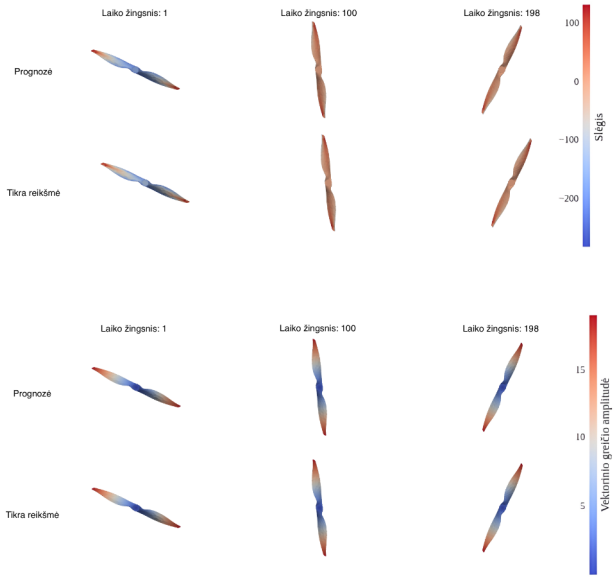
The project addresses the challenge of determining the aerodynamic performance of a drone wing using artificial intelligence methods.

Novelty of the work

The main novelty of the project lies in the first application of a graph neural network combined with a physics-based filter to simulate the aerodynamic and aeroacoustic properties of a drone propeller. The resulting model provides practically applicable outcomes and is suitable for rapid simulations while maintaining a high level of predictive accuracy.

The benefits and value to the potential users

The developed artificial intelligence model is capable of accurately and rapidly predicting the results of aerodynamic simulations. The predictions were validated through visual assessment and the calculation of various evaluation metrics, confirming the reliability and accuracy of the proposed approach.



“Iterova” – An Iteration and Work Planning Tool. Manage Projects. Manage Finances

Field of science Information Technologies
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Nedas Barsteika

Head: Dr. Eglė Butkevičiūtė

Kaunas University of Technology

Description of the work

Iterova is a project management platform built for IT companies across Europe. It brings task planning, progress tracking, and financial workflows into a single, unified environment. By consolidating tools that teams typically manage separately, Iterova reduces operational overhead and gives project leads clear visibility across every stage of delivery - from initial planning through to invoicing.

Technical or other problems that are solved with the work

Project managers typically spend around four hours each week calculating and compiling project financial data. Our solution automates the project cost calculation process, eliminating the need for project managers to dedicate valuable time to manual financial computations. The time saved can instead be invested in higher-value activities, such as communicating with clients, defining and refining tasks, coordinating team activities, and organizing project workflows more effectively.



Novelty of the work

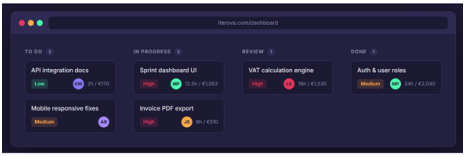
There is currently no well-established platform on the market that effectively combines both project management and financial tracking within a single solution. In most cases, project managers rely on two separate tools that are not integrated with one another, resulting in additional costs for organizations and fragmented workflows.

“Iterova” addresses this gap by bringing project planning, execution, and financial monitoring together in one platform. By eliminating the need for multiple disconnected systems, the solution simplifies day-to-day operations, improves data consistency, and enables more efficient decision-making.

The benefits and value to the potential users

By automating the calculation process, the solution saves approximately four hours per week for each project manager. When translated into labor costs, this represents an estimated annual saving of around EUR 4,000 per project manager. In addition to increasing efficiency, automation eliminates the risk of human errors associated with manual calculations, resulting in more accurate and reliable financial data.





Votet - Voting Platform

Field of science Information Technologies
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Evelina Sakalauskaitė

Head: Dr. Agnius Liutkevičius

Kaunas University of Technology

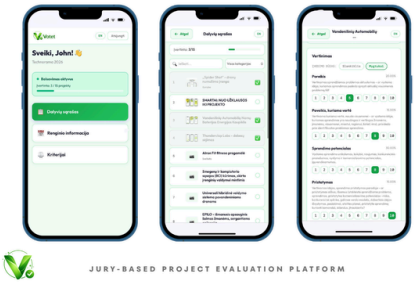
Description of the work

Votet is a modern project evaluation and voting platform designed for hackathons, business expos, pitch events, university events, and various competitions. The system helps organizers and committees ensure a fast, convenient, and transparent evaluation process - from managing evaluation criteria to automatically calculating results and rankings in real time. Votet allows jury members to efficiently evaluate projects from any device, while organizers can centrally manage the entire evaluation process within a single platform.

Technical or other problems that are solved with the work

Votet addresses inefficient and fragmented project evaluation in events where projects are assessed by jury panels. In many hackathons, business exhibitions, pitch events and university competitions, evaluation is still carried out using paper forms, Google Forms, Excel sheets or several separate systems. This makes the process slow, inconvenient, harder to manage, and less transparent. Professional evaluation systems on the market





are often expensive, aimed at large organisations and include excessive functionality that is not needed for a focused jury evaluation process. As a result, smaller events and universities often lack simple and easily adaptable solution.

Votet provides a unified digital platform that enables organisers to manage the entire evaluation process in one place, while jury members can quickly and conveniently evaluate projects from any device. The system automatically calculates scores, generates rankings, and reduces the risk of human error.

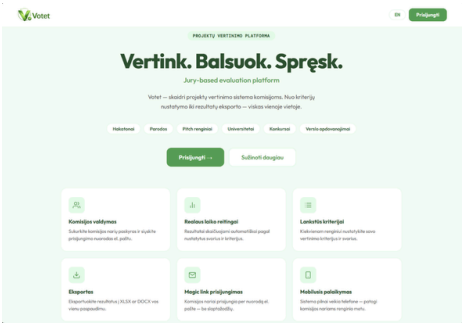
The target market includes hackathon organisers, universities, innovation centres, business event organisers and various competition organisers. The number of hackathons and innovation events is growing rapidly worldwide, and more organisations are looking for digital solutions for event management and evaluation.

Novelty of the work

Votet stands out by focusing specifically on the project evaluation process for jury panels and by offering only the essential functionality needed for it. Many existing solutions are universal event or competition management platforms that are often complex, overloaded with unnecessary features, and expensive. Such systems are usually aimed at large organisations or international events.

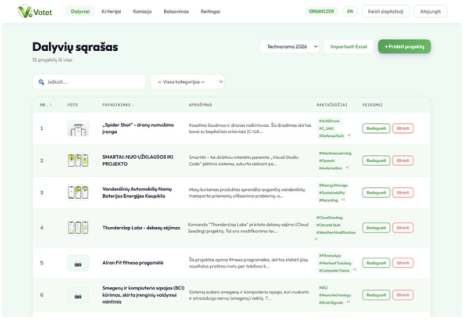
Votet is being developed as a simple, easily adaptable and mobile-optimised platform that allows organisers to centrally manage the evaluation process and enables jury members to evaluate projects quickly and conveniently in real time. The system focuses on a strong user experience, a clear interface, and efficient result calculation without unnecessary complexity.

Its additional novelty lies in being adapted to the Lithuanian audience and easily usable by universities, hackathons and smaller event organisers.



The benefits and value to the potential users

Votet enables organisers and jury panels to run the project evaluation process more efficiently, quickly and transparently. The platform centralises event management, evaluation criteria, jury members, and results in one system, reducing administrative work and the risk of human error.



Jury members can conveniently evaluate projects from any device in real time, while automatic score calculation and ranking allow organisers to obtain final results quickly. This helps ensure a more transparent, objective, and structured evaluation process.

Compared with existing market solutions, Votet focuses on ease of use and the most important evaluation functions, making it easier to adapt for smaller events, universities and organisations for which complex and expensive systems are not suitable.

Personalized LED Keychain

Field of science Information Technologies
Type of innovation Design solution (product design, user experience design concept, architectural design, fashion design)

Ugnė Auglytė

Head: Neringa Dubauskienė

Kaunas University of Technology

Description of the work

This is a customizable LED car keychain created using 3D modeling and 3D printing technologies. The keychain design is based on a specific car model, recreating the front silhouette and key design elements of the vehicle. Integrated LED lighting creates a realistic headlight effect. The product also allows users to personalize the license plate according to their preferences. The solution combines product design, electronics, and modern manufacturing technologies to create a unique accessory for car enthusiasts.

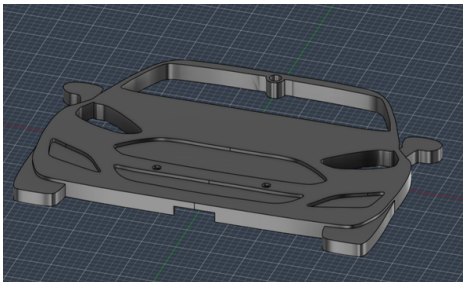
Technical or other problems that are solved with the work

The product addresses the lack of personalised automotive accessories. Most keychains on the market are standard and do not reflect the individuality of the car owner. This solution enables the creation of an LED car keychain based on a specific car model and selected licence plate number. Integrated lighting creates a distinctive design. The product can also be used as an original gift for car enthusiasts, as unique gifts in this area are often difficult to find. The target market includes car enthusiasts and people looking for personalised accessories or gifts.

Novelty of the work

This solution is distinctive because it combines personalised car design,

3D printing and integrated LED lighting in a single product. Unlike most standard keychains on the market, the product is created for a specific car model and can be adapted to individual needs, such as a chosen licence plate combination or different design elements. Integrated lighting adds functionality and uniqueness, while 3D modelling technologies allow new models to be created quickly and customised for individual orders.





The benefits and value to the potential users

The product gives users the opportunity to own a personalised accessory adapted to a specific car model and individual preferences. Integrated LED lighting distinguishes it from conventional keychains and adds aesthetic value. The product can serve not only as an everyday accessory but also as an original gift for car enthusiasts.



paperback
Replacing paper receipts with a tap

Field of science Information Technologies
Type of innovation Hardware (e.g. electronic device, robotics, computer hardware, wearable technology, etc.)

Leo Onyema Sochi Muoghara

Head: Leo Onyema Sochi Muoghara

Description of the work

paperback is an early-stage hardware-software startup building a device that replaces paper receipts at the point of sale.

The device connects to any existing cash register, captures receipt data in real-time, and delivers digital receipts to consumers via NFC tap.

On the backend, this supports multiple languages and receipt formats.

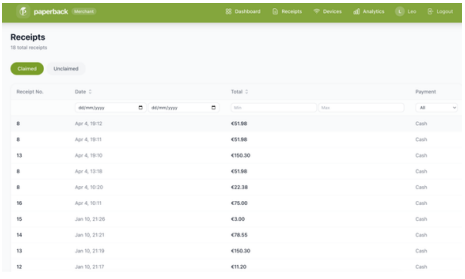
Currently at proof-of-concept stage (TRL 4-5). Next milestone: pilot deployment with a real merchant to validate the complete transaction flow in a production environment.



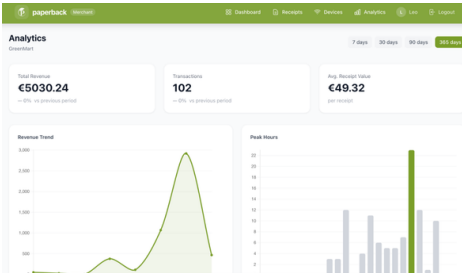
Technical or other problems that are solved with the work

Every year, over 150 billion paper receipts are printed in Europe — most are thrown away within seconds. This creates enormous waste: 3 million trees, toxic BPA-coated paper, and billions of disposal costs.

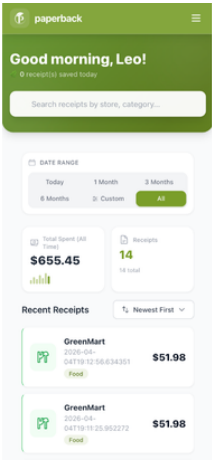
But the real problem isn't just environmental. The data on those receipts — what was bought, where, when, how much – disappears the moment the paper hits the bin. Consumers lose track of spending. Merchants lose insight into their customers.



Existing digital receipt solutions require merchants to overhaul their POS systems, integrate new software, or partner with banks. This creates friction, delays adoption, and leaves millions of small retailers behind.



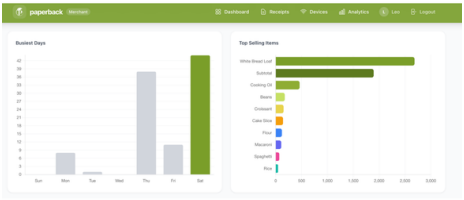
paperback solves this by working at the hardware level. Our device plugs directly into any existing POS system, emulates the receipt printer, and captures transaction data without any software changes. Consumers claim their receipt with a single NFC tap – no app download, no QR scan. The receipts are searchable for data ready for expense tracking, analytics, or accounting.

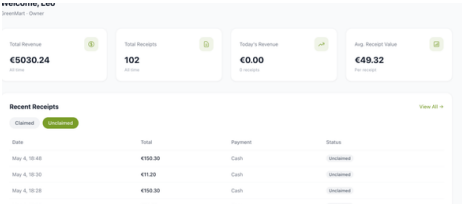


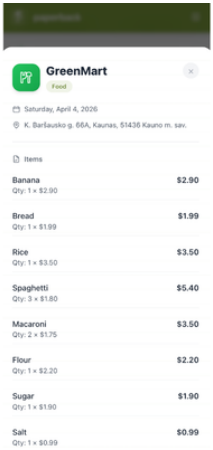
Zero friction for merchants. Zero friction for consumers. Zero paper.

Novelty of the work

paperback is the only solution that captures receipt data at the hardware level by emulating the receipt printer. While competitors rely on card linking via banks, QR codes, or POS software integrations, we capture data directly from the register — requiring zero software changes for the merchant.







The benefits and value to the potential users

For consumers: every receipt stored digitally, accessible anytime, automatically organised. No more lost receipts, easier returns, effortless expense tracking, and a clear picture of spending habits.

For merchants: plug in our device and go paperless instantly. No POS software changes, no staff training, no integration costs. Gain access to anonymised customer analytics and reduce paper and printing expenses.

For accountants and businesses: structured receipt data — items, taxes, totals, payment methods — delivered in machine-readable format. Eliminates manual data entry.

For the environment, every paperback device deployed means thousands of paper receipts are eliminated annually.

AI-based system for generating personalized mandibular osteosynthesis guides

Field of science Information Technologies
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Rimantė Povilavičiūtė
Eimantas Zaranka
Vilius Šakinas
Dmytro Klepachevskyi
Dr. Edgaras Šlikinskas
Inesta Stonkutė
Simas Steponaitis
Dr. Jan Pavel Rokicki
Dr. Dainius Razukevičius
Romas Daugnora
Jonas Domarkas

Head: Dr. Tomas Krilavičius

VDU SustAInLivWork, LSMU, UAB "DRE Design & Consulting"

Description of the work

An AI-based system is being developed for the automated generation of personalized surgical guides for mandibular fracture surgery. The system analyzes medical imaging data in DICOM format, from which a 3D model of the mandible is reconstructed. Using the RandLA-Net neural network, safe osteosynthesis zones, fracture lines, and anatomically high-risk regions are identified. Kabsch, ICP, and KDTree methods are applied for automatic reconstruction of bone fragments and optimization of the osteosynthesis plate position. The system also automatically calculates safe screw trajectories by evaluating bone geometry and the position of the

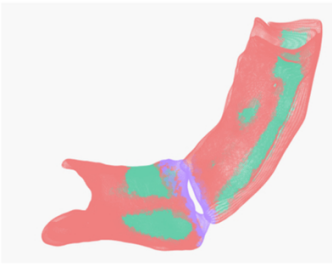
mandibular nerve canal. In the final stage, a patient-specific surgical guide is generated.

Technical or other problems that are solved with the work

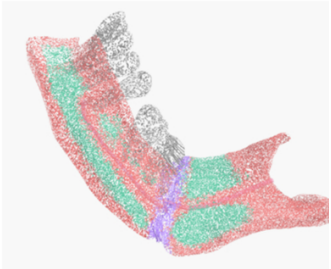
In mandibular fracture surgery, the positioning of osteosynthesis plates and screws often depends on the surgeon's experience and manual planning. It is challenging to accurately determine the optimal plate fixation sites and safe screw trajectories, particularly when attempting to avoid damage to the mandibular canal or inadequate stabilization of bone fragments. Inaccurate implant positioning may lead to longer surgery times, complications, repeat surgical interventions, and prolonged patient recovery.

The proposed solution automates the surgical planning process using artificial intelligence and 3D geometric analysis. The system generates a 3D model of the mandible from medical DICOM data, identifies safe osteosynthesis zones, automatically optimizes plate positioning, and calculates safe screw drilling trajectories. This approach reduces the risk of human error, increases the accuracy of surgical planning, and improves overall surgical quality.

Segmentation



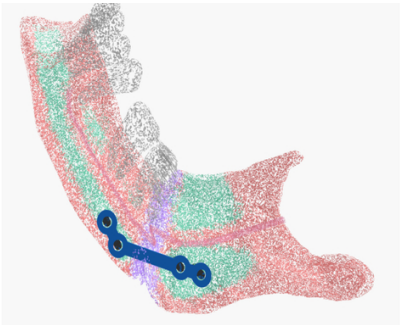
Reconstruction (2)



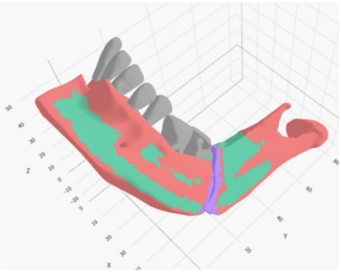
Novelty of the work

The solution is distinguished by its integrated application of artificial intelligence and 3D geometric analysis technologies for osteosynthesis planning. The system employs the RandLA-Net neural network for automatic segmentation of safe anatomical zones from 3D mandibular models. Kabsch, ICP, and KDTree methods are applied for bone fragment reconstruction and optimization of

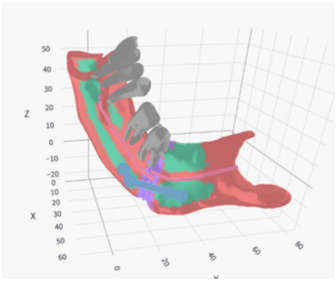
osteosynthesis plate positioning, enabling the automatic generation of patient-specific surgical solutions. The system also automatically evaluates screw trajectories according to anatomical constraints and generates surgical guides. This combination of methods is currently applied only to a limited extent in osteosynthesis planning and demonstrates a high level of innovation.



Reconstruction (1)



Mini plate position (1)



Input





The benefits and value to the potential users

The solution will enable surgeons to plan mandibular osteosynthesis procedures more quickly and accurately using personalized 3D surgical guides. Automated identification of safe zones and optimization of screw trajectories will reduce implant positioning errors and the likelihood of surgical complications. For patients, this will result in safer surgeries, shorter recovery times, and improved treatment outcomes. For healthcare institutions, the solution may reduce surgical planning time, optimize surgical workflows, and decrease the need for additional corrective procedures.

Secure Grid-Edge Module for Flexible Energy Systems Management

Field of science Information Technologies
Type of innovation Food (new food products and ingredients)

Eidenis Kasperavičius
Matas Tamulynas
Vaidas Jankauskas

Head: Dr. Vytautas Markevičius, Dr. Dangirutis Navikas

Kaunas University of Technology

Description of the work

As part of the implementation of the “Center of Excellence in Technological and Physical Sciences (TiFEC)” project, the secure grid-edge module has been designed to connect distributed energy resources (electric vehicle chargers, heat pumps, photovoltaic systems and others) to power distribution system operators in a reliable and secure way. The system consists of a gateway and several controllers that communicate over a secure sub-GHz wireless link, enabling the grid operator to monitor and control the consumed power of selected household appliances. Implemented as a compact module, the controller can be integrated into new equipment or retrofitted into legacy systems. It is designed to support smart grid communication standards over Ethernet, while securing the radio link with security features: AES-256 encryption, anti-replay protection, adaptive frequency selection and others. This creates a scalable and interoperable platform for flexible energy management in modern low-voltage grids.

The project “Center of Excellence in Technological and Physical Sciences (TiFEC)” No. S-A-UEI-23-1 is funded by the Research Council of Lithuania and the Ministry of Education, Science and Sports of the Republic of

Lithuania from the state budget under the program “University Excellence Initiative”.

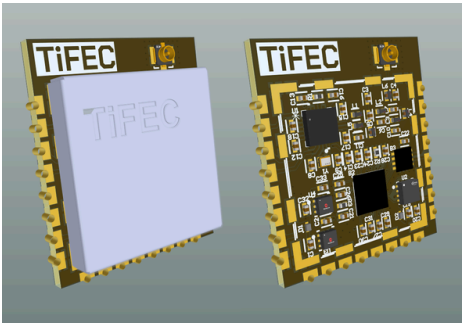
Technical or other problems that are solved with the work

The rapid growth of distributed energy resources (EV chargers, rooftop solar systems, heat pumps, battery storage and others) is placing increasing stress on low-voltage electricity distribution networks. Since the existing grid infrastructure was primarily designed for predictable one-way energy flow, grid congestion (nominal voltage violations, transformer overloads and other issues) are predicted to become disruptive as early as 2030.

Energy system flexibility management is a promising alternative to expensive grid equipment upgrades. However, there is a lack of monitoring, communication, and control capabilities at the low voltage level. On the other hand, increasing the number of connected devices also introduces cybersecurity risks, including spoofing, unauthorized control, and data manipulation attacks that can threaten grid stability. This secure grid-edge module addresses these challenges by providing a secure, standardized, and cost-effective interface between grid operators and distributed energy resources. It enables real-time monitoring, remote control, and secure communication for both legacy and modern equipment, reducing infrastructure costs while improving grid flexibility, resilience, and operational security.

Novelty of the work

The main novelty of this work is combining secure communication and scalable grid-edge control into a single compact interoperable module. Unlike existing solutions that often target specific devices, rely on wired infrastructure, or provide software-only platforms, this innovation provides a universal communication layer for both legacy and modern equipment. The compact design of the module enables seamless manufacturer integration or standalone deployment, while the secure sub-GHz wireless architecture offers long-range, low-power, and resilient communication. Advanced cybersecurity mechanisms (AES-256 encryption, adaptive



frequency selection, anti-replay protection and others) are built directly into the architecture. This creates a practical solution for advancing today's energy resources into the flexible smart grid ecosystem of tomorrow.

The benefits and value to the potential users

This secure grid-edge module delivers value to distribution system operators, equipment manufacturers, and energy consumers. For grid operators, it improves visibility and control of low-voltage networks, enabling flexible connection schemes and reducing the need for costly infrastructure expansion. For manufacturers, it offers a compact, standardized communication module that simplifies compliance with emerging smart grid requirements and reduces development complexity. For owners of legacy equipment, it provides a practical means to participate in smart grid expansion without replacing existing systems. The solution also strengthens cybersecurity through encryption, authentication, and anti-tampering measures, improving reliability and trust. Overall, it enables faster, safer, and more cost-effective adoption of flexible energy systems.

SOStudy

Field of science Information Technologies
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Aistė Zuzevičiūtė
Evelina Riukaitė

Head: Aistė Zuzevičiūtė

Kaunas University of Technology

Description of the work

"SOStudy" is a fast and convenient learning support platform designed for students who need quick answers or short tutoring sessions. Instead of long and often inefficient lessons, students can upload their questions and instantly connect with an available tutor for an online session. The platform works similarly to a taxi service – help is provided exactly when it is needed. "SOStudy" saves time, allows users to pay only for the actual lesson duration, and offers clear, high-quality academic support. The main target audience includes students, parents, and tutors looking for a flexible and modern way to learn and teach.

Technical or other problems that are solved with the work

SOStudy addresses a problem faced by many pupils: academic help is often needed quickly and briefly, while traditional tutoring is not designed for this. Pupils often get stuck on a single question or task but must wait for a scheduled lesson or pay for a full one-hour session. This takes time and becomes inefficient and expensive.

Tutors also face challenges: their working hours are often inflexible, and free time slots remain unused. This makes it difficult to provide help exactly when it is needed most.



SOStudy allows pupils to quickly upload a question and be connected with an available tutor for a remote consultation. Help is provided immediately, and users pay only for the actual time spent. This saves time, reduces costs, and provides clear, convenient learning support at any time.

Novelty of the work

SOStudy differs from existing tutoring platforms in Lithuania by focusing not on pre-scheduled long-term lessons but on real-time quick help. Most current platforms function as tutor directories, where pupils must search for a teacher, agree on a time and book a full lesson.

SOStudy enables a pupil simply to upload a question and be instantly connected with an available tutor. This is especially useful when help is needed here and now, for example while preparing for a test, solving homework tasks or trying to understand a specific topic. The platform also stands out through its short-consultation model and payment only for the time used, making the service faster, more flexible, and more accessible than traditional tutoring.

The benefits and value to the potential users

SOStudy gives pupils the opportunity to receive help quickly when they need it most. Instead of long and expensive tutoring lessons, students can receive a short, clear answer to a specific question and pay only for the time actually used. This saves time, reduces stress when preparing for tests or doing homework, and enables more effective learning. For parents, the platform provides a convenient and flexible way to ensure academic support for their children, while tutors gain an opportunity to work flexibly and earn additional income. SOStudy creates a fast, convenient and modern learning solution for all users.

“HOOPS Arena” - Technology-driven basketball skills development system

Field of science Information Technologies
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Augustin Averkin
Jurgis Augūnas

Head: Mykolas Vaitiekūnas

Kaunas University of Technology

Description of the work

Hoops Arena is an innovative basketball training facility designed for youth and adult athletes, professional players, and basketball enthusiasts. The project plans to offer advanced shooting and dribbling training stations powered by artificial intelligence, sensor-based technology, and data analytics. The system will provide athletes with real-time feedback, progress tracking, and personalised insights to improve their technical skills more efficiently. Services will be offered through a flexible credit-based model, allowing customers to choose their preferred training time and activity type. The goal of the project is to create a unique technology-driven sports infrastructure in Lithuania and the wider region, promoting physical activity, supporting youth basketball development, and contributing to the growth of the sports innovation ecosystem.

Technical or other problems that are solved with the work

The product addresses the lack of modern, specialized, and personalized basketball training infrastructure in Lithuania and Europe. Most athletes currently train in traditional sports halls, where there is limited access to dedicated shooting and dribbling development tools, automated performance tracking, and objective progress analysis. As a result, players

often find it difficult to accurately evaluate their technique, identify weaknesses, and improve individual skills in a focused way.

An additional challenge is the limited availability of coaches and the high cost of individual training sessions. Not all athletes can regularly access professional coaching, so their development often depends on independent and less structured practice.

Hoops Arena offers a technology-driven alternative: automated shooting and dribbling stations allow athletes to train independently, receive real-time feedback, track their results, and plan their progress more effectively. This creates a more accessible, flexible, and data-based training environment that helps improve basketball skills regardless of the athlete's age or performance level.

Novelty of the work

The novelty of the project lies in creating a specialized basketball training facility that combines automated shooting and dribbling stations, artificial intelligence, sensor-based technology, and data analytics in one integrated environment. Unlike traditional gyms, basketball courts, or individual coaching sessions, this solution enables athletes to train independently while receiving objective real-time feedback and tracking their progress over time.

The solution stands out because it is not only a sports facility, but a technology-driven skill development platform. It offers a more structured, measurable, and engaging way to improve basketball performance, making advanced training tools more accessible to youth athletes, professionals, and basketball enthusiasts in Lithuania and the wider region.



The benefits and value to the potential usersPotential users will gain access to a modern,

technology-driven basketball training environment that enables more effective development of shooting, dribbling, and physical conditioning skills. Automated training stations will provide real-time feedback, objective performance analysis, and the ability to track individual progress. This will help athletes better understand their weaknesses and improve their results in a more focused and structured way.

The service will be flexible and accessible to users of different skill levels, from youth players to professionals and basketball enthusiasts. The credit-based system will allow users to train according to their individual schedules, while the modern environment will encourage motivation, independence, and consistent athletic development.

“Tabor” – An Artificial Intelligence Assistant for Programming Education

Field of science Information Technologies
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Matas Marčiulionis
Benas Būla
Paulina Reinikytė
Aretas Pupelis

Head: Dr. Tomas Blažauskas

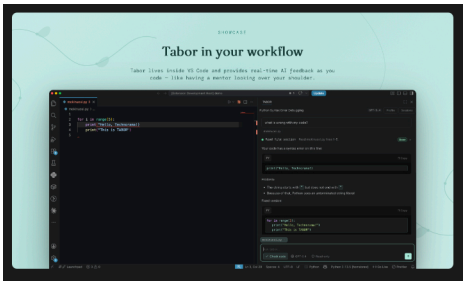
Kaunas University of Technology

Description of the work

“Tabor” is an AI-powered VS Code extension designed to help beginner and intermediate programmers learn more effectively. Integrated directly into the most widely-used development environment, it provides real-time contextual assistance: explaining code, answering questions, and analyzing the user's workspace to guide them through programming concepts. Built on a three-tier architecture — a VS Code extension, a .NET backend, and a web dashboard — the platform delivers a personalized, secure, and seamless learning experience with flexible subscription plans.

Technical or other problems that are solved with the work

Modern AI programming tools, such as GitHub Copilot and ChatGPT, are designed to write code for programmers rather than help them learn how to program. Beginners



using these tools often receive immediate answers without understanding how or why the solutions work. As a result, the development of genuine programming knowledge and problem-solving skills may be hindered.

“Tabor” addresses this challenge through a different approach. Instead of generating code, the assistant explains concepts, asks guiding questions, and leads users through the learning process. At the same time, it helps learners develop the ability to work effectively with AI tools—an increasingly essential skill in the daily practice of modern software developers.

Target market and customers: The product is designed for self-learners, secondary school students, and university students aged 15–34 who are beginning their programming journey. An additional customer segment includes schools and programming courses seeking to familiarize learners with contemporary, AI-integrated programming practices.

Market size and potential: The global EdTech market was valued at approximately USD 300 billion in 2024, while the segment of AI-powered learning tools is growing at an annual rate of around 38%. Visual Studio Code, the world's most widely used development environment, with a market share of approximately 73%, provides a direct distribution channel to the target audience.

Novelty of the work

Existing AI programming tools, such as GitHub Copilot, Cursor, and ChatGPT, are designed to enhance coding productivity rather than support learning. They generate ready-made code but rarely explain how it works or foster the development of computational thinking and problem-solving skills.

“Tabor” occupies a unique position in this landscape. It is designed as a VS Code tool whose primary purpose is education rather than code generation. The assistant guides users through the problem-solving process by asking targeted questions, explaining concepts, and

encouraging active learning, thereby helping learners develop genuine programming competencies.

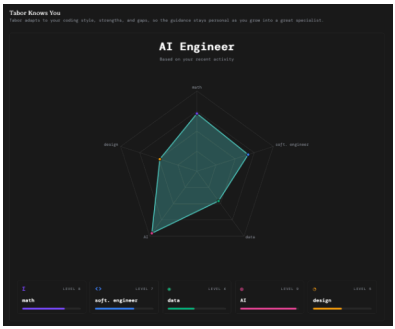
An additional distinguishing feature is its deep integration within the development environment. The assistant has access to the user's files and project structure, enabling it to provide contextually accurate explanations tailored to the learner's specific situation. This level of contextual understanding is not achievable with general-purpose conversational AI tools operating outside the programming environment.

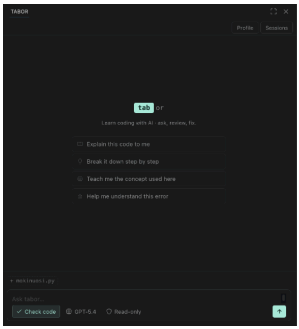
The benefits and value to the potential users

“Tabor” creates value not by writing code on behalf of users, but by helping them genuinely learn how to program—faster, more effectively, and in a way that reflects modern software development practices.

Learners gain access to an AI assistant that understands their specific project and codebase, enabling it to provide precise explanations tailored to their individual situation rather than generic answers found online. This reduces the need for constant context switching between different tools and helps maintain continuity throughout the learning process.

At the same time, users develop the ability to work with AI as a collaborative assistant—an increasingly essential skill in today's programming profession. For schools and programming courses, “Tabor” offers an opportunity to familiarize students with contemporary, AI-integrated programming practices from the early stages of their education, preparing them for the realities of the modern workforce.





“Rocket Fuel Automation” – An Automated Rocket Fuel Production System

Field of science Information Technologies
Type of innovation Hardware solutions (electronic devices, robotics, computer hardware and equipment, wearable devices, etc.)

Miglė Cirtautaitė
Julius Barauskas
Dominykas Remeika
Dovydas Jusevičius

Head: Simonas Aukštuolis, Ignas Mikolaitis

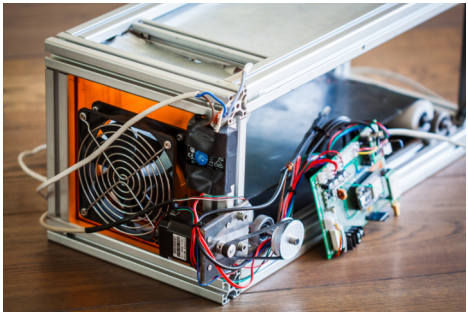
Kaunas University of Technology

Description of the work

"Rocket Fuel Automation" is a fully automated rocket propellant production system developed by Thunderclap Labs. It integrates Industrial IoT sensors for real-time monitoring, automated quality control checkpoints, and redundant safety systems for hazardous material handling. The system comprises a material dryer, a precision screw conveyor, and a planetary ball mill capable of reducing materials to 50 µm particle sizes. The goal is to create a scalable, efficient, and safe manufacturing process for next-generation propellants.

Technical or other problems that are solved with the work

Rocket fuel production has traditionally been a highly complex, labor-intensive process that poses significant risks to worker safety and is susceptible to human error. Small and medium-sized space



technology developers, research laboratories, and defense organizations face a major challenge: there is a lack of compact, automated, and financially accessible manufacturing solutions tailored to solid rocket fuel production.

The limitations of existing solutions include:

Manual processes – inconsistent in nature and associated with a high risk of explosions and fires;

Industrial production lines – excessively expensive and oversized for small-scale research activities or startup companies;

Lack of integrated real-time monitoring and automated quality control systems.

The target market includes private space companies, defense technology developers, and research institutions that require reliable, scalable, and more cost-effective fuel production infrastructure. The global market for rocket engine components is valued at tens of billions of euros and continues to grow rapidly each year, particularly within the private space sector (NewSpace), an industry that Lithuania and the Baltic States are also seeking to enter and develop.

Novelty of the work

"Rocket Fuel Automation" distinguishes itself by integrating several innovations into a single compact solution.

The system is built using standardized and readily available components while achieving a level of precision and safety typically associated only with high-end industrial equipment. All production modules are integrated into a unified network with a centralized IoT monitoring platform, enabling coordinated operation and real-time process oversight.

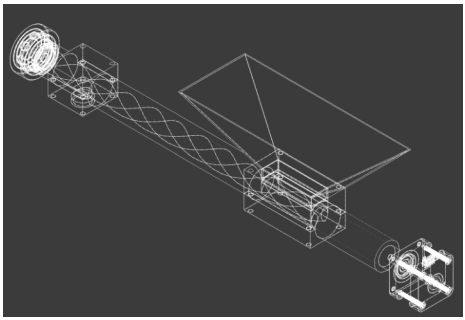
The system has been developed for internal use at "Thunderclap Labs", providing evidence of its effectiveness under real operating conditions.

This differentiates it from many market offerings that remain at the prototype stage without practical validation.

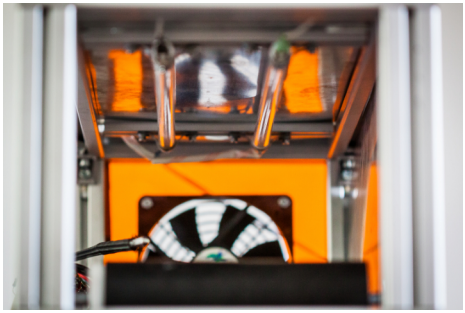
Furthermore, the solution is specifically designed to address the needs of small and medium-sized space research organizations—a market segment that is often underserved by major manufacturers. By focusing on accessibility, scalability, and operational reliability, the proposed system offers a practical alternative for organizations requiring cost-effective production infrastructure.

The benefits and value to the potential users

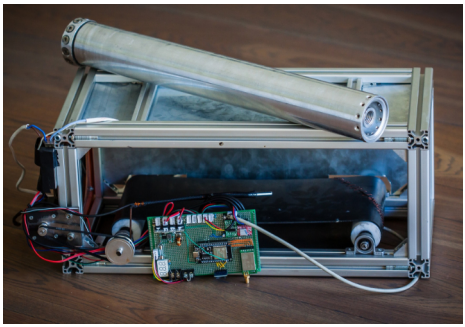
The automated system delivers value through several key advantages:



Improved safety – automating stages that involve hazardous chemicals significantly reduces the risks associated with direct human interaction and exposure.



Enhanced quality assurance – integrated automated control checkpoints eliminate batch-to-batch variability and ensure consistent fuel quality.



Reduced costs – the use of standardized components and automated operations substantially lowers production expenses.

Greater scalability – the system is designed to support both small-scale research activities and larger

production requirements, providing flexibility as operational needs evolve.

Time savings – real-time data monitoring enables rapid responses to process deviations and minimizes downtime, improving overall production efficiency.

“RTR – Read Translate Repeat” – Digital Sign Recognition Software

Field of science Information Technologies
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Saulius Požerskas
Šarūnas Žibutis
Bernardas Gustas
Ignas Tautvaišas
Liutauras Pavilionis
Gabija Paulikaitė

Head: Giedrius Tribandis

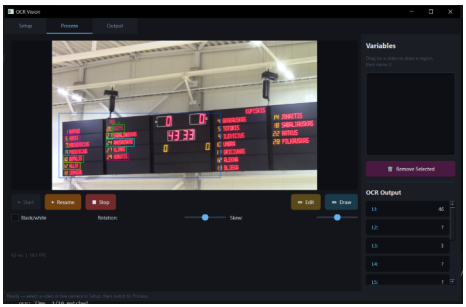
Kaunas University of Technology

Description of the work

Live sports broadcasts use various graphic effects to convey information to viewers, which, in order to reduce dependence on a single program, are sent information from physical scoreboards using scanning software. The goal of the product is to create scoreboard reading software based on artificial intelligence, which will simplify the transfer of scoreboard data to a real-time symbol generation system.

Technical or other problems that are solved with the work

Current scoreboard recognition software may encounter several limitations during live broadcasts. For example, if the camera's view of the scoreboard is obstructed for even a few seconds, the system



may lose the ability to accurately capture and display the information shown on the scoreboard. In smaller venues, there is also a need to simultaneously receive and process data from multiple sources. Such disruptions can persist until the camera is physically repositioned or adjusted, during which time viewers may miss important information.

The target market for the proposed solution consists of companies that provide live sports broadcasting services. The initial focus is on basketball broadcasts; however, the technology has the potential to be adapted and scaled across a wide range of sports disciplines.

Novelty of the work

The proposed solution introduces automatic number detection capabilities that are not available in many existing scoreboard recognition systems. In addition, it ensures the continuity of information flow during unexpected situations, such as temporary camera obstructions, movement, or OCR failures.

By combining automated detection with intelligent fallback mechanisms, the system is able to maintain the accuracy and availability of real-time scoreboard data, minimizing disruptions and preventing the loss of critical information during live sports broadcasts.

The benefits and value to the potential users

The proposed solution ensures continuity and reliability in situations where conventional OCR technology can no longer accurately detect scoreboard information due to camera movement, temporary obstructions, or other disruptions. In such cases, the system automatically switches to an artificial intelligence module that uses contextual information to infer and validate the most likely values. This prevents incorrect data from being displayed and helps maintain an uninterrupted viewing experience.

By combining OCR with context-aware AI capabilities, the solution increases the accuracy and robustness of real-time scoreboard data processing, ensuring that audiences continue to receive reliable information even under challenging operating conditions.

Dcredit

Field of science Information Technologies
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Dovilė Kuizinienė

Head: Dr. Tomas Krilavičius

Vytautas Magnus University (VDU) SustAInLivWork

Description of the work

This work presents a financial distress identification methodology based on machine learning techniques. The research analyzes different data processing, dimensionality reduction, class balancing, and risk assessment methods to improve the accuracy of financial distress prediction and adapt solutions to various business needs.

Technical or other problems that are solved with the work

Identifying financial distress is a complex task due to the diversity of assessment methods, the limited availability of data, and issues related to data quality. Traditional financial indicators are often reported with delays or may lack accuracy, particularly in small and medium-sized enterprises. To improve the prediction of financial distress, it is necessary to incorporate a broader range of data sources and apply machine learning techniques. However, this approach increases data complexity and introduces additional challenges related to dimensionality reduction and class imbalance.



Novelty of the work

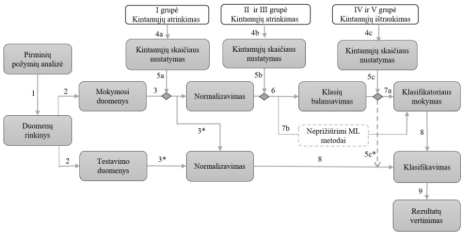
An advanced financial distress detection methodology based on machine learning technologies has been developed. It enables the automatic creation of accurate risk assessment models using diverse business data sources and supports the early identification of potential financial difficulties.

The methodology incorporates flexible, data-driven financial distress assessment criteria, allowing organizations to tailor risk levels according to their specific needs, decision-making strategies, and risk tolerance. This adaptability enables businesses to apply the solution in a manner that aligns with their operational objectives and risk management policies.

The benefits and value to the potential users

The developed methodology enables the creation of financial distress identification solutions applicable to a wide range of risk assessment contexts, including credit evaluation, deferred payment arrangements, factoring, leasing, and customs insurance. The system can also be used as a standalone tool for assessing the financial condition of small and medium-sized enterprises.

The methodology is flexible and adaptable to different business requirements, allowing financial distress assessments to be adjusted according to the selected level of risk tolerance. The solution can be applied within financial institutions, public sector organizations, and internal business processes related to the management of customer and supplier credit risk and outstanding receivables.



Geolocation-based healthy lifestyle game (SavorSphere)

Field of science Information Technologies
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Gvidas Padaigis
Artūras Saulis
Dainius Petraitis
Emilija Jakuškaitė
Nojus Bataitis

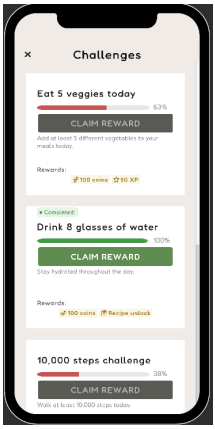
Head: Dr. Ingrida Lagzdinytė-Budnikė

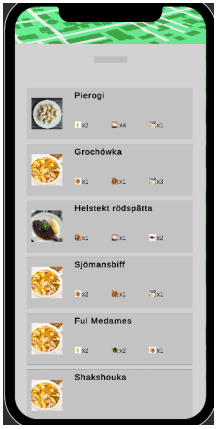
Kaunas University of Technology

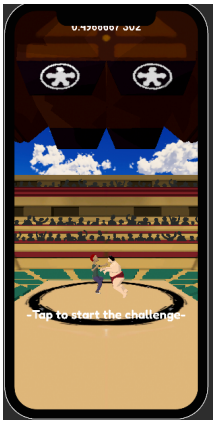
Description of the work

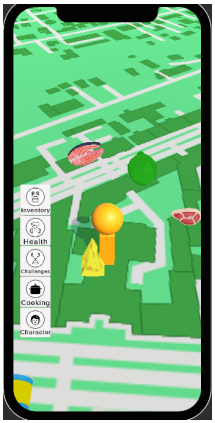
SavorSphere is a geolocational mobile game designed to motivate young adults (18–25) to move more and eat healthier. Players explore the real world to gather healthy food ingredients, which they use to "cook" culturally themed recipes (e.g., Egyptian, Swedish, Polish dishes). Every ingredient and recipe provides clear educational value regarding macronutrients (protein, carbs, fat, vitamins). By tracking daily steps and eating habits, the app calculates a dynamic “Health Score” across four pillars: Nutrition, Activity, Water, and Sleep. With personalized avatars, fitness challenges, and closed-circle social features, SavorSphere successfully transforms boring dietary tracking











into a fun, rewarding daily routine without global competitive pressure.

Technical or other problems that are solved with the work

Obesity and physical inactivity are surging global crises, affecting over 1 billion people. Modern youth struggle with low motivation to exercise regularly and find traditional food tracking or nutrition labels boring and complex. SavorSphere solves this by transforming walking and healthy eating into an engaging, gamified adventure.

Our primary target market is urban young adults, university students, and young professionals (aged 18–25) who own smartphones and seek healthier lifestyles but lack the self-discipline to maintain them.

The mobile health and fitness app market is experiencing rapid growth, with the global gamified health market projected to reach tens of billions of dollars. SavorSphere captures this rising wave by targeting the gap between traditional fitness trackers (which lack nutritional gaming) and geolocation games (which ignore wellness). By merging real-world movement with dietary education, SavorSphere presents a powerful preventative healthcare tool with immense viral growth potential among social-media-active university and local city communities.

Novelty of the work

Unlike indirect competitors such as Pokémon GO, Pikmin Bloom, or Monster Hunter Now—which promote movement solely to collect virtual

monsters or plant digital flowers—SavorSphere connects physical activity directly to real-world nutrition and holistic wellness.

Its unique innovation lies in the integration of dietary education with map exploration: players must physically walk to gather real food resources and use them to unlock nutritionally accurate cultural recipes. Furthermore, SavorSphere replaces intimidating, public global leaderboards with a focus on personal self-improvement and secure, closed-circle friend group challenges. This establishes a highly distinct value proposition that prioritizes long-term preventative health over abstract collection mechanics.

The benefits and value to the potential users

SavorSphere provides young adults with a fun, stress-free gateway to a healthier lifestyle. Instead of tedious calorie counting, users learn about macronutrients (carbs, proteins, fats) and cultural cuisines dynamically through gameplay. By tracking steps, sleep, hydration, and nutrition, the app generates a personalized, highly visual “Health Score” with tailored feedback to improve habits.

Additionally, the physical movement required to gather ingredients on the map directly increases daily exercise. Players also benefit from a secure, closed-circle social environment where they can challenge close friends without the anxiety and demotivation caused by global competitive leaderboards.

“VEŽU” – A Construction Logistics Coordination Platform

Field of science Information Technologies
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Head: Robertas Kasperovičius, Aleksandras Mandyc

Description of the work

VEZU is a geolocation-based construction logistics coordination platform designed to improve the management of soil, construction equipment, and transportation resources. The platform enables users to find relevant resources in real time based on location, type, and demand.

Today, many construction logistics processes are still coordinated through phone calls, social media groups, or general classified platforms, leading to additional costs, inefficient resource usage, and unnecessary transportation routes.

VEZU is being developed as a specialized platform for the construction and infrastructure sector, combining a listing system, map-based functionality, and logistics coordination in one place. In the future, the platform aims to integrate data analytics and AI-based solutions for logistics optimization.

Technical or other problems that are solved with the work

In the construction and transportation sectors, many logistics processes are still carried out inefficiently. Companies and private individuals often rely on phone calls, Facebook groups, Telegram channels, or general classified advertisement platforms to find soil, machinery, or transportation services. These methods are time-consuming, provide limited information about location and availability, and frequently result in additional

transportation costs.

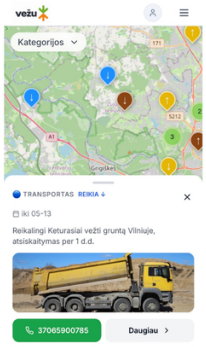
VEŽU addresses this challenge by creating a specialized geolocation-based platform for construction logistics. The platform enables users to view supply and demand in real time on an interactive map, filter listings by category, location, or time period, and coordinate logistics processes more efficiently.

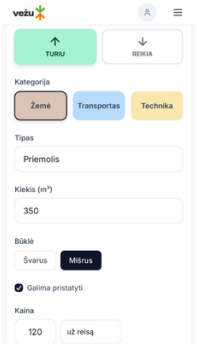
The target market includes companies operating in the construction, infrastructure, and transportation sectors, as well as private users in Lithuania, with future expansion planned across the Baltic region. The growing demand for digitalization in construction and logistics optimization is driven by the need for greater efficiency, sustainability, and cost reduction.

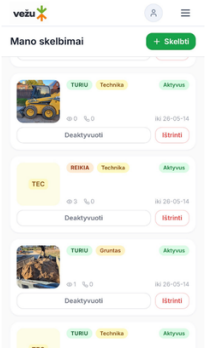
Novelty of the work

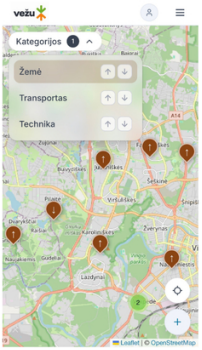
VEŽU distinguishes itself by combining the principles of construction logistics, geolocation services, and classified marketplaces into a single specialized platform tailored to the construction and infrastructure sectors. Unlike general-purpose listing portals or social media groups, the platform is designed for the real-time coordination of resources based on location, type, timing, and availability.

The solution incorporates industry-specific parameters relevant to the construction sector, including soil classifications, machinery categories, site accessibility conditions, transportation types, and scheduling options. Future development plans include the integration of data analytics and artificial intelligence functionalities to optimize logistics operations and enable more efficient resource allocation.









The benefits and value to the potential users

VEŽU enables companies in the construction and transportation sectors to find the required soil, machinery, or transportation partners more quickly and efficiently based on location, demand, and timing. The platform facilitates real-time coordination of logistics processes while reducing unnecessary phone calls, inefficient routes, and additional operational costs.

The solution creates value for both B2B users and private individuals seeking cost-effective or even free access to soil materials or machinery services. In addition, the platform promotes more efficient utilization of existing resources, contributes to lower CO_2 emissions, and supports the digital transformation of the construction sector.

“Money Knockout” – An Incremental Idle Game Developed Using Immersive Technologies

Field of science Information Technologies
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Ugnė Auksoraitytė
Tomas Basevičius
Raminta Jėgerytė

Head: Andrius Paulauskas

Kaunas University of Technology

Description of the work

The project is aimed at developing an incremental virtual reality boxing game that combines immersive entertainment with physical activity. The main idea of the product is to create an immersive VR experience that allows users to train, stay physically active, and improve within a structured, reward-based system. Unlike traditional virtual reality boxing games that focus on short-term gameplay sessions, the proposed solution includes progression mechanisms such as leveling, skill development, virtual rewards, and unlockable content.

Technical or other problems that are solved with the work

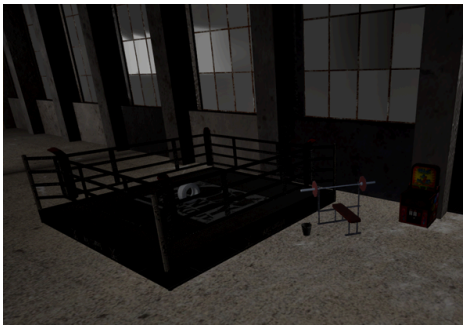
“Money Knockout” is designed to motivate users to remain physically active by transforming repetitive exercise movements into meaningful in-game achievements. This approach aims to increase long-term engagement while providing users with a continuous sense of progression and accomplishment.

The product is particularly relevant to younger audiences and individuals who spend a significant amount of time playing video games or engaging

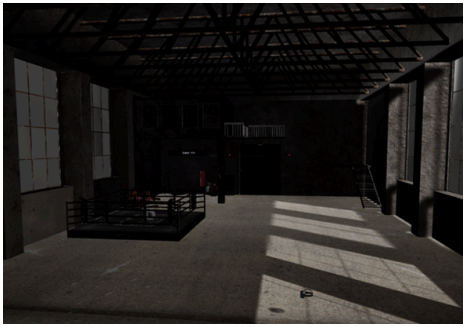
with digital entertainment. To evaluate market interest, a user survey was conducted. The results indicated that 77.9% of respondents belonged to the 18–24 age group, highlighting strong interest among young adults.

Novelty of the work

The game distinguishes itself by combining physical activity with incremental gameplay mechanics within a single system. Most VR fitness games currently available on the market focus on intensive, short-term workouts but struggle to sustain users' long-term motivation and engagement.







In “Money Knockout,” repetitive boxing exercises are not presented as routine tasks but rather as meaningful components of the game's progression and economic system. By linking physical effort directly to in-game rewards and advancement, the solution transforms exercise into an engaging experience that encourages users to remain active over extended periods.

The benefits and value to the potential users

The VR game being developed provides potential users with both physical and emotional value. Its primary benefit lies in promoting physical activity through an engaging and motivating experience. Instead of relying on traditional, repetitive workouts, users are immersed in an interactive virtual environment

where their movements directly contribute to in-game progress. This approach is intended to encourage the development and maintenance of regular exercise habits.

The product also improves accessibility to physical activity. Users can exercise from the comfort of their own homes without the need for gym memberships, additional equipment, or adherence to fixed schedules. By combining entertainment with movement, the solution offers a more enjoyable and convenient way to maintain an active lifestyle.

Virtual reality incremental game: Pat-Pat

Field of science Information Technologies
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Aurimas Pankūnas
Rokas Šimkūnas
Ieva Gaspariūnaitė
Ernestas Jankauskas
Robertras Radžvilas
Lukas Daunoravičius

Head: Andrius Paulauskas, Dr. Kęstutis Jankauskas

Kaunas University of Technology

Description of the work

The game is an incremental idle-style VR game centered around managing an animal shelter and caring for animals. The player takes care of the shelter, takes in new animals, ensures their well-being, and gradually expands the infrastructure, with progress occurring both through active gameplay and passively, as the system generates resources in the background.

Technical or other problems that are solved with the work

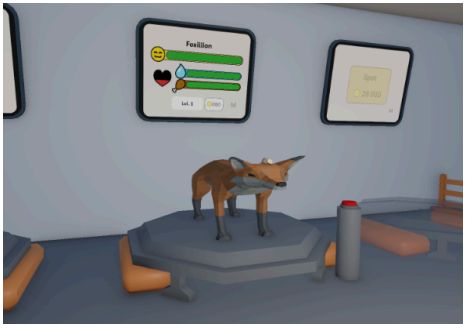
Right now, the VR gaming market is missing something obvious — there's no game that combines the immersion of virtual reality with relaxing, low-effort gameplay and taking care of animals. Most popular animal type games are 2D with no virtual reality. On the other hand, most virtual reality games are too intense and action-heavy, which isn't great if you just want to relax after a long day.

Pat-Pat fills that gap. It's a virtual reality idle game where you run an animal

shelter — you feed, pet, and look after animals, watch your shelter grow, and earn in-game currency even when you're not actively playing.

Our target audience is gamers between 18–35 in Western Europe and North America who already own a Meta Quest headset and are looking for something more laid-back to play. The global VR gaming market was worth over $7 billion in 2023 and is expected to grow by 27–30% every year. On top of that, cozy and indie games make up around 15–20% of all Steam players, and there are already 30–40 million active VR users worldwide.









Novelty of the work

The market is flooded with fast paced, high intensity and flashy virtual reality games. While these games sell a lot of copies and are very profitable, they are exhausting to play for a long time. Our game solves that issue by providing the user a warm, bright, comfortable, and cozy environment. In addition to that our game provides incremental features, meaning that while you don't physically have to enjoy taking care of animals and









earning money every day, the game does that for you. Our wonderful experience lets you physically pet animals in VR, grow your shelter at your own pace, and come back whenever you feel like it — no pressure, no punishment, just good vibes, and happy animals.

The benefits and value to the potential users

Our product grants our users a calm and interactive VR experience, in which they can take care of virtual animals and their shelter. During gameplay players can reduce stress, build emotional connections with the animals, and enjoy a satisfying sense of progression through idle game mechanics. The game is designed for short and long sessions during which the user can take care of the animals, personalize their shelter and progress even when offline. Our game stands out, because it combines VR immersion, a cozy atmosphere and long-term progression systems in a market niche that is still empty. As a result, the product offers an accessible, relaxing, and replayable experience that keeps players engaged.

“Fortress Challenge” – Challenges That Build Healthy Habits!

Field of science Information Technologies
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Giedrė Senikaitė
Domas Gedvilas
Gerda Mingailaitė
Paulina Jakutavičiūtė
Tomas Šibirkštis
Ugnius Karpičius

Head: Dr. Ingrida Lagzdinytė-Budnikė

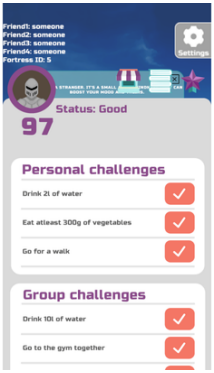
Kaunas University of Technology

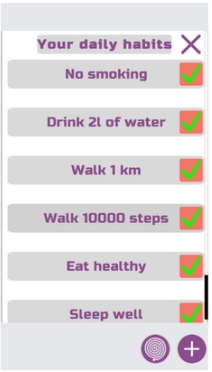
Description of the work

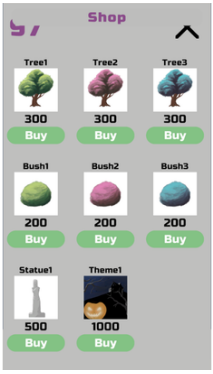
“Fortress Challenge” is a gamified mobile application designed to help students build and maintain healthy habits during their studies. The app addresses common student challenges such as lack of motivation, stress, poor sleep routines, low physical activity, and burnout. Users can track their progress, complete daily challenges, receive reminders, and stay motivated through interactive game elements. Every completed goal helps users expand a virtual fortress that visually represents their personal growth. The application also includes social features that allow friends to achieve goals together and motivate one another. The solution aims to improve students’ physical and emotional well-being while increasing productivity and consistency in daily routines.

Technical or other problems that are solved with the work

Our product addresses a significant problem faced by students – lack of motivation to maintain healthy habits, high stress levels, burnout, low









physical activity, and unhealthy daily routines. Many students struggle to maintain regular sleep, balanced nutrition, and emotional well-being, while existing applications often focus on only one aspect and fail to ensure long-term engagement. “Fortress Challenge” is designed for students and young adults (18–29 years old) who want to improve their well-being, productivity, and daily habits. The target market includes university students in Lithuania and across Europe – millions of active mobile technology users. As awareness of mental health, self-improvement, and digital wellness solutions continues to grow, this market has strong expansion potential. The app’s growth opportunities are strengthened by gamification, personalization, and social engagement features that encourage long-term user involvement.

Novelty of the work

“Fortress Challenge” stands out by combining healthy habit building, gamification, social engagement, and visual progress tracking into one platform specifically designed for students’ needs. Unlike many existing applications that focus only on habit tracking or physical activity monitoring, our solution creates an interactive motivational system where user progress is represented through a growing virtual fortress. The app also integrates personalized challenges, collaborative social features, and game mechanics that increase long-term engagement while helping users overcome lack of motivation and burnout.

The benefits and value to the potential users

“Fortress Challenge” helps students build and maintain healthy habits through gamification, progress visualization, and social motivation. The application provides structure to daily routines, helps reduce stress, improve sleep quality, increase physical activity, and maintain motivation during studies. Personalized challenges, reminders, and virtual achievements encourage consistency and long-term engagement. Social features allow friends to achieve goals together and support one another. The product delivers both emotional and physical well-being benefits while also contributing to improved productivity and academic performance.

Pigu Keliauti – Affordable Travel

Field of science Information Technologies
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Austėja Mockienė

Head: Rimantas Mockus

Kaunas University of Technology

Description of the work

The product is a digital platform designed to help users find affordable travel deals faster and more conveniently. It targets people who want to travel more often but do not have the time to constantly check multiple travel websites, compare prices, or search for the best offers manually. The platform curates relevant and attractive travel deals and presents them in a clear, simple, and user-friendly format. This reduces the complexity of travel search, saves users time, and helps them make quicker travel decisions. In the long term, the goal is to build a reliable travel discovery ecosystem that becomes a regular tool for users who plan their trips independently.

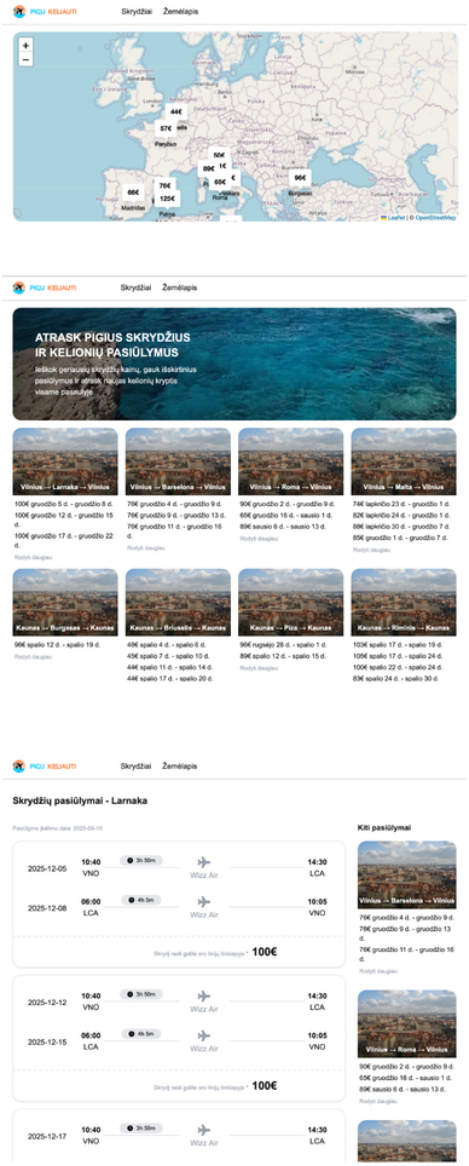
Technical or other problems that are solved with the work

Travel planning is often fragmented, time-consuming, and requires users to continuously monitor multiple sources of information. Travelers seeking affordable options must track prices, compare offers, follow promotions, and respond quickly to time-limited opportunities. Due to the overwhelming amount of information and its scattered nature, many attractive deals go unnoticed, making the travel planning process unnecessarily complex.

The proposed solution addresses this challenge by centralizing and simplifying the search for affordable travel opportunities. The target market

includes independent travelers, particularly young adults, students, remote professionals, families, and all price-conscious consumers. The product is also relevant to users seeking spontaneous travel opportunities or more flexible trip ideas.

The market potential is significant, as the travel industry continues to undergo digital transformation and consumers increasingly demand fast, convenient, and cost-effective solutions. Growth is further driven by the rising popularity of self-planned travel, more flexible working arrangements, and the increasing desire among consumers to travel more affordably.



Novelty of the work

The novelty of the proposed solution lies in its more convenient, curated, and user-friendly presentation of affordable travel opportunities. Unlike traditional search engines or booking platforms, this product focuses on offer selection, simplicity, and enabling faster decision-making. Instead of overwhelming users with excessive information, it highlights the most relevant and attractive travel options.

This approach reduces information overload and creates a more curated travel discovery experience. In the future, the solution can be expanded to include personalized recommendations, price tracking features, and more intelligent filtering of travel offers based on individual user preferences and needs.

The benefits and value to the potential users

The product enables users to find affordable travel deals more quickly, easily, and conveniently through a single platform. Users no longer need to continuously check multiple websites or manually compare large amounts of information. The platform saves time, reduces the complexity of travel planning, and helps users discover better offers that they might otherwise overlook.

Its core value lies in presenting travel opportunities in a clear and accessible manner, allowing users to make faster decisions and travel at a lower cost. This is particularly beneficial for price-conscious travelers who wish to travel more frequently while managing their budgets in a rational and cost-effective way.

MediCheck. Seek truth, seek health!

Field of science Information Technologies
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Eva Šlikaitė
Valius Ramanauskas
Laura Bagurskaitė
Mantas Gustaitis
Mykolas Mažeikis
Linas Danusevičius

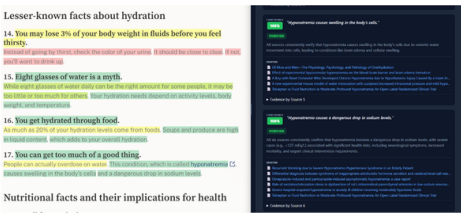
Head: Dr. Kęstutis Jankauskas

Kaunas University of Technology

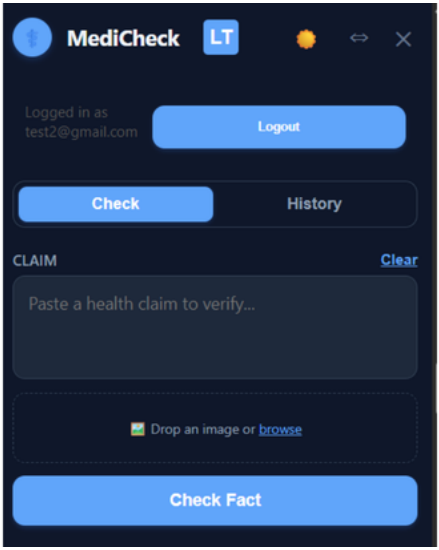
Description of the work

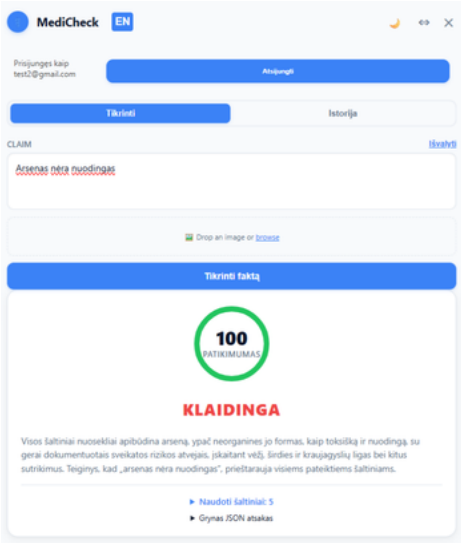
MediCheck is an AI-powered extension for the Chrome browser that helps people check the reliability of health-related information. It works by using advanced language processing techniques and relies on peer-reviewed scientific sources obtained from trustworthy academic databases.

When a user highlights some text, the system analyzes its content, identifies the claims presented within it and based on scientific evidence labels each claim as true, false, or uncertain if there is not enough data to decide. Alongside this evaluation, the system displays a percentage-based confidence score, indicating how certain the model is about its assessment. This additional metric allows users to interpret the results more critically.



The extension also provides citations from scientific sources,





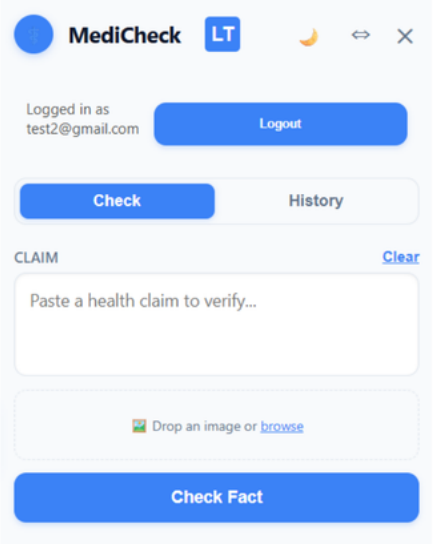
along with links to the original articles, ensuring transparency and enabling independent verification. Finally, the analyzed text is highlighted in different colors so users can instantly see how reliable the information is.

Technical or other problems that are solved with the work

Online spaces are filled with unverified claims about diets, supplements, treatments, vaccines, and many other health-related topics. These claims often spread faster than verified scientific information, contributing to confusion and division in society. According to a 2025 Eurobarometer survey, more than one-third of respondents in the EU reported being exposed to disinformation “often” or “very often” within the previous seven days.

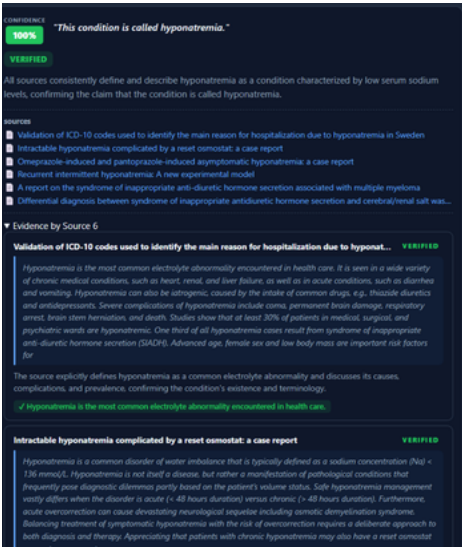
Because health information can have real-world consequences, such as delayed treatment, harmful self-medication, or wasted money, a tool that helps people identify unreliable content can significantly improve public well-being. Most individuals do not have the skills to interpret complex scientific papers, nor the time to do so. This plugin is designed to help users recognize health-related misinformation and make science-based, informed decisions about their lifestyle.

The primary target audience consists of Lithuanian and English speaking young adults who are invested in their personal well-being. These health-conscious and tech-savvy individuals value reliable, accurate information about various health topics. The potential audience is estimated at around 1.5 million people, with room for growth, as the product is easy to use and can also benefit various groups—such as skeptical or simply curious users.

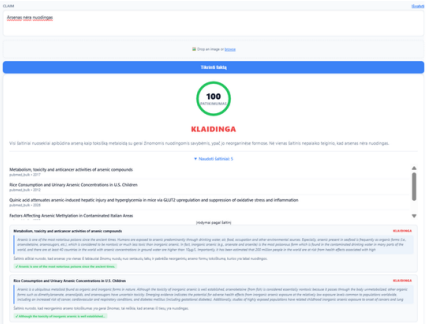


Novelty of the work

The product stands out in the current market because there are no AI based extensions specifically designed for health-focused fact-checking, especially relying on trusted sources like scientific articles. Existing competitors check general facts rather than health-specific claims, which raises concerns about accuracy given how sensitive and impactful health information is.



Non-specialized AI fact-checking plugins often lack free versions, and paid plans typically start at around 10€ per month. In contrast, MediCheck offers both a free option and paid plans starting from 5€ per month.



By using scientific papers, MediCheck provides a strong advantage over indirect competitors such as search engines or medical websites, delivering reliable insights far faster than users could by reading and evaluating the studies themselves.

The benefits and value to the potential users

The product helps people live a more informed and healthy life by encouraging science-based decisions related to their health. Knowing the truth helps to save money on deceitful products that are allegedly beneficial to health. It also reduces confusion when users encounter conflicting advice by bringing together evidence from multiple scientific papers in one place. By showing clear citations and direct links to the sources, the plugin builds trust in the verdicts it provides.

Beyond individual benefits, the plugin also helps slow the spread of health misinformation and reduces the influence of harmful content creators. As a result, it contributes to improving digital health literacy and helps decrease public polarization around sensitive health topics.

“Daily City” – An Idle Game for Tracking Daily Activities

Field of science Information Technologies
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Ernestas Valentinas
Emilija Lakačauskaitė
Agnė Lukavičiūtė
Airidas Mikelaitis
Armandas Ozolas
Dinas Urbštas

Head: Lukas Paulauskas

Kaunas University of Technology

Description of the work

“Daily Cit” is a mobile idle game for the Android platform in which the player's real-life daily activities directly influence the growth of a virtual city. The game was developed using the Unity engine and integrates the Google Health Connect API, which allows it to access the user’s step count, sleep, and screen time data.





The player builds a city by constructing buildings, which are unlocked by completing real-world or in-game tasks. Buildings generate resources that are used for further city development. Mechanics such as the happiness meter, electricity generation, and neighborhood effects add

additional strategic depth. The city is rendered in an isometric 3D perspective, and the environment changes according to the day and night cycle.

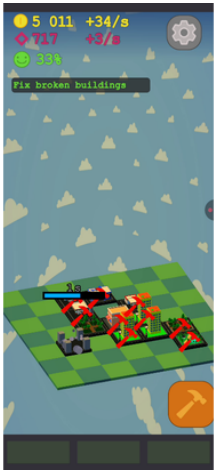
Technical or other problems that are solved with the work

Modern individuals, particularly those aged 16–30, often struggle to maintain motivation when it comes to sustaining daily routines such as tracking physical activity, sleep patterns, screen time, and other healthy habits. Existing habit-tracking applications, such as Habitica and Skillix, tend to focus heavily on productivity without providing a clear sense of long-term progression, while most idle games fail to connect real-life behaviors with in-game mechanics.

“Daily City” addresses this challenge by combining daily activity tracking with an engaging gaming experience. Players complete real-world activities—such as walking, maintaining healthy sleep habits, or reducing screen time—and are rewarded with visible progress within the game. As a result, their virtual city grows through the construction of buildings and the expansion of new territories. This creates a tangible sense of achievement and satisfaction, even with minimal active engagement.

In addition, traditional idle games often become repetitive and gradually lose players' attention due to monotonous gameplay mechanics. “Daily City” seeks to overcome this limitation by incorporating city-building elements, random events, building upgrade systems, and the integration of real health-related data, such as step counts and sleep metrics. Together, these features are designed to promote sustained user engagement and encourage the development of healthier daily habits.





Novelty of the work

Existing solutions on the market tend to fall into one of two categories: habit-tracking applications, such as “Habitica,” or city-building idle games, such as “City Builder Idle.” However, none effectively combine the strengths of both approaches. “Habitica” gamifies tasks but lacks a visually compelling representation of long-term progress, while city-building idle games provide a sense of growth and achievement without linking gameplay to users' real-life activities. Similarly, applications such as “Skillix” do not offer the flexibility to create highly personalized tasks.

The novelty of “Daily City” lies in the direct integration of real-world health data—such as step counts, sleep patterns, and screen time—into the core gameplay mechanics. Users' actual daily behaviors directly influence the growth and development of their virtual city. In this way, the solution uniquely combines two traditionally separate categories—a productivity tool and an entertainment game—within a single product, creating an engaging experience that encourages the development of healthier habits.

The benefits and value to the potential users

“Daily City” delivers dual value to its users by enabling them to develop healthier habits while simultaneously enjoying an engaging gaming experience. Rather than creating pressure through missed tasks or unmet goals, the game provides positive reinforcement: every real-life activity—such as taking steps, maintaining healthy sleep habits, or reducing screen time—is transformed into visible growth within the player's city. This encourages users to return to the application on a daily basis.

The product is particularly well suited to busy young adults, as each gameplay session lasts only one to five minutes, while progress continues even when users are not actively playing. The visually evolving city provides a sense of accomplishment, further enhanced by daily rewards, building upgrades, and strategic gameplay elements. In addition, the game is free to play, ensuring a minimal barrier to entry and broad accessibility.

Burnout risk assessment and management tool

Field of science Information Technologies
Type of innovation Design solutions (product design, user experience design concepts, architectural design, fashion design, etc.)

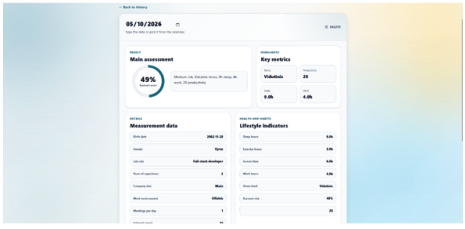
Aistė Lukošiūtė
Matas Samuolis
Emilis Janšauskas
Karolis Rameikis

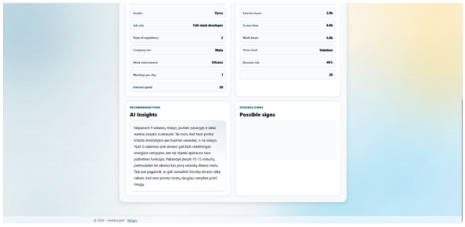
Head: Prof. Tomas Danikauskas

Kaunas University of Technology

Description of the work

This project is a website that calculates an user's burnout risk and recommends factors to reduce it, based on lifestyle data entered by the user (sleep, work quantity and quality, health problems, etc.). Both recorded daily data and overall statistical history can be viewed. The burnout score is calculated by an algorithm, and AI provides personalized insights and recommendations for lifestyle improvements.

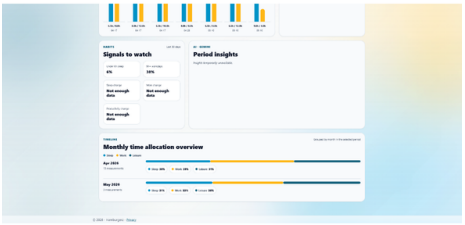


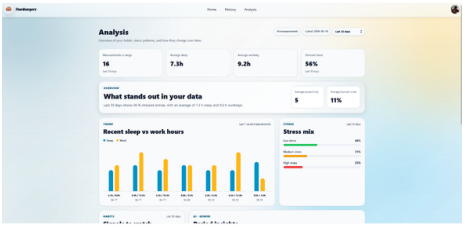


Technical or other problems that are solved with the work

The market currently has no product which allows easy, online access to burnout self-assessment tests that not only give a burnout score, but are easy to use, can track a history of assessments, what factors affect the given burnout score, how the statistics

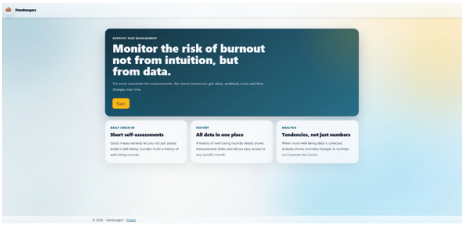
change over time, and provide personalized, AI-powered recommendations to improve life satisfaction. More and more students and employees are affected by burnout each day, and this product aims to help them easily assess their mental state, notice risk factors, and encourage changes for better work-life balance.

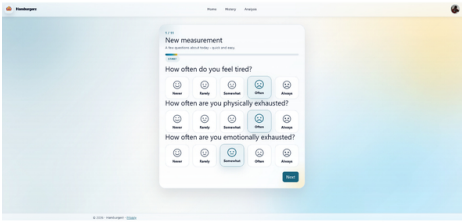


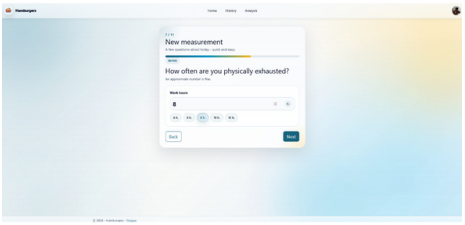


Novelty of the work

Online self-assessment tests are quick and easy, but can't provide history or personalized recommendations. Copenhagen Burnout Inventory has strong scientific basis and is used by psychologists, but it is long, expensive, and doesn't have an analysis history or personalized recommendations, which deters a lot of users who may be in risk of developing o already experience burnout. Only this project has it all - burnout assessments, which are based on simplified Copenhagen Burnout Inventory principles, assessment history saving, automatic analysis and personalized, AI-powered recommendations.







The benefits and value to the potential users

Burnout is a widely spread syndrome that reduces efficiency, amplifies exhaustion, mental distance from one's job, studies or other duties, cynicism, and overall stress, which leads to many other issues in health, work and personal life. This product aims to assess burnout risk factors from lifestyle data, inform about burnout risks, and recommend changes towards better quality of life for its users.

Smart hand and wrist rehabilitation system Rehab-AI

Field of science Information Technologies
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Tėja Šidlauskaitė
Domas Milaševičius
Einius Kelpša
Martynas Šidlauskis
Kostas Braidokas

Head: Dr. Renata Burbaitė

Kaunas University of Technology

Description of the work

Rehab-AI is a smart post-trauma hand and wrist rehabilitation system designed to help patients perform exercises more correctly and monitor their progress. The system uses a camera, computer vision, and AI-based motion analysis. It detects hand and wrist movements, calculates movement angles, amplitude, and accuracy, and compares the patient's exercise with a demonstration movement. The patient receives feedback in real time, allowing them to immediately see whether the exercise is being performed correctly. The system can also support progress tracking between specialist visits. Rehab-AI does not replace a doctor or physiotherapist, but it works as a supportive tool, especially when access to rehabilitation services is limited or waiting times are long.

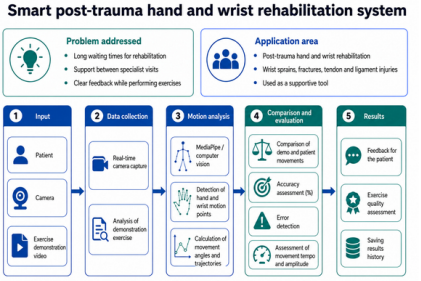
Technical or other problems that are solved with the work

Rehab-AI addresses the problem of limited access to timely and continuous rehabilitation after hand and wrist injuries. Many patients face long waiting times for rehabilitation services and cannot receive frequent

guidance from a specialist. As a result, they often have to perform exercises on their own without knowing whether they are doing them correctly, with sufficient range of motion, or with proper movement control. Rehab-AI helps solve this problem by providing real-time feedback during exercises, supporting patients between specialist visits, and allowing progress to be tracked over time. It helps make hand and wrist rehabilitation more accessible, structured, and motivating.

Novelty of the work

Rehab-AI differs from many existing rehabilitation solutions because it focuses specifically on post-trauma hand and wrist rehabilitation, not general fitness or full-body exercise tracking. Many market solutions are designed for broad physical activity monitoring, general physiotherapy, or remote consultations. In contrast, Rehab-AI is aimed at a narrower and more specific problem: helping patients perform hand and wrist rehabilitation exercises more correctly after injuries. Another important difference is that Rehab-AI uses an ordinary camera to analyze movement, so the user does not need expensive additional sensors, wearable devices, or special equipment. This makes the system more accessible and easier to use at home. The system also provides feedback in real time, allowing the patient to immediately understand whether the exercise is being performed correctly. Some existing solutions mainly record data or provide video instructions, while Rehab-AI actively compares the patient's movement with a demonstration and gives an evaluation. Rehab-AI is also designed to support patients between specialist visits, which is especially relevant when rehabilitation services have long waiting times. It does not replace doctors or physiotherapists, but it helps maintain rehabilitation continuity and motivation at home.



The benefits and value to the potential users

For patients, the system helps them perform rehabilitation exercises more correctly by giving feedback in real time. They can see whether their movement is accurate,

whether the range of motion is sufficient, and whether they are improving over time. This increases confidence, supports regular practice, and helps maintain rehabilitation continuity between specialist visits.
For physiotherapists and rehabilitation specialists, Rehab-AI can provide additional information about the patient's progress. Stored results and movement assessments may help specialists better understand how the patient is performing exercises outside the clinic and adjust the rehabilitation plan if needed.

For rehabilitation centers, the system offers a supportive digital tool that may help improve patient monitoring, encourage home-based exercise, and reduce the gap caused by long waiting times or limited appointment availability.

Overall, the main value of Rehab-AI is that it supports safer, more consistent, and more data-informed rehabilitation without replacing professional medical care.

Clickeris. Interactive classroom system

Field of science Information Technologies
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Tautrimas Ramančionis
Aistis Jakutonis
Salvijus Bagdzevičius
Rokas Zujus
Justina Dimšlytė
Jogailė Gražulytė

Head: Dr. Dovilė Varenė

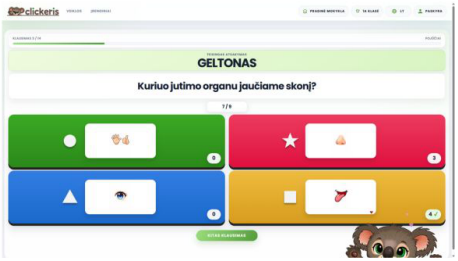
Kaunas University of Technology

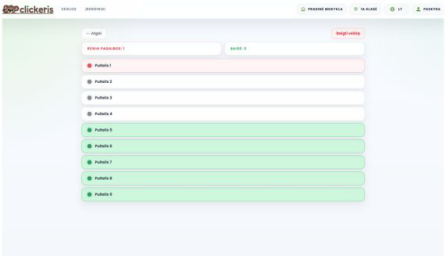
Description of the work

"Clickeris" is an interactive learning system designed for primary school students and teachers. The system consists of physical clickers with buttons and a teacher-controlled web platform. Through the platform, teachers can launch different classroom modes, while students interact with them using the clickers. Depending on the selected mode, the buttons can be used for answering questions or tracking work progress. The system supports both an interactive quiz mode and a silent classroom work mode. The product allows teachers to monitor student activity and progress in real time. "Clickeris" aims to reduce screen time in classrooms while providing students with a simple and engaging way to learn.



Technical or other problems that are solved with the work





Many primary school teachers face difficulties in effectively involving all students in the learning process and monitoring their progress in real time during lessons. Traditional participation methods, such as raising hands or answering in front of the class, often do not engage the entire classroom and may create additional stress for younger students. At the same time, most existing digital learning solutions require the use of smartphones or tablets, increasing screen time, distractions, and making classroom management more difficult. “Clickeris” aims to solve these problems by providing teachers with physical clickers and a web platform for organizing interactive classroom activities. The system allows teachers to monitor student engagement, progress, and task completion in real time.

The target market for the product is primary school students and teachers in Lithuanian schools. The main customers are schools and educational institutions looking for innovative and easy-to-integrate educational solutions. According to national education statistics, primary school students make up around one-third of all students in Lithuania, making this a large and continuously renewing market. The growing demand for EdTech solutions and increasing focus on reducing screen time in classrooms demonstrate strong growth potential for the product.

Novelty of the work

The novelty of the developed solution lies in its adaptation to primary education and the needs of Lithuanian schools, distinguishing it from existing alternatives. Unlike other systems, it does not require additional networking devices such as a separate control hub, making it easier to

deploy between classrooms. The response devices are not assigned to individual students, increasing flexibility and simplifying classroom use. A key advantage is reduced screen time, as students use simple response devices instead of phones or tablets, helping maintain attention and reduce distractions. The platform also includes Lithuanian-language educational content aligned with the national curriculum and provides improved security, as communication signals are more difficult to intercept.

The benefits and value to the potential users

“Clickeris” provides value for both students and teachers. Students can participate more actively in lessons using physical clickers, reducing stress related to answering in front of the class while increasing engagement in the learning process. Gamified elements help maintain attention and improve motivation to learn. For teachers, the system enables real-time monitoring of student activity, progress, and task completion, making it easier to evaluate classroom understanding and respond more quickly to students’ needs. The solution also reduces the need for smartphones or tablets during lessons, helping minimize distractions in the classroom. The product is easy to integrate into the educational process and can be used in different types of lessons and classroom activities.

Yard Assistant

Field of science Information Technologies
Type of innovation Hardware (e.g. electronic device, robotics, computer hardware, wearable technology, etc.)

Nojus Jončas
Henrikas Mickevičius
Emilis Kasiulynas
Justas Vilčinskas
Eivydas Orinas

Head: Ignas Plauska

Kaunas University of Technology

Description of the work

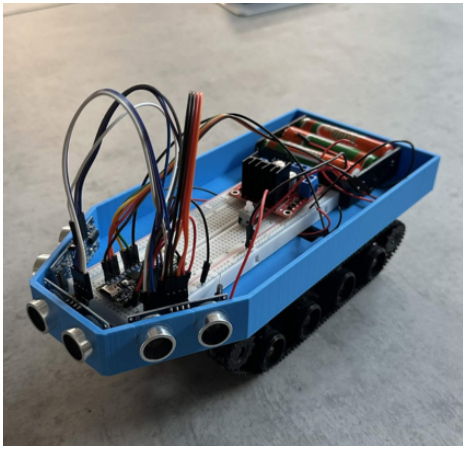
The product the team is developing is an autonomous robot designed for continuous monitoring and analysis of the condition of the grass. Using advanced sensors, the robot scans a defined area, assesses the moisture level and overall health of the vegetation. The collected data is transmitted in real time to a specialized mobile management application.

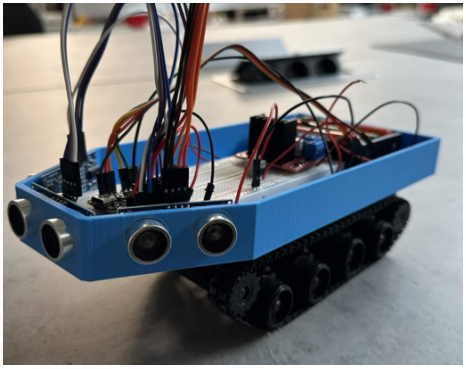
Key value for the user:
The user sees a detailed map of the yard on their smart device, highlighting problem areas. This allows:

Precise watering: Identify drier patches and optimize water consumption.

Save time: Avoid physical inspection of the lawn and manual assessment.

Avoid diseases: Timely notice changes in the condition of the grass before it starts to dry out.





Technical or other problems that are solved with the work

Our product is a robot that checks the condition of grass within a predefined area. The data is transferred to a robot-control application where the owner can review condition data for a given area and, for example, water drier patches of grass more intensively. The robot is mainly intended for people living in private houses or maintaining other grassy areas: people who work long hours and cannot always take care of their yards, elderly people or people with poor health, and those who manage large areas of land and do not have time to maintain them properly. For these customer groups, the robot would save time in yard maintenance and allow them to use their day more efficiently instead of manually checking the condition of the grass.

Novelty of the work

There are currently no such automated robots on the market, which makes the solution distinctive.

The benefits and value to the potential users

The product will allow users who lack time or have limitations that prevent them from assessing lawn condition themselves to monitor lawn quality remotely. The robot could also connect with other systems, such as irrigation systems or lawn mowers.

Unitrack

Field of science Information Technologies
Type of innovation Hardware (e.g. electronic device, robotics, computer hardware, wearable technology, etc.)

Dr. Raimondas Pomarnacki

Head: Dr. Raimondas Pomarnacki

VILNIUS TECH

Description of the work

Unitrack is an algorithm that can track any user-selected object in video. Typical AI solutions detect and track only pre-trained object classes. This solution aims to be universal and to operate in real time without delay. The system is deployed on a drone using an NVIDIA Jetson platform.

Technical or other problems that are solved with the work

The solution enables real-time tracking of any selected object in video. Existing object-tracking algorithms often fail to maintain long-term tracking, lose the object, are sensitive to zooming, rapid vibrations, or are too slow and do not operate in real time. The developed solution significantly addresses these limitations.

Novelty of the work

The novelty lies in universal, real-time object tracking that does not depend on a predefined set of object classes. The solution is designed to remain stable under zoom changes, vibrations and challenging conditions, and it is implemented directly on a drone platform.



The benefits and value to the potential users

The system is intended to mark and track any desired object, for example a person in snowy conditions near a tree. It allows the camera to remain focused on an object for an extended period and to track it automatically. Such objects are typically not recognised by current AI solutions.

Flivision: Vehicle Driver Monitoring and Evaluation System

Field of science Information Technologies
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Matas Stankaitis
Giedrius Navickas

Head: Eimantas Mažeika

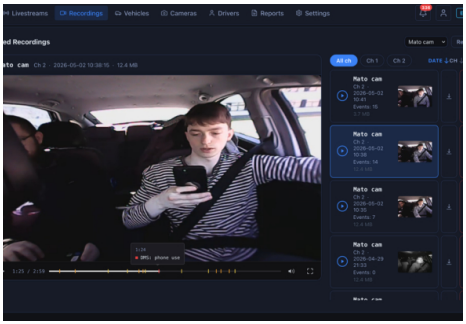
Description of the work

Flivision is an AI-based video telematics system designed to improve driving safety and reduce risks in commercial vehicle fleets. The solution analyses dash-cam video streams in real time, evaluates driver attention, behaviour and the road environment, detects fatigue, distraction and other hazardous events, generates alerts and provides reports. Its main innovation is that video analysis is performed on a server rather than inside the dash cam itself, making the system less dependent on specific hardware, enabling easier model updates and supporting dash cams from different manufacturers.

Technical or other problems that are solved with the work

Flivision addresses the problem of unsafe driving behavior and limited real-time visibility in commercial vehicle fleets. Fleet operators often lack an efficient way to monitor driver fatigue, distraction, and risky road situations across different vehicles and devices. As a result, companies face higher risks of accidents, insurance costs, vehicle downtime, and operational losses.





Novelty of the work

The novelty of the work is an alternative approach to intelligent video telematics. In most market solutions, video analysis is performed directly in the dash cam, making systems dependent on the capabilities of a specific device and the manufacturer's ecosystem. Flivision moves analysis to the server, enabling the use of more powerful computing resources, more flexible deployment and updating of machine-learning models, and support for dash cams from different manufacturers. The system also combines live video stream management, DMS and ADAS analysis, event detection, reporting and driver safety assessment in one platform.

The benefits and value to the potential users

Flivision provides clear financial and practical value to potential users. Financially, the system can help reduce traffic accidents, insurance costs and vehicle operating costs, while support for dash cams from different manufacturers allows companies to use existing equipment more flexibly. Because video analysis is performed on a server, higher analysis quality can be achieved than in limited-capacity dash cams. In practical terms, the system helps identify risky driver behaviour in time, improve driving safety and integrate intelligent video analysis into existing telematics solutions.

ForestForYou – Data-Driven GIS Platform for Forest Investment Analysis

Field of science Information Technologies
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Matas Kučas
Mindaugas Matulaitis
Giedrė Jansonaitė
Simas Janulynas
Kastautas Maižvila
Ugnius Sasnauskas

Head: Matas Kučas, Mindaugas Matulaitis

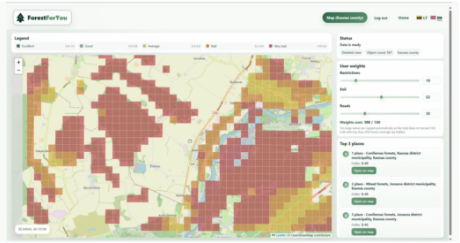
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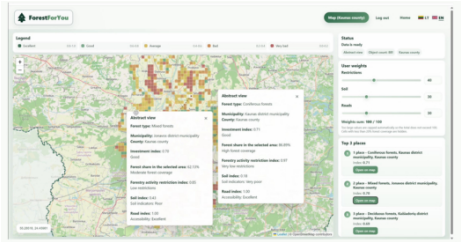
Description of the work

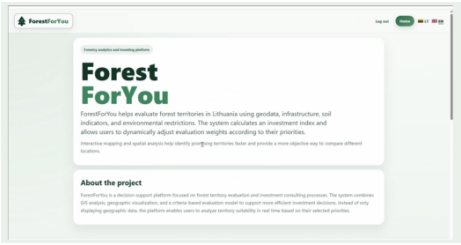
ForestForYou is a GIS-based forest territory analysis and investment consulting platform. The system evaluates Lithuanian forest territories using infrastructure, soil quality, environmental restrictions, and other geographic indicators. Users can adjust evaluation weights according to their priorities and instantly view recalculated investment index results on an interactive map. The platform helps users compare territories more objectively and make investment decisions more efficiently.

Technical or other problems that are solved with the work

Investing in forest territories is often a complex process because investors must analyze large amounts of geographic, environmental, and infrastructure-







related information. The report identified a clear lack of accessible investment information in the market, while many potential investors lack sufficient experience in evaluating forest territories. Existing solutions are often based on manual consultations or human expertise and do not provide automated or clearly visualized analysis.

ForestForYou addresses this issue by creating a unified GIS-based platform that integrates multiple territorial datasets and automatically calculates an investment quality index. The system enables users to compare territories according to their personal priorities and reduce investment uncertainty.

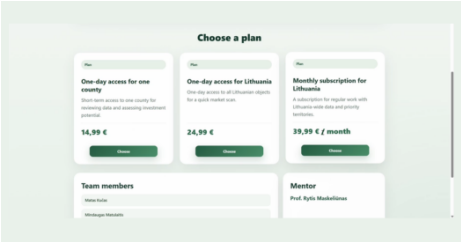
The target market includes mainly private investors, forest owners and organizations involved in sustainable land management. Growing interest in alternative investments and the expansion of GIS technologies indicate strong long-term growth potential for this market.

Also it integrates itself greatly into the European Green Deal initiative by initiation of forest protection and restoration.

Novelty of the work

The novelty of ForestForYou lies in combining several technological solutions into a single system. The platform integrates geographic information systems (GIS), spatial optimization, an investment quality index, and interactive map-based result visualization. The system processes multiple territorial datasets and combines them into a unified evaluation presented in a clear visual format. It also applies parallel computation techniques and optimized analysis algorithms to efficiently

process large spatial datasets. Dynamic adjustment of evaluation criteria and real-time result updates provide users with a more flexible and modern analysis environment.



The benefits and value to the potential users

ForestForYou enables users to quickly and clearly evaluate the investment attractiveness of forest territories without requiring advanced GIS expertise. The platform automates territory analysis, calculates an investment quality index, and presents the results through an interactive map interface. Users can compare territories more efficiently, reduce analysis time, and make more objective investment decisions. The system also helps reduce investment uncertainty by allowing users to evaluate environmental and infrastructure-related factors at an early stage.

GrowSoft – an AI-powered assistant for developing soft skills

Field of science Information Technologies
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Arminas Arlauskas

Head: Dr. Eglė Butkevičiūtė

Kaunas University of Technology

Description of the work

Soft skills development platform designed for IT professionals. The system enables users to improve competencies such as negotiation, conflict resolution, teamwork, and leadership through AI-powered simulations and personalised feedback. The platform tracks progress in real time, rewards users with achievements and XP points, and delivers individualised challenges tailored to each user's skill profile.





Technical or other problems that are solved with the work

In the IT sector, technical education is widely accessible - there are countless courses, certifications, and learning platforms for programming, databases, and cloud technologies. However, soft

skills such as negotiation, conflict resolution, empathy, and leadership are often overlooked, even though they are critical for career growth and team effectiveness.



Existing learning platforms mainly provide passive content: video lectures and quizzes that do not offer real practical experience. There is a lack of tools that allow users to safely practice social skills in realistic workplace situations while also measuring progress.



The target market consists of IT companies seeking to improve their employees' interpersonal competencies. The global e-learning market exceeded USD 300 billion in 2023 and continues to grow rapidly, while the soft skills training segment is projected to surpass USD 97 billion by 2034.

Novelty of the work

Unlike traditional e-learning platforms, this solution offers interactive, dialogue-based simulations instead of passive content. Users actively participate in realistic scenarios and receive instant AI-generated feedback rather than simply watching lessons.

The platform is specifically designed for the IT context - scenarios reflect real situations faced by IT professionals, including technical disputes, project negotiations, and team management. This differentiates it from generic soft skills courses.

Gamification is integrated as a core motivational system, combined with a personalized skill profile for each user.





Finally, the system is highly scalable - new modules, scenarios, and skill areas can be added without requiring major architectural changes.

The benefits and value to the potential users

The platform provides IT professionals with a safe environment to practice challenging workplace situations - such as client negotiations, team conflicts, and giving feedback - without real-world consequences.

AI-generated scenarios are realistic and tailored specifically to IT workplace environments. After each session, users receive detailed, personalized feedback with concrete suggestions for improvement.

Gamification elements - XP points, levels, achievements, and challenges - encourage continuous engagement and motivation. Radar or spider-chart skill visualizations clearly display strengths and areas for improvement, while long-term progress tracking helps users recognize their actual growth over time.

Flowabot: AI Customer Support Agent

Field of science Information Technologies
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Jonas Urnėžius
Ernest Tretjakov
Gabrielė Šreiderytė
Aronas Butkevičius
Viktoras Timofejevas
Atanas Dičkus

Head: Dr. Dovilė Varenė

Kaunas University of Technology

Description of the work

Flowabot is an AI customer support agent that helps small and medium-sized companies automate responses to recurring customer queries. Companies can upload their internal documentation, and the AI uses it to answer customer questions. When documentation is insufficient, the query can be transferred to an employee, while the system learns from the response and expands the knowledge base.

Technical or other problems that are solved with the work

Customer support specialists face large volumes of repetitive queries. Companies usually rely on internal documentation when employees answer these queries, which means staff time is used inefficiently and customers must wait a long time for responses. With our product, the initial part of support - answering routine questions - can be handled effectively by artificial intelligence, leaving employees to respond only to queries for which the documentation does not contain an answer.

The target market is small and medium-sized companies that do not have automated customer-support solutions and do not use dedicated tools such as Zendesk. For such companies, building an automated support tool for their own needs is often too expensive, so support usually takes place by email or through various forms. This is slow, inconvenient and requires a great deal of monotonous work. Due to the AI boom, many new companies and start-ups are emerging without enough employees to build customer-support departments, so our target segment is constantly growing.

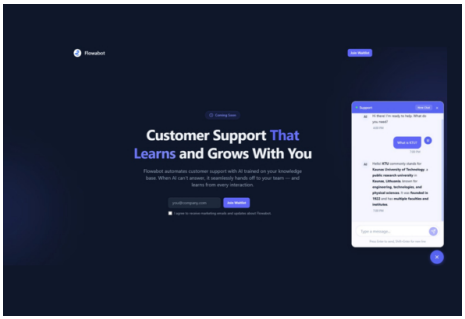
Flowabot helps businesses provide faster and more efficient responses to customers, improving customer satisfaction and company reputation.

Novelty of the work

Most existing solutions are focused on customer-support systems such as Zendesk, while many small and medium-sized companies simply do not use such systems. Our system enables companies to start AI-based customer support easily by uploading PDF, text or other-format documents.

The system also continuously learns from unanswered questions. If the agent cannot answer a query using the provided documents, the customer is connected with an employee who answers it. The agent then learns the answer and can respond to the same question next time.

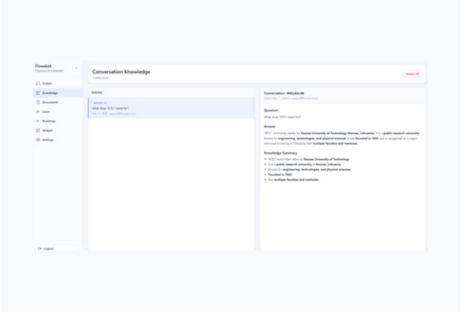
Finally, Flowabot allows customers sending support requests to have just one account and receive help from all companies using Flowabot. This significantly increases customer satisfaction, since creating a new account and entering personal data each time a customer wants an answer is very inconvenient.



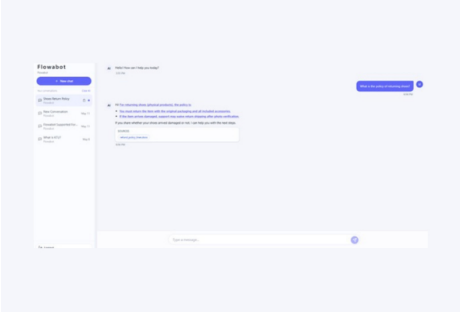
The benefits and value to the potential users

Flowabot enables companies not only to replace a full customer-support department with one or

several employees, but also to provide faster and more efficient customer responses using artificial intelligence. The system continuously learns from questions it could not answer, so the AI agent improves while the company's documentation is automatically expanded.



For customers using Flowabot to request help, answers are provided faster, and they do not need to create a new account every time they ask for support. One Flowabot account allows users to send requests to all companies using the product.



Laser Obstacle Removal System

Field of science Information Technologies
Type of innovation Hardware (e.g. electronic device, robotics, computer hardware, wearable technology, etc.)

Ignas Senovaitis

Head: Marius Svirskis

MB „Invematikas“

Description of the work

The team is developing an advanced remote laser-based obstacle removal system for tasks where direct human access is dangerous, expensive or technically difficult. The current prototype weighs up to 5 kg and integrates a camera, laser aiming module, object tracking and remote-control capability. Primary applications include pruning tree branches, removing foreign objects from high-voltage power lines and maintaining hard-to-reach infrastructure. The system is designed as a precise, mobile and safer tool for infrastructure maintenance, reducing the need for lifting equipment and limiting worker exposure to hazardous areas. Future development may include simplified versions for bird and animal deterrence, specialized remote hazardous-object neutralization (e.g. demining) and security-related (dual-use) applications, subject to safety, legal and operational requirements.

Technical or other problems that are solved with the work

Obstacle removal from high-voltage lines, industrial structures and other hard-to-reach objects often requires infrastructure shutdowns, lifts, ladders, specialised equipment or sending workers into high-risk zones. This increases work costs, response time, the duration of power-supply disruptions and the likelihood of accidents. Particularly relevant problems include tree branches near power lines, foreign objects hanging on wires,

hard-to-reach structural elements and obstacles that cannot be safely removed using conventional mechanical methods.

The target market includes electricity transmission and distribution network operators, infrastructure maintenance companies, industrial and energy facilities, municipal emergency and maintenance services, railway and road infrastructure operators and specialised safety services. First customers could be organisations that regularly incur costs from emergency call-outs, planned line shutdowns, tree trimming or hazardous-object removal.

The market in Lithuania is shaped by maintenance budgets for electricity networks, roads, railways, industrial and municipal infrastructure. Internationally, the potential is driven by growing demand for remote, robotic and worker-safety-enhancing maintenance technologies, grid modernisation, more frequent extreme weather, stricter occupational safety requirements and the need to remove faults faster without placing people in hazardous areas.

Novelty of the work

The novelty of the solution lies in the combination of compact remote laser equipment, an integrated camera, laser targeting, object tracking and a mobile infrastructure-maintenance concept. Instead of mechanically accessing an obstacle, the system enables targeted action from a distance and can therefore be used in situations where conventional methods are slow, dangerous or expensive. Further development foresees a modular platform for civil infrastructure maintenance, bird or animal deterrence and specialised safety tasks such as demining or remote drone neutralisation.



The benefits and value to the potential users

The solution can reduce risks to workers, shorten obstacle-removal time and reduce dependence on

heavy lifting equipment. Remote control, an integrated camera and object tracking allow the operator to work from a safer position, while a mobile prototype weighing up to 5 kg provides flexibility in different environments. For energy and infrastructure clients, this can mean faster incident response, shorter planned or emergency shutdowns, lower maintenance costs and improved occupational safety.

Sidequester: Digital Solution for Enhancing Motivation and Collaboration

Field of science Information Technologies
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Martyna Laptevaitė
Lukas Mieliauskas
Domantas Širingevičius
Domas Sargevičius
Julius Pipiras

Head: Dr. Rasa Gudonavičienė

Kaunas University of Technology

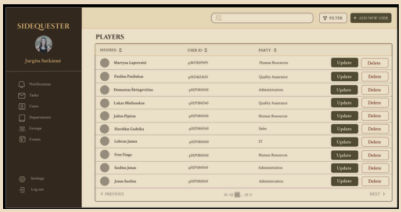
Description of the work

Sidequester – a digital solution for motivation and communication enhancement based on a point accumulation and reward system designed to drive employee activity, engagement, and collaboration. The system consists of a mobile app and an administration dashboard. Every completed task, event participation, or process improvement suggestion is awarded points, which employees can then exchange for incentives or prizes. Gamification principles are reflected not only in the scoring system but also in the app's terminology and design. This platform enables the creation of a clear, transparent, and gamified motivation model within the organization.

Technical or other problems that are solved with the work

Nowadays organizations increasingly face declining employee motivation, limited engagement in additional activities, and weak cross-functional collaboration between teams. Traditional incentives, such as annual bonuses or formal performance review systems, do not always ensure





consistent engagement or active participation in organizational activities. Furthermore, employees increasingly expect immediate feedback, a clear progression system, and transparent reward mechanisms. To address these challenges, we propose a solution: the creation of an internal system based on point accumulation and rewards designed to drive employee activity, engagement, and collaboration.

Novelty of the work

The novelty of this work lies in the development of a system that integrates gamification elements with Kaizen and KPI principles. Unlike competitors, who primarily focus on general employee recognition or the entire employee lifecycle, this solution is dedicated to improving specific tasks, goals, and processes. The system stands out for its simpler implementation, clear structure, gamified design and adaptability for smaller companies.

The benefits and value to the potential users

The system delivers increased employee motivation, drives active participation in shared initiatives, and fosters better communication across various company teams.

PVPlan – solar panel layout system

Field of science Information Technologies
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

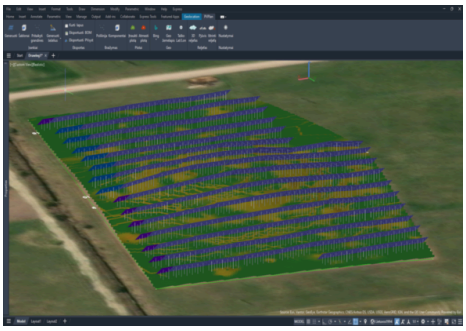
Mantvydas Klimavičius
Justinas Jankauskas
Mantas Maščinskas
Ignas Morkeliūnas
Simonas Pranckevičius
Aušrys Radvila

Head: Kęstutis Valinčius

Kaunas University of Technology

Description of the work

The product, PVPlan, is an AutoCAD add-in designed to automate the design of ground-mounted solar power plants. The solution enables users to generate solar module layouts based on plot boundaries, mark work zones, create 3D terrain models, and calculate support pile parameters. The system also helps prepare reports on the required materials. The project aims to reduce the amount of manual design work, speed up engineering decision-making, and lower the likelihood of errors when designing large-scale solar power plants under real-world conditions.



Technical or other problems that are solved with the work

The product addresses a key challenge in solar power plant design: the layout of modules across large areas is often done

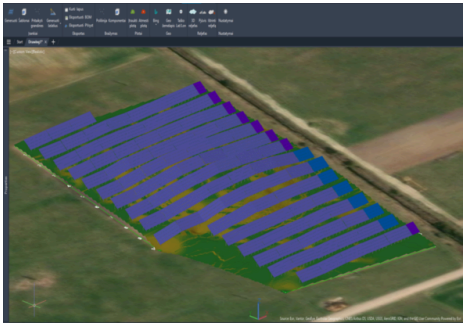
manually using several different software tools. As a result, the process can be slow, complex, and prone to errors.

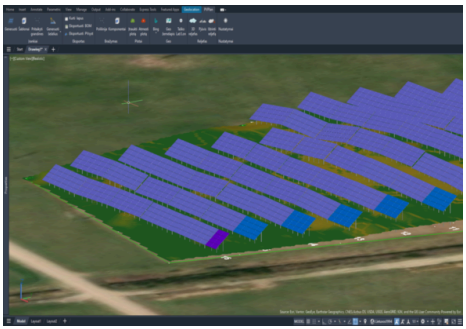
The product automates the placement of solar modules, enables the creation of 3D terrain models, allows users to define work zones, calculates pile parameters, and generates material reports. By automating these processes, we reduce manual work, save engineers' time, and lower the risk of technical errors.

The target market consists of solar park developers, design companies, and engineering firms working with ground-mounted solar power plants. The initial market is Lithuania and the Baltic States, with later expansion planned into the European Union. The market has strong growth potential: the global and European solar energy markets are expanding rapidly, which is increasing the demand for efficient design automation solutions.

Novelty of the work

This project stands out because it is designed for the efficient planning of large solar arrays. Although various AutoCAD add-ins for solar power plant design already exist on the market, many of them focus on more complex 3D solutions or include excessive functionality. Our system focuses on fast, convenient, and optimized panel placement across large areas, enabling designers to use space more efficiently and shorten the design process. The aim is also to offer a more affordable solution that remains practical for everyday use.





The benefits and value to the potential users

This AutoCAD add-in enables solar

power plant engineers to complete tasks faster and more accurately. Automated panel placement, connection, and shading simulation analysis reduce the amount of manual work and the likelihood of errors. A more user-friendly interface and integration into the AutoCAD environment allow users to work within a single system without additional tools. This helps save time, optimize the design process, and prepare solar power plant projects more efficiently.

Nextend: Platform for Planning Your Next Innovation

Field of science Information Technologies
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Arnas Kavaliauskas
Aidas Čepukaitis
Tautvydas Žilinskas
Gvidas Kulikauskas
Karolis Čiūdaras
Benas Danyla

Head: Dangis Rimkus

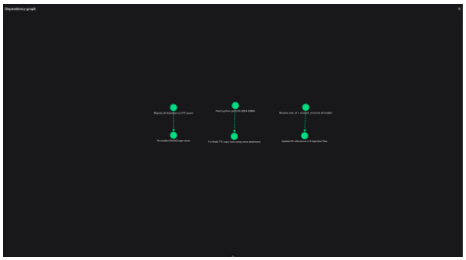
Kaunas University of Technology

Description of the work

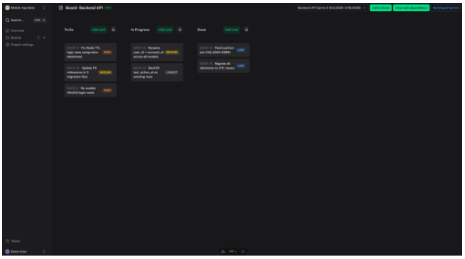
"Nextend" is a web platform, designed for the oversight and planning of projects. The system is geared towards the "Agile SCRUM" type of project management; this means iterations, how each is planned, tasks with set weights.

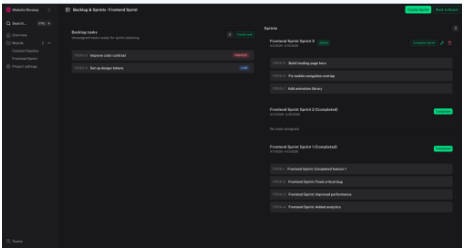
Technical or other problems that are solved with the work

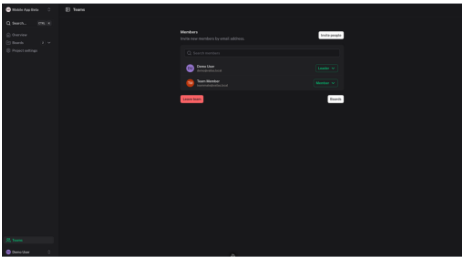
Nextend addresses the fragmentation, disorder, and lack of transparency that occur when team tasks and workflows are split across multiple tools in small and medium-sized teams. Most teams use a mixed set of tools, such as email, chats, and separate to-do lists, causing task priorities, dependencies, and context to be lost. Nextend unifies project, board (kanban), sprint and



backlog management into one easily adaptable platform. Clear visual task status, LexoRank-based ordering, tags, comments, attachments and team roles allow teams to plan, delegate and track progress quickly. The product is especially aimed at start-ups, study projects and small businesses that need a secure, fast and configurable solution without excessive setup or high cost barriers.







Novelty of the work

The novelty lies in the practical focus on an easily adaptable workflow and technical readiness for small teams. Nextend combines LexoRank ordering, integrated file management and a team/permissions model in one Nuxt+Prisma platform that can be deployed locally or in the cloud. Compared with large tools, it offers a lower adoption barrier, greater privacy control, and easier integration with local infrastructure.

The benefits and value to the potential users

Nextend increases team productivity and reduces coordination costs. Clear boards and backlogs speed up decision-making; the integration of attachments and comments encourages communication and specificity, and user-adaptable board templates allow teams to start work without lengthy configuration. A self-hosting and privacy-supporting architecture provides control for sensitive projects. The result is a shorter path from idea to implementation, clearer responsibility, and broad project visibility for team members and stakeholders.

Gamified plant care system LapAI

Field of science Information Technologies
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

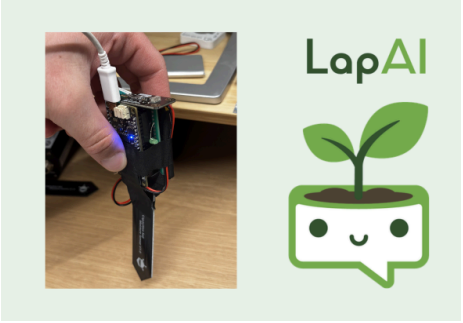
Juozas Balčikonis
Paulina Sabanskytė
Motiejus Tamonis
Rokas Žiaukas
Augustas Stankūnas
Dominykas Sidauga

Head: Vytautas Pilkauskas

Kaunas University of Technology

Description of the work

LapAI is an IoT and AI-powered ecosystem designed for indoor plant survival and emotional bonding. The system features a smart sensor for real-time environmental monitoring and a mobile app. Using AI , it automatically identifies species and predicts future watering needs. A unique gamification engine transforms the plant into an interactive character with a distinct personality and emotions, fostering user responsibility and turning routine plant care into an engaging, game-like experience. “LapAI – Let’s Ask Plantas AI!”



Technical or other problems that are solved with the work

Most houseplants die due to improper watering and a lack of specific knowledge. Our research showed that young people aged 19-

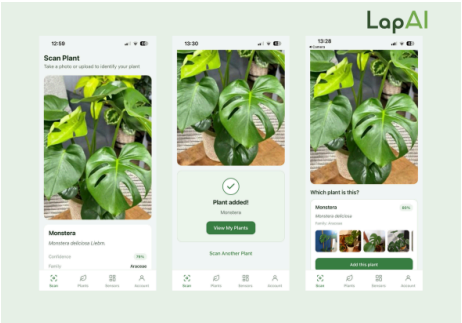
30 often neglect their plants due to busy schedules or a lack of knowledge about their specific needs. LapAI solves this problem by automating monitoring and using ML algorithms for watering predictions. The target market is tech-savvy urban residents for whom plants are a source of well-being. The “smart home” market is growing by billions of euros annually, and our solution fills a gap where technology meets emotional gamification.

Novelty of the work

Unlike the standard plant sensors currently dominating the market, which merely passively record real-time data, the LapAI project stands out for its proactivity and comprehensive integration of technologies. The novelty of the work is based on a unique application of artificial intelligence: the system not only automatically identifies the plant species and applies a personalized care profile, but also uses regression models to accurately predict future watering needs. A key element of innovation is the integrated gamification mechanics, which transform the plant from a passive object into an interactive character with changing emotions. This creates a strong psychological bond between the grower and the plant, turning routine care tasks into an engaging experience and ensuring long-term user engagement that existing technical solutions cannot provide.

The benefits and value to the potential users

Users gain peace of mind and reassurance as the system proactively notifies them when the plant needs water, even before it starts to wilt. The main value lies not only in saving the plant (financial benefit) but also in reducing the stress of caring for it. Gamification elements (like chat bot, changes in the plant’s emotions, plant’s health meter) create a unique connection, turning the plant into a “virtual pet” in a physical pot. This is can also be relevant for parents raising children (educational value) and beginner gardeners.



Zenda

Field of science Information Technologies
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Mecit Bedel
Kadir Batuhan Sayan

Vyatutas Magnus University, Kaunas University of Technology

Description of the work

Zenda connects clients and coaches on a single platform. It brings people who want to stay fit together with real coaches who genuinely track their progress. Today, most clients track their weight, food intake, and workouts across multiple apps. If they're working with an online coach, they communicate over generic messaging apps. Things get lost along the way, and the coach never sees the full picture. Zenda fixes this. Clients record their daily check-ins from their phones. Weight, photos, food intake, and health data from their watch are all collected in one place. Coaches see everything in a clean dashboard, can create diet and workout plans for their clients, and respond through the built-in chat. We also run an in-app marketplace. Clients can find a coach, send messages, and pay for sessions without ever leaving the app.

Technical or other problems that are solved with the work

Staying active should need one app, not many. Today, people use one app for food, one for workout, and another for sleep. They get tired of switching between them and stop after a few weeks. People who actually keep going usually have a coach. But hiring a coach is also complicated. Coaches are found on social media. Payments go through random links. Weekly updates are sent over messaging apps. Coaches face the same problem from their side. Their tools cannot handle more than a few clients. Zenda is for two groups. Adults who want to stay active and would do better with

real human support. And online coaches who need a real platform to run their business. The online fitness and digital health market is large and still growing because of remote work, more focus on health, and the move away from traditional gyms. Zenda brings everything into one platform.

Novelty of the work

Coaching apps already exist. Tracking apps already exist. But we are combining them into a single product that feels natural to both sides. Current trainer tools are designed for the professional. The user gets a simplified look that feels like homework. Consumer tracking apps are the opposite. They're polished for the user, but the professional is left out. Zenda is built as one product for both sides at once. The user gets a real tracking app they can use on their own. The professional gets a real dashboard with live data from the user's phone, not data the user remembers to send. Discovery, messaging, and tracking all happen in one place.

The benefits and value to the potential users

For users: One app instead of many. Your weight, food, photos, and health data all live in the same place. A real fitness professional actually looks at it and replies. You stop guessing if you are on track. You stop giving up on yourself after week three.

For fitness professionals and nutritionists: Everyone you coach in one dashboard. No more screenshots, no more spreadsheets, no more chasing people across messaging apps. You see who checked in and who skipped. You can take on more people. Finding new ones is easier too, since people can discover you through the app instead of sending random messages on social media.



Milo&Luna: An AI-powered website that helps identify misleading information on pet food packaging

Field of science Information Technologies
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Augustė Jucevičiūtė
Kamilė Kerevičiūtė
Augustas Kniaževas
Joris Markauskas
Matas Raškauskas

Head: Ligita Zailskaitė-Jakštė

Kaunas University of Technology

Description of the work

This is an AI-powered website that helps pet owners identify misleading information on pet food packaging. Users can scan or upload product information and the system analyzes marketing claims, ingredient composition and compliance with EU regulations and scientific sources. The platform detects potentially vague or unsupported claims, explains why they may be misleading and provides a product reliability score. It also evaluates the product's suitability for a specific pet based on allergies, age, or health conditions. The solution promotes transparency in the pet food market and helps consumers make more informed purchasing decisions.

Technical or other problems that are solved with the work

The pet food market is growing very quickly and manufacturers are using more marketing terms such as "premium", "natural" or "high quality" to attract buyers. However, many of these claims are unclear or not fully supported by evidence. Pet owners often do not know if the information on

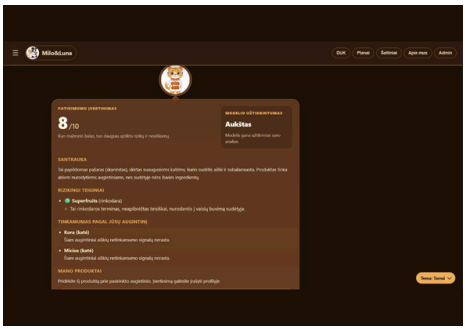
the packaging actually matches the ingredients, nutritional value or product quality. Information about company reputation, sustainability or previous safety issues is also difficult to find in one place. Our product solves this problem by providing an AI-powered platform that analyzes pet food packaging and identifies potentially misleading information. The target market is pet owners who want to make safer and more informed decisions for their pets. The European pet food market reached €29.3 billion in 2023 and continues to grow which shows strong future demand for solutions that increase transparency and trust in this industry.

Novelty of the work

The novelty of our solution is that it combines artificial intelligence, pet food analysis and consumer transparency into one platform. Unlike many existing solutions that only show ingredient information or nutritional values, our website also analyzes misleading marketing claims and explains why certain statements may be unclear or unsupported. The system evaluates products using AI-based criteria, EU regulations and scientific sources while also considering the specific needs of the user's pet such as allergies, age or health conditions. In addition, the platform provides information about company reputation, sustainability and possible past safety issues. This creates a more complete and user-friendly solution that helps consumers better understand the real quality and reliability of pet food products.

The benefits and value to the potential users

The platform helps pet owners make safer and more informed purchasing decisions by providing simple explanations about misleading claims, product reliability scores and suitability evaluations based on their pet's allergies, age or health conditions. It makes complicated marketing language easier to understand and helps users compare different products more quickly. The solution also saves time because important information



about ingredients, product quality and company reputation is available in one place. By increasing transparency in the pet food market the platform encourages healthier choices for pets and helps users feel more confident when buying pet food.

Development of Features Extraction Algorithm of Malignant Skin Lesions in Digital Images

Field of science Information Technologies
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Yehor Yakymov

Head: Dr. Vidas Raudonis

Kaunas University of Technology

Description of the work

This project aims to create a robust automated feature extraction algorithm in regards to the medical skin lesion images, with the primary goal to extract the features of malignant melanoma lesions. The real medical method for the identification of malignant lesions is selected, and is adopted via programming methods. A robust preprocessing function is implemented to get rid of all kinds of impurities, present in the medical images. Segmentation AI model is selected and trained, and the results are compared to choose the best one, which later serves as the one, that creates image masks. These image masks are then used in the handcrafted ABCD (Asymmetry, Border Irregularity, Colour Variation, Diameter) to calculate the Total Dermoscopic Score.

Technical or other problems that are solved with the work

Skin cancer is one of the most widespread skin malignancies worldwide. In 2019, more than 1 million new cases were registered, and over 60,000 deaths were the direct result of skin cancer. Similarly, it is estimated that amonst it‘s many types, the most dangerous one is malignant melanoma, which has the ability to rapidly metastasize and can lead to lethal outcomes in cases when it is not detected early, as it is evident by the estimated 325 000 new melanoma cases and 57 000 deaths in 2020. On the contrary,

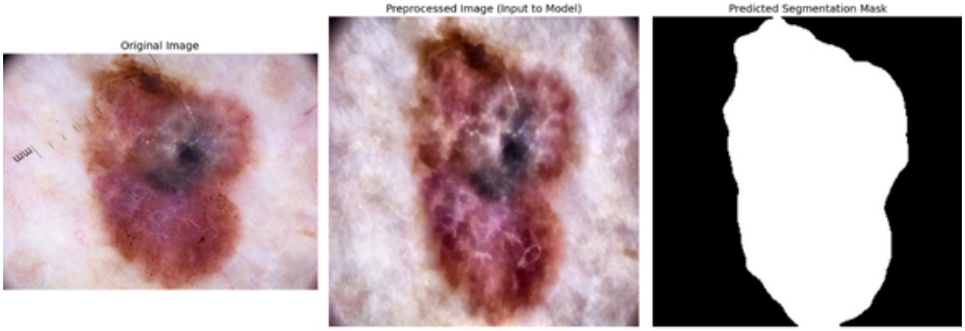
if detected within five years, the positive treatment is above 95 percent, compared to stage four survival of below 17 percent. What is also important to mention, is that the melanoma treatment expenses vary based on the stage of diagnosis, with the highest being amongst patients with late-stage disease, in the initial and terminal phases of care. Lithuania shows the same tendency as the rest of Europe, with the gradual increase in the frequency of incidents, as well as the mortality rate, both for men and women. The appearance of melanomas increased to 8.7 per 100 000 amongst women and 8.8 among men. The graph also shows that the mortality rate for women increased by 1.9, while for men it increased by two. The reason for that is that while an experienced dermatologist would be able to identify the lesion correctly, many inexperienced doctors struggle with doing the same. Studies show that inexperienced dermatologists are able to correctly diagnose melanoma in roughly 2/3rds of cases, while experts show 90-99% accuracy. Considering all of these factors, the need for improved secondary measures that would help with the increase in the successful identification of malignant lesions is clear. To address that, automated tools that enable earlier detection of malignant lesions and the increase in their correct identification were introduced.

Novelty of the work

The presented solution differs from existing market solutions by combining automated AI-based lesion segmentation with interpretable handcrafted feature extraction based on the clinically recognized ABCD method. Currently, many modern systems rely primarily only on the black-box deep learning classification, the proposed approach focuses on explainability and transparency of the obtained results, allowing the extracted asymmetry, border, colour, and diameter features to be directly analyzed and interpreted. Additionally, the solution is designed to operate using relatively lightweight image-processing methods and standard digital images, reducing the dependency on expensive dermoscopic equipment and increasing accessibility for remote or resource-limited healthcare environments.

The benefits and value to the potential users

There are multiple benefits that this project aims to address, the first one being the need for cheap, reliable and available solution that would increase the identification of malignant lesions, in this case - melanomas. The offered method would decrease the cost, annually spent on the treatment of skin cancer, and increase the general healthiness of the populace. It would also make the dermoscopic practice easier, as it could be used in distant, rural areas, where expensive and/or fragile equipment is hard to come by. Young doctors, stepping in the practice would benefit greatly from having a tool, that would allow them to have a second opinion about some cases. At the same time, even experienced clinicians may experience performance-affecting fatigue during "rush hours", so having a tool that may ease that burden would appeal to them as well. And because of the scalability of this project, it could be integrated into telemedicine and remote healthcare systems.



An Integrated Vision–Mobile Fusion Framework for Real-Time Smart Parking Navigation

Field of science Information Technologies
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Oleksandr Laptiev
Ananthakrishnan Thuruthel Murali
Nathalie Saab
Nihad Soltanov

Head: Dr. Agnė Paulauskaitė

Kaunas University of Technology

Description of the work

The innovation is an integrated vision–mobile fusion framework for real-time smart parking navigation. It combines four key components into a single unified system: (1) camera-based vehicle perception using YOLOv8n-seg instance segmentation, (2) homography-based ground-plane localization that converts image-space detections into precise geographic coordinates, (3) mobile GNSS data fusion that associates users with their vehicles through spatio-temporal proximity scoring (without requiring license plate recognition), and (4) a dynamic A* routing algorithm that continuously updates navigation paths based on real-time slot availability and lane obstructions. Unlike existing solutions that focus solely on detection or occupancy classification, this framework delivers end-to-end navigation guidance using only standard surveillance cameras and smartphones, achieving sub-meter localization accuracy (mean error of 0.283 m) without specialized infrastructure such as LiDAR, RGB-D sensors, or in-ground sensors.

Full publication: https://www.mdpi.com/2305-6290/10/4/84

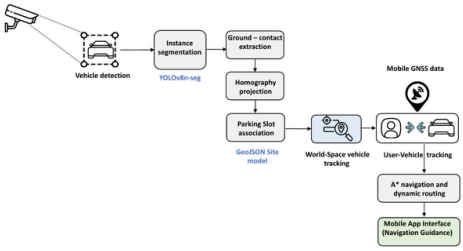
Technical or other problems that are solved with the work

Drivers in large, dynamic parking facilities — particularly truck parking lots, commercial complexes, and high-density urban garages — waste significant time searching for assigned or available parking spaces. This causes driver frustration, internal traffic congestion, increased fuel consumption, and emissions. Traditional solutions rely on static signage, basic occupancy indicators, or fixed routes that quickly become ineffective in environments where occupancy levels, driver behavior, and vehicle flows change continuously.

Existing technological alternatives also fall short. Sensor-based and IoT systems require expensive embedded infrastructure in every parking slot. LiDAR and RGB-D solutions deliver high precision but remain prohibitively costly for wide deployment. Vision-based systems, meanwhile, focus narrowly on detection or occupancy classification without providing actual navigation guidance, user interaction, or user–vehicle association. Optical identification methods such as license plate recognition fail under rain, fog, snow, glare, or low-light conditions. Furthermore, axis-aligned bounding boxes commonly used in detection models inaccurately represent vehicle ground-contact position under oblique camera angles, producing meter-level localization errors. The proposed system addresses all of these gaps within a single coherent, scalable, and low-cost architecture suitable for real-world operating conditions.

Novelty of the work

The novelty lies in being the first framework to unify four normally isolated capabilities into a single operational workflow: visual vehicle localization, geometric site modeling, mobile GNSS-based user–vehicle association, and dynamic A* routing. Specific innovations include: (1) replacing inaccurate axis-aligned bounding boxes with instance-segmentation-based ground-contact extraction, reducing mean localization error from 0.732



m to 0.283 m; (2) eliminating the need for optical identification (e.g., license plate recognition) through a spatio-temporal proximity-scoring algorithm that fuses noisy mobile GNSS data with visual detections; (3) introducing a delayed refinement stage that corrects early matching errors caused by GPS noise; and (4) demonstrating that sub-meter localization and full navigation are achievable using only commodity surveillance cameras.

The benefits and value to the potential users

For drivers: real-time, step-by-step navigation directly to an assigned parking slot through a mobile app; reduced search time, fuel cost, and frustration; reliable service even in adverse weather, since no license plate recognition is required.

For parking facility operators: scalable, cost-effective deployment using only standard surveillance cameras already installed at most facilities — no LiDAR, RGB-D sensors, or in-ground hardware needed; sub-meter vehicle localization accuracy; automatic parking-quality evaluation (detecting poorly parked vehicles); dynamic adaptation to lane blockages and changing slot availability.

For city and logistics planners: smoother traffic flow within parking complexes, reduced congestion during peak periods, and a foundation for autonomous parking and multi-facility intelligent transportation deployments.

Prokevo: A gamified continuous improvement portal driving corporate innovation through modular training and employee engagement

Field of science Information Technologies
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Aistė Veitaitė
Arsenii Ziubin
Nikita Ziubin
Athul Krishna Chanayil Sajivothaman
Mohammed Amine Janyen

Head: Dr. Asta Tarutė

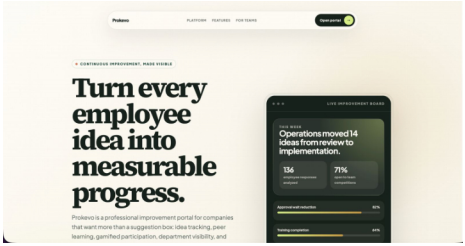
Kaunas University of Technology

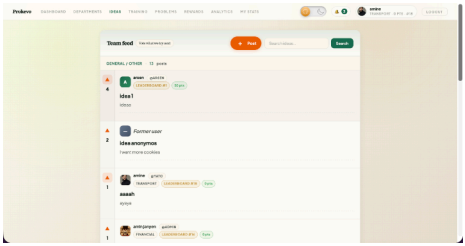
Description of the work

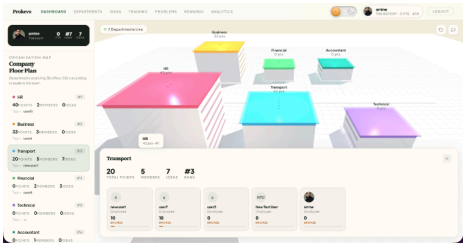
Prokevo is a continuous improvement portal designed for medium and large enterprises to cultivate a Kaizen culture. The platform addresses employee disengagement by digitising the idea-submission process and turning it into an engaging experience. Key features include an interactive 3D department map, a gamified points and levels of system, and integrated learning modules. Unlike standard HR tools, Prokevo directly links employee initiatives with real recognition and professional growth. This allows companies to reduce organisational silence, increase operational efficiency, and create a transparent feedback system where every innovation is noticed and valued.

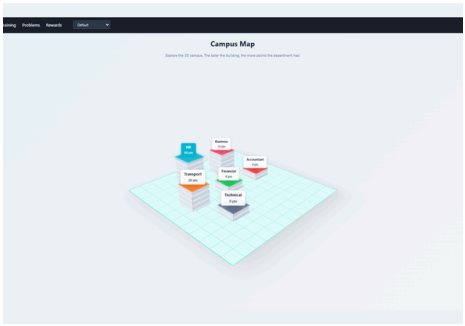
Technical or other problems that are solved with the work

Most European companies with 50 to 500 employees struggle to capture and act on employee improvement ideas. Existing tools - suggestion boxes, email chains and quarterly review sessions, fail structurally









because they offer no feedback, no recognition and no reason for an employee to contribute a second time after the first idea goes unanswered. Research shows that only 23% of employees worldwide feel engaged at work (Gallup, 2024) and employee attrition rates across Europe have reached 17.4% (Ravio, 2025), creating massive recruitment and training costs for companies.

Prokevo targets medium-sized and large European companies - specifically in transport, logistics and manufacturing, where no competitor currently offers a dedicated continuous improvement platform at a transparent and accessible price point. The European market has high demand for Kaizen methodology but lacks the internal resources to build or afford custom enterprise solutions. Prokevo fills this gap with a gamified web portal priced at 3 to 5 euros per user per month, making structured continuous improvement accessible to companies that have been ignored by every major competitor across Europe.

Novelty of the work

Prokevo is the only platform in Europe that combines three elements no competitor currently offers simultaneously. First, a structured Kaizen continuous improvement framework the Japanese philosophy of small

consistent changes made by everyone. Second, a full gamification engine with points, multi-tier levels from Bronze to Diamond, achievement badges, personalised role-based challenges and department leaderboards designed to sustain engagement beyond the typical 3 to 6 month drop-off. Third, a built-in peer-to-peer training module with knowledge assessments and learning points. No existing competitor eKaizen, Viima or Sideways 6 combines all three. Additionally, the interactive 3D department map for visualising live team rankings is a feature that exists nowhere else in this market.

The benefits and value to the potential users

Kaizen is a Japanese philosophy meaning “continuous improvement” the belief that small, consistent changes made by everyone in a company compound into extraordinary results over time. Prokevo makes this philosophy operational for modern European businesses. Employees get a structured channel to submit ideas and see exactly what happens to them. Every contribution earns points, levels and badges, turning improvement into a daily habit. Managers gain real-time visibility into team engagement without manual review of bottlenecks. HR directors reduce attrition costs by sustaining motivation beyond the typical 3 to 6 month drop-off. The built-in training module lets employees develop skills and earn recognition simultaneously. Everyone benefits employees feel heard, managers see results, companies improve continuously.

TaskManager J2534 PassThru Bridge

Field of science Information Technologies
Type of innovation Hardware (e.g. electronic device, robotics, computer hardware, wearable technology, etc.)

Yasin Efe Diyar

Head: Yasin Efe Diyar

Kaunas University of Technology

Description of the work

The Taskmanager J2534 PassThru Bridge is a modular hardware and software stack that replicates commercial automotive diagnostic tools. It translates SAE J2534-1 API calls from Windows software into physical CAN bus traffic using an STM32 microcontroller and a high-speed asynchronous logger.

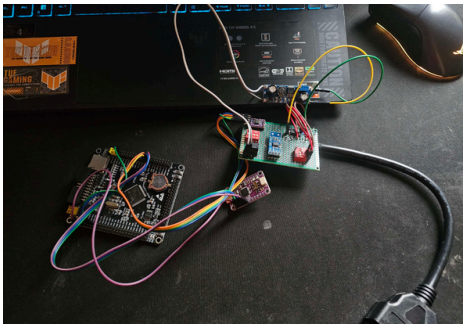
Technical or other problems that are solved with the work

Commercial SAE J2534 automotive diagnostic interfaces are prohibitively expensive and rely on closed-source, proprietary hardware. This creates a massive financial barrier for independent developers, students, and small automotive engineering firms who need to test custom ECU software, build diagnostic pipelines, or run standard vehicle diagnostics.

Novelty of the work

Unlike commercial tools that hide their translation layers, this solution utilizes accessible consumer-grade silicon (STM32F407) and a custom unmanaged C# DLL to achieve strict protocol timing and multi-threaded memory management. It proves high-end diagnostic protocols do not require heavily marked-up proprietary hardware to achieve SAE compliance.

The benefits and value to the potential users



The target market (automotive engineers, independent mechanics, software developers) gains a low-cost, transparent, and fully compliant SAE J2534-1 diagnostic bridge. It lowers the entry barrier for vehicle diagnostics and firmware flashing while providing raw engineering data visibility through an integrated asynchronous CAN logger (Sniffa).

Robotic Soft Tissue Sampling with Virtual Reality and AI based Anomaly Detection

Field of science Information Technologies
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Michael Meyling
Adrian Rudloff
Sarah Latus
Ludwig Bosse
Alexander Schlaefer

Head: Maximilian Neidhardt

Technical University of Hamburg, Institute of Medical Technology and Intelligent Systems

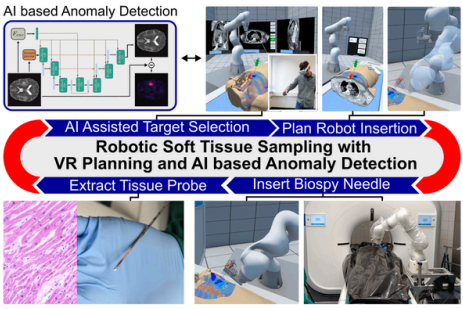
Description of the work

We present a robotic system for sampling tissue from corpses. Our robotic system enables needle placement in only a few seconds and achieves high sampling accuracy. For planning the insertion, we present a custom virtual reality (VR) planning environment. The physician can virtually see inside the corpse and plan insertions with a robot in 3D CT image data. that assist the physician during target selection. The physician is assisted during target selection by an AI agent that detects anomalies, e.g., tumors or lesions.

Technical or other problems that are solved with the work

Soft tissue samples from diseased individuals are important to investigate the cause of death and to improve clinical therapy by learning from the diseased. Current tissue sampling from cadavers, especially those that may be infected, carries significant health risks for medical personnel. Manual sampling on infectious corpses exposes physicians to biohazards and requires extensive safety measures. Additionally, conventional tissue

sampling lacks systematic extraction of samples, is operator dependent in needle placement accuracy, and is time consuming.



The global medical robotics market is projected to reach $20–25 billion by 2030, with surgical and laboratory robotics driving growth. With our innovation, we target clinics with forensic medical departments as well as research institutes.

Novelty of the work

The novelty of our work lies in the integration of robotics, AI, and VR for safe and efficient tissue sampling. Our system provides a custom VR planning environment where clinicians can intuitively control a robot, select tissue targets in 3D CT data, and execute needle insertions. AI-based detection of tissue anomalies assists the physician during target selection. Finally, the system supports fully automated, remote tissue sampling, allowing robotic extraction of tissue without direct contact with potentially infected cadavers, ensuring safety, efficiency, and high accuracy. This combination of novel path planning, AI-guided detection, and automated robotic execution represents a unique and innovative approach to cadaver tissue sampling.

The benefits and value to the potential users

We present a robotic system for soft tissue sampling that eliminates direct contact with potentially infected corpses, ensuring maximum safety for clinicians. The system features enhanced AI models to detect anomalies and guide tissue sampling. Clinicians can plan and execute robot movements using a custom VR interface, enabling an immersive experience with an intuitive visualization of CT image data and robot trajectory planning. This approach ensures high accuracy, speed, and reproducibility compared to conventional manual needle placement. By combining robotics, VR, and AI, our solution improves medical research, forensic investigations, and clinical training. We offer a safe, efficient, and innovative workflow for tissue analysis from infectious corpses.

NATURAL SCIENCES AND MATHEMATICS

“ReFiber” Technology for Recycling Raw Materials into Drone Parts

Field of science Natural Sciences and Mathematics
Type of innovation Hardware (e.g. electronic device, robotics, computer hardware, wearable technology, etc.)

Vilius Medika

Head: Dr. Benas Gabrielis Urbonavičius

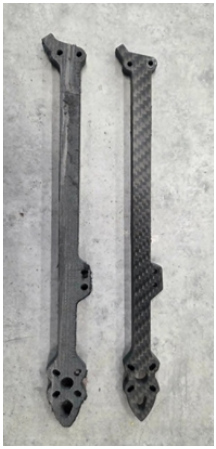
Kaunas University of Technology

Description of the work

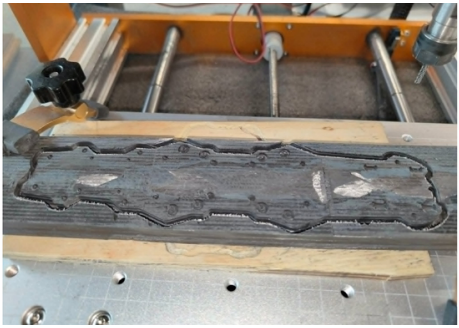
Our main product idea is to reuse end-of-life hydrogen cylinders made of carbon fiber. After that period, they often become worthless, although they can be recycled and extracted as a useful raw material - carbon fiber. Our proposed solution is to develop a technology - ReFiber - and adapt the cylinders to a new purpose, processing and integrating them into drone body structures that require lightness, strength and load resistance.

Technical or other problems that are solved with the work

Hydrogen is increasingly used in the energy, transport and industrial sectors, and the development of hydrogen technologies is considered an important part of sustainable energy. Due to its very low density, hydrogen is difficult to store and transport. It is most often stored in high-pressure cylinders, which in the transport sector must be lightweight while also being very strong and resistant to high







pressure. For this reason, such cylinders are usually made from composite materials such as carbon fibre. Carbon fibre has the required properties, but it creates environmental challenges at the end of its service life. The material and products made from it are non-biodegradable and difficult to recycle, as recycling requires significant investment and often reduces material strength. Therefore, it is important to find ways to reuse expired hydrogen cylinders. The solution is aimed at drone manufacturers and users seeking lightweight, durable and economically viable structural solutions for different applications.

Novelty of the work

There are currently no alternative applications for secondary carbon fibre recovered from gas cylinders. Our work is the first of its kind.

The benefits and value to the potential users

The solution would enable local drone-part production in Lithuania, increase independence from foreign markets and improve resilience during crisis situations.

Glass-Based Electrodes for Gaseous Elementary Particle Detectors

Field of science Natural Sciences and Mathematics
Type of innovation Hardware (e.g. electronic device, robotics, computer hardware, wearable technology, etc.)

Dr. Tomas Klinavičius
Ugnė Lukaševičiūtė
Gabija Riaubaitė

Head: Dr. Tomas Tamulevičius

Kaunas University of Technology

Description of the work

The work develops glass-based electrodes for gaseous elementary particle detectors. The solution uses laser microfabrication technologies, such as laser ablation, to form arrays of microscopic holes in a glass substrate and then apply a metal coating on both sides to create a functional electrode. Such electrodes are intended for gas electron multipliers and can improve detector sensitivity and durability by enabling higher-voltage operation.

Technical or other problems that are solved with the work

The work addresses the sensitivity and durability limitations of elementary particle detectors based on gas electron multipliers. Typically, the electrodes of these multipliers are made from thin metal-coated dielectric foils perforated with holes, which makes them unsuitable for high-voltage operation and limits detector sensitivity. This can be solved by using a thicker dielectric that is more resistant to high voltage, such as a glass substrate, as the electrode base. However, perforating glass with microscopic holes is much more technologically complex than microstructuring thin dielectric foils. The challenge is addressed using laser

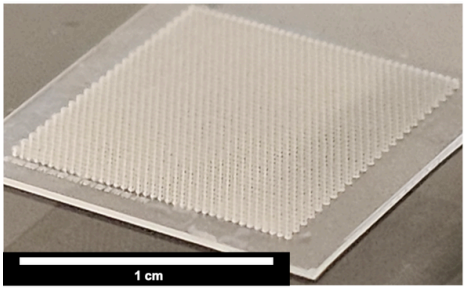
microforming technologies such as laser ablation, which enables fast, reliable, and defect-free formation of microhole arrays of the required size and density in a glass substrate in a single process. After metal coating is deposited on both sides of the perforated glass, a usable electrode is obtained.

Novelty of the work

Detectors of this type have not yet been widely researched or fully developed, largely because their microforming technology is limited. Only a few reliable technologies suitable for glass microforming combine reliability, scalability, cost-effectiveness and speed. This work develops one of them: femtosecond laser ablation. This microprocessing technology enables a fast and efficient one-step process for forming holes in a quartz glass substrate without using expensive photosensitive glass or multi-step lithographic technology.

The benefits and value to the potential users

The main beneficiaries will be the elementary particle research community and detector developers working at particle accelerators and related institutions such as CERN. The nuclear medicine community will also benefit. Developing glass-based electrodes for gas electron multiplier detectors would increase detector sensitivity and reliability by improving their resistance to high voltage. These detectors are also widely used in nuclear medicine, including charged-particle therapy equipment for the treatment of oncological diseases.



GradientFab: Next-Generation Nanomanufacturing Solutions for Optical Elements

Field of science Natural Sciences and Mathematics
Type of innovation Material or technological process innovation

Klaudijus Midveris
Gvidas Klyvis
Erika Jonaitytė

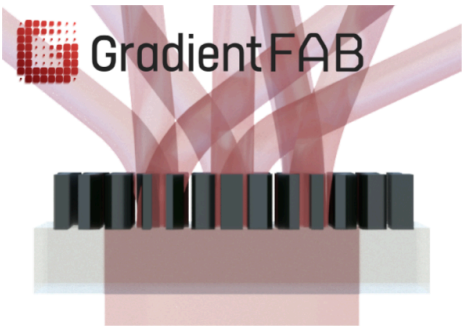
Head: Dr. Mindaugas Juodėnas

Kaunas University of Technology (KTU); MB "GradientFab"

Description of the work

GradientFab project presents a nanotechnology-based flat optics solution for the control of high-power ultrashort pulse lasers. By using metasurfaces, ultra-thin optical elements capable of manipulating light at the nanoscale, the project aims to replace conventional bulky and complex lens systems with a single compact chip.

Ultrashort pulse lasers play a critical role in advanced manufacturing, where they are used for highly precise cutting, structuring, and processing of components such as smart displays, medical stents, and microchips. However, current optical control systems remain large, expensive, and difficult to integrate into compact industrial environments.



The proposed metasurface technology enables precise beam bending, splitting, and shaping within a single flat element. As a result, it can substantially reduce the size, weight, and complexity of

laser-based systems, while expanding their applicability in next-generation smart manufacturing and other high-precision industrial processes.

Technical or other problems that are solved with the work

Modern high-tech industries, such as microelectronics and medical-device manufacturing, increasingly rely on ultrashort-pulse lasers that cut materials in a “cold” way without burning them. The main problem is not the lasers themselves but their control. To make this precise tool work, large, expensive and vibration-sensitive traditional optical systems are required. Calibrating these systems requires major engineering effort and prevents devices from becoming smaller. Our product solves this problem of size and complexity by transferring the entire optical system onto a single nanoscale plate. The target market includes developers of laser micromanufacturing and processing systems and industrial companies seeking to automate and reduce the cost of production lines. Although the metasurface market is growing exponentially worldwide as an alternative to traditional optics, spatial manipulation of ultrashort lasers using this technology remains an almost empty and unexplored niche. This creates major potential to integrate our solutions directly into next-generation industrial machines or spectroscopy devices ahead of competitors.

Novelty of the work

Although metasurface or flat-optics research is currently undergoing a renaissance worldwide, it has so far mostly been applied to continuous-wave or standard lasers, such as those used in facial-recognition sensors. The novelty of our work is the application of this technology to highly complex ultrashort laser pulses. This is an exceptional challenge because such pulses are extremely sensitive to distortion: an unsuitable element can destroy the benefits provided by the laser itself. We have managed to design metasurfaces that shape the beam with very high spatial precision without damaging the sensitive time-defined properties of the pulse. This opens a completely new chapter in the application of flat optics to high-end industrial tools.

The benefits and value to the potential users

The main value of our product is the ability to use light much more

efficiently, conveniently and cheaply. For laser-system manufacturers, the technology makes it possible to replace kilogram-scale optical systems with elements weighing only a few grams. Instead of several expensive lenses or prisms, one flat element is used, which in the future could be mass-produced like computer chips. Monolithic flat optics require almost no complex and lengthy alignment and are more resistant to environmental vibrations in factories. Multiple functions, such as a lens and a polariser, can be encoded in a single element, opening the way to innovative manufacturing processes.

Inobranda Medicine: Building the foundation for AI-driven Lithuanian medical documentation

Field of science Natural Sciences and Mathematics
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game, etc.)

Murad Ibrahimov
Linas Tamošiūnas

Head: Aistis Raudys

AAI Labs

Description of the work

Inomedicine Integrated AI Platform is a locally deployed AI system for Lithuanian medical documentation and enterprise document analysis. The platform combines Lithuanian medical speech recognition, a medical LLM, RAG technology, local data storage, and a unified user interface. It helps doctors automatically generate visit summaries and structured documentation drafts from conversations or dictation, reducing time spent on manual documentation. At the same time, it enables organizations to upload, search, analyze, and summarize internal documents. The solution operates on-premise, ensuring that sensitive medical and enterprise data is not transferred to external cloud service providers.

Technical or other problems that are solved with the work

The product solves two related problems: the heavy burden of manual medical documentation and the difficulty of finding and using internal organizational knowledge. After patient visits, doctors spend significant time writing documentation, repeating standard phrases, and re-entering information into systems, which costs time, money, and focus. This is especially relevant in Lithuania because medical Lithuanian language, terminology, abbreviations, and real clinical audio quality create additional technical challenges.

At the same time, organizations often have large volumes of internal documents where information is fragmented, difficult to find, and underused. The Inomedicine platform helps automate medical documentation from speech or transcripts and enables companies to search, analyze, and summarize internal documents locally in a secure environment.

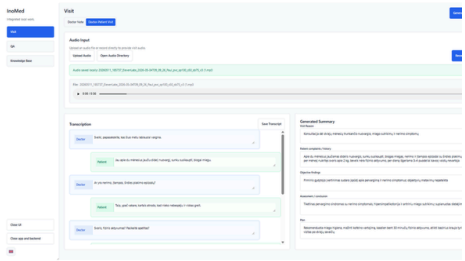
Novelty of the work

The novelty of our work is the development of a Lithuanian-focused AI platform that understands medical terminology, clinical jargon, abbreviations, and real-world doctor speech. Our models are trained and adapted using Lithuanian medical speech recordings collected from real doctors. This allows the system to perform better in practical healthcare environments than generic speech recognition or LLM tools. The platform combines medical speech-to-text, medical documentation generation, Lithuanian-capable LLM technology, and enterprise document intelligence in one secure on-premise system. Unlike cloud-based generic AI solutions, it is designed for Lithuanian healthcare workflows and keeps sensitive data within the organization's local infrastructure.

The benefits and value to the potential users

The product provides users with faster documentation, easier access to information, and stronger data control. Doctors can reduce time spent writing clinical notes, generate visit summaries from speech or transcripts, and focus more on patients. Medical institutions benefit from more consistent documentation, lower administrative workload, and a tool adapted to Lithuanian medical language. Enterprise users can quickly search, analyze, and summarize internal documents instead of manually reviewing large





volumes of files. Because the platform runs locally, sensitive medical and business data remains within the organization's own infrastructure. This creates practical value through time savings, improved productivity, better knowledge access, and increased confidence in handling confidential information.

“Algora” – A Team Sports Soft Skills Monitoring and Development Application

Field of science Natural Sciences and Mathematics
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Geistė Buzytė
Adomas Paškevičius
-eva Mažvilaitė
Miglė Pliuskutė
Rokas Bergmenas
Vilūnė Rauluševičiūtė

Head: Dr. Liepa Bikulčienė

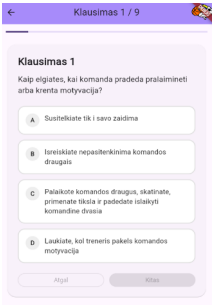
Kaunas University of Technology

Description of the work

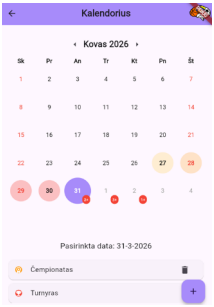
“Algora” is a mobile application designed for the development of athletes’ soft skills and team performance analysis. The system evaluates skills such as leadership, communication, teamwork, and emotional well-being. Athletes and coaches can track individual and team progress, complete assessments, and analyze results. The solution helps improve team atmosphere, strengthen communication, and achieve better sports performance outcomes.

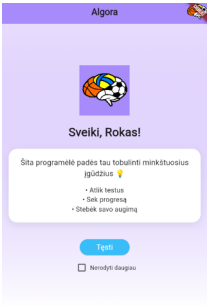
Technical or other problems that are solved with the work

“Algora” addresses a challenge faced by many team sport athletes and coaches: the difficulty of objectively assessing team dynamics, communication, leadership, and other soft skills that have a significant impact on athletic performance. In many cases, coaches only recognize these issues once they have already begun to negatively affect team atmosphere and competitive results.









The “Algora” mobile application enables athletes and coaches to regularly assess teamwork, emotional well-being, leadership, and communication skills. The system analyzes the collected data and allows users to monitor both individual and team progress over time.

The target market includes team sports organizations, sports schools, university teams, coaches, and youth sports associations. The product is positioned within the growing SportTech market, where increasing emphasis is being placed not only on physical performance but also on the psychological and emotional well-being of athletes. The rising demand for digital sports solutions indicates strong growth potential for the product in both the Lithuanian and international markets.

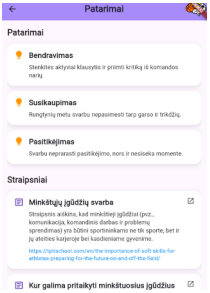
Novelty of the work

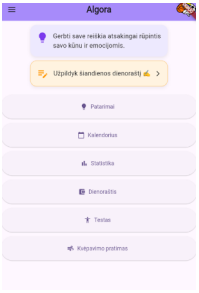
“Algora” distinguishes itself by focusing not on the analysis of physical performance, but on the assessment of athletes’ soft skills and team dynamics. Most sports applications currently available on the market monitor physical activity, performance statistics, or training outcomes, while placing limited emphasis on emotional well-being, communication, leadership, and teamwork.

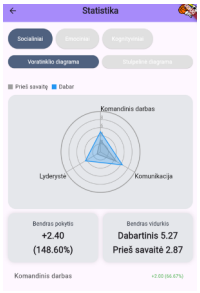
The application enables coaches and athletes to monitor team atmosphere in real time, analyze changes in soft skills, and identify issues at an early stage before they begin to affect performance. In doing so, it offers an innovative digital solution that brings together elements of sports psychology, data analytics, and the SportTech domain.

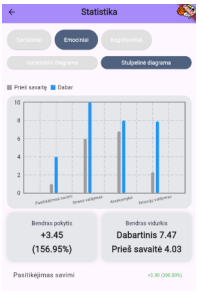
The benefits and value to the potential users

“Algora” provides athletes and coaches with the opportunity to gain a deeper understanding of team dynamics, strengthen communication, and develop essential soft skills. The application enables users to monitor changes in teamwork, leadership, emotional well-being, and motivation, allowing coaches to identify emerging issues more quickly and make informed decisions that contribute to improved team performance.









For athletes, the system supports self-assessment by helping them recognize their strengths and areas for improvement. For teams, it facilitates stronger interpersonal connections and fosters a healthier team environment. By consolidating relevant information into a single digital platform, the solution enables convenient data analysis and supports more effective achievement of sporting objectives.

KinezAssist

Field of science Natural Sciences and Mathematics
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Domantas Petrošius
Karolis Klėgeris
Matas Čyvas
Benediktas Šimas
Gerda Kliminskaitė
Miglė Andreikėnaitė

Head: Dr. Jurgita Čyvienė

Kaunas University of Technology

Description of the work

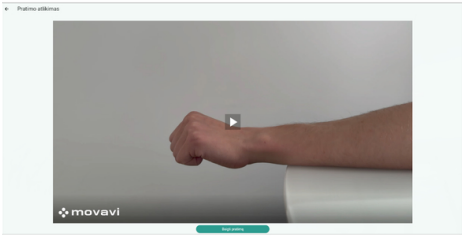
The product being developed is a website / mobile app. The product provides physiotherapists with a convenient way to track patients' progress, assign appropriate exercises for faster rehabilitation. While patients are provided with visual and audio instructions for exercise completion and the opportunity to communicate with physiotherapists on the platform itself.

Technical or other problems that are solved with the work

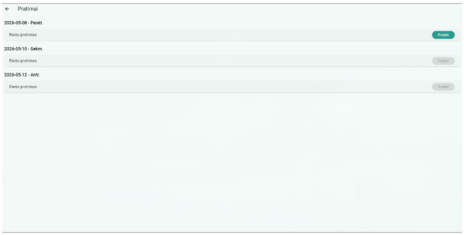


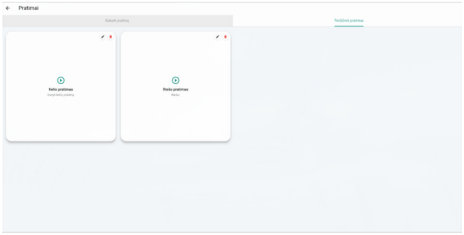
One of the major challenges faced today by individuals seeking physiotherapy services is the limited availability of specialists. Due to time constraints, physiotherapists are often unable to provide continuous supervision when patients perform prescribed exercises at home. Patients also

frequently lack clear guidance on how to execute exercises correctly, in what sequence they should be performed, or when new exercises should be introduced during home-based rehabilitation.



These challenges can slow down the rehabilitation process, reduce the effectiveness of treatment, and, in the worst-case scenario, lead to improper exercise execution that may cause further injury. Addressing these issues requires solutions that improve access to physiotherapy support while ensuring that patients can perform their rehabilitation exercises safely and correctly in a home environment.

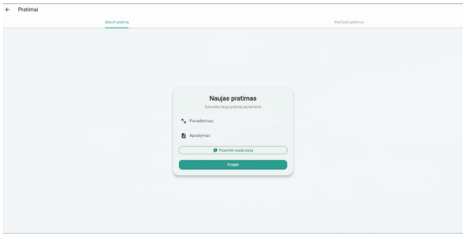


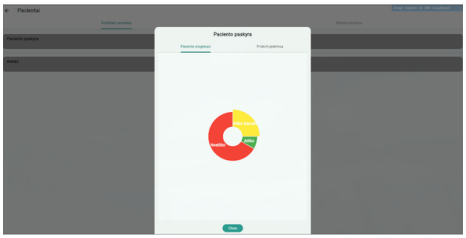


Novelty of the work

There is currently virtually no equivalent solution on the Lithuanian market that is fully tailored to the needs of local patients and healthcare professionals. Unlike many international platforms, this application eliminates language barriers by offering a simple, Lithuanian-language user interface that is accessible and easy to understand for users of all ages.

The key innovation of the solution lies in combining professionally recorded exercise videos with direct physiotherapist supervision, rather than merely providing generic exercise programs. It represents the first local tool of its kind that not only delivers rehabilitation guidance but also directly connects patients with their physiotherapists, enabling effective remote rehabilitation and continuous support throughout the recovery process.







The benefits and value to the potential users

The virtual physiotherapy assistant ensures continuity throughout the rehabilitation process and enables patients to exercise safely at home using accurate methodological guidance. By using the platform, patients can avoid long waiting times and receive immediate feedback that helps prevent mistakes and reduces the risk of injury when performing exercises independently.

For healthcare professionals, the solution significantly optimizes workflow by automating routine exercise supervision and enabling the remote monitoring of multiple patients simultaneously. The reduced direct workload allows physiotherapists to dedicate more time to complex clinical cases and the adaptation of individualized treatment plans.

As a result, the system creates mutual value: patients benefit from faster and more effective rehabilitation, while healthcare specialists can reduce the risk of burnout and make more efficient use of their professional time.

ParkOp

Field of science Natural Sciences and Mathematics
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

Nojus Gurauskas
Augustas Bartkus
Matas Karmazinas
Tautvydas Urbutis
Mintaras Vidra
Evita Vasyliūtė

Head: Dr. Jurgita Čyvienė

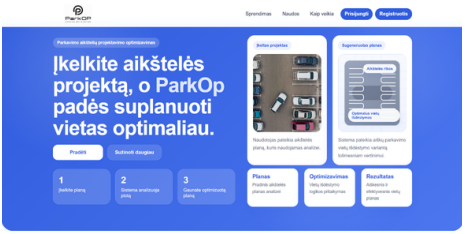
Kaunas University of Technology

Description of the work

The smart parking lot optimization system is designed to automatically generate an efficient parking space layout based on an uploaded site plan. The system analyzes area boundaries, buildings, obstacles, entrances and exits, while the algorithm selects a practical arrangement of parking spaces. The solution helps speed up parking lot planning, use available space more efficiently and reduce the time required for manual design.

Technical or other problems that are solved with the work

The product addresses the problem of inefficient and time-consuming parking lot planning. Designing parking facilities often requires professionals to manually assess site boundaries, obstacles, entry and exit points, parking space types, vehicle



dimensions, and applicable regulatory requirements. As a result, available space may not be utilized efficiently, and the preparation of an initial layout can be a lengthy process.

The proposed solution automates this process by generating potential parking layouts based on an uploaded site plan. The system assists users in maximizing the utilization of available space while significantly reducing the time required to develop preliminary designs.

The target market consists of B2B customers, including parking facility designers, companies involved in the planning and management of parking spaces, and real estate owners and operators. The market potential is considered promising, as the infrastructure, construction, and digitalization sectors increasingly demand tools that enable faster design decisions, reduce manual workload, and support the more efficient use of urban spaces.

Novelty of the work

Professional parking and infrastructure design tools already exist on the market; however, many of them operate within CAD environments, are highly complex, or are intended for broader infrastructure planning projects. The proposed solution focuses on a specific challenge: optimizing the layout of parking spaces based on an uploaded parking lot plan.

Unlike traditional design software, users do not need advanced technical expertise or access to sophisticated CAD tools. The primary objective is to quickly generate an initial parking layout through a user-friendly web-based system.

In this way, the product occupies a niche between complex professional solutions and users who require a fast, practical, and more accessible approach to parking optimization. It enables organizations to streamline the early stages of the design process while maintaining flexibility and ease of use.

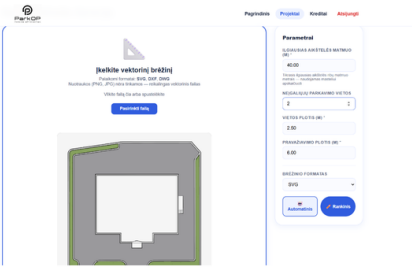
The benefits and value to the potential users

The product creates value for designers, companies, and organizations involved in the planning and management of parking facilities. The system enables users to generate an initial parking layout more quickly, reduces the need for manual design work, and helps maximize the utilization of available space within a given area.

Users can upload a parking lot plan, identify key zones and constraints, and receive an algorithmically generated parking layout tailored to the specified conditions. This approach saves time, minimizes the number of design revisions required, and allows users to evaluate multiple planning scenarios more efficiently.

The primary value of the solution lies in its ability to provide a clear and practical starting point for the design process, simplifying subsequent work for both parking facility designers and organizations responsible for developing or managing parking infrastructure.





“Energonas 3000” – An Energy Storage System Without Batteries

Field of science Natural Sciences and Mathematics
Type of innovation Hardware solutions (electronic devices, robotics, computer hardware and equipment, wearable devices, etc.)

Amelija Nicytė
Miglė Sadauskaitė
Mantas Stalioraitis
Džiugas Janušaitis
Redas Paulionis
Markas Siju Gu

Head: Dr. Benas Gabrielis Urbonavičius

Kaunas University of Technology

Description of the work

“Energonas 3000” is a supercapacitor-based energy storage device designed to power emergency lighting and EXIT signs during power outages. In this solution, traditional batteries are replaced with a longer-lasting and more sustainable energy storage component. The product helps reduce battery replacement, maintenance costs, and chemical waste. It is designed for organizations that must ensure reliable building safety infrastructure, such as schools, hospitals, offices, public institutions, and other facilities.

Technical or other problems that are solved with the work

The proposed product addresses the reliability and maintenance challenges associated with emergency lighting systems and EXIT signs. Current solutions typically rely on chemical batteries or rechargeable accumulators that gradually degrade over time, lose storage capacity, and require periodic replacement. As a result, organizations incur additional

maintenance costs, administrative burdens, and must manage the disposal of used batteries as hazardous chemical waste.

The most critical issue arises when a deteriorated battery fails during a power outage. In such situations, EXIT signs may not illuminate evacuation routes, potentially endangering occupants and exposing building operators to legal liability.

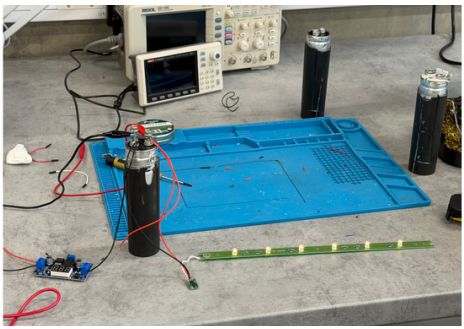
“Energonas 3000” addresses this problem by replacing conventional batteries with supercapacitors. This approach enables the development of a longer-lasting, more reliable, and more sustainable energy storage solution. By reducing maintenance requirements, minimizing battery waste, and improving the dependability of emergency lighting systems, the proposed solution enhances both operational efficiency and public safety.

Novelty of the work

The novelty of “Energonas 3000” lies in the use of supercapacitors instead of conventional chemical batteries in emergency lighting and EXIT sign systems. Most solutions currently available on the market still rely on rechargeable batteries that gradually degrade over time, require periodic replacement, and generate chemical waste.

Our solution distinguishes itself through its longer service life, faster energy storage capability, reduced maintenance requirements, and more sustainable operating principle. These advantages enable the development of a more reliable and environmentally friendly alternative to traditional battery-based emergency lighting systems.

By rethinking the way backup energy is stored, “Energonas 3000” offers an innovative approach that improves system dependability while reducing both operational costs and environmental impact over the product's lifecycle.



The benefits and value to the potential users

“Energonas 3000” provides potential users with a more reliable emergency lighting solution while significantly reducing the maintenance requirements of EXIT signs. By replacing conventional batteries with supercapacitors, organizations can minimize the frequency of battery replacements, lower maintenance costs, and reduce the associated administrative burden.

The solution also decreases the amount of chemical waste generated, contributing to the development of more sustainable building infrastructure. Its greatest value lies in offering a safer, longer-lasting, and lower-maintenance system suitable for a wide range of applications, including schools, hospitals, offices, public institutions, and other commercial and public buildings.

By enhancing the reliability of emergency lighting during power outages, “Energonas 3000” helps improve occupant safety while delivering long-term economic and environmental benefits to facility operators.

“Lingis” – A Learning and Rest Optimization Application

Field of science Natural Sciences and Mathematics
Type of innovation Digital solutions (mobile applications, web applications, software platforms, algorithms, games, etc.)

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Description of the work

“Lingis” is a personalized study and rest planning application designed to help students prepare more effectively for exams, assignments and other academic tasks. In the app, users enter the assessment date, task list, priorities, study type and available free time. Based on this information, as well as the user’s energy level, sleep, motivation and current well-being, the system generates an individual study plan with integrated rest breaks. The application does not work as a strict fixed timetable; users can adjust, extend or change study and break sessions according to their needs. In this way, “Lingis” helps students organize their preparation more clearly, avoid chaotic last-minute studying and maintain a healthier balance between productivity and rest.

Technical or other problems that are solved with the work

“Lingis” addresses a challenge highly relevant to university students: difficulties in managing study time, insufficient rest, and the growing risk of



burnout. When preparing for exams and coursework deadlines, students often face large volumes of information, overlapping deadlines, and uncertainty about where to begin. As a result, studying becomes chaotic, tasks are postponed until the last minute, and rest is either left unplanned or neglected altogether. This reduces productivity, increases stress, and negatively affects emotional well-being.

“Lingis” is being developed specifically for students in Lithuanian higher education institutions. Its primary users include motivated students seeking to improve their academic performance and time management skills, as well as those who have not yet developed strong planning habits but wish to cultivate them. The application supports users in organizing their study processes, scheduling periods of rest, and maintaining a healthy balance between academic responsibilities and personal life.

The potential target market for “Lingis” in Lithuania is estimated at approximately 50,000 users. Market growth is further supported by the increasing demand among students for digital, personalized, and user-friendly productivity solutions that can assist them in managing their everyday activities more effectively.

Novelty of the work

Many learning applications currently available on the market offer functionalities similar to certain features of “Lingis”; however, these capabilities are typically distributed across separate applications. “Lingis” differentiates itself by integrating multiple solutions into a single platform, providing students with a more comprehensive and convenient experience.

Furthermore, “Lingis” uniquely considers the student's emotional and physical well-being when recommending the duration and intensity of

study sessions. The application actively emphasizes the importance of rest by encouraging regular breaks between learning periods and adapting recommendations to the user's condition.

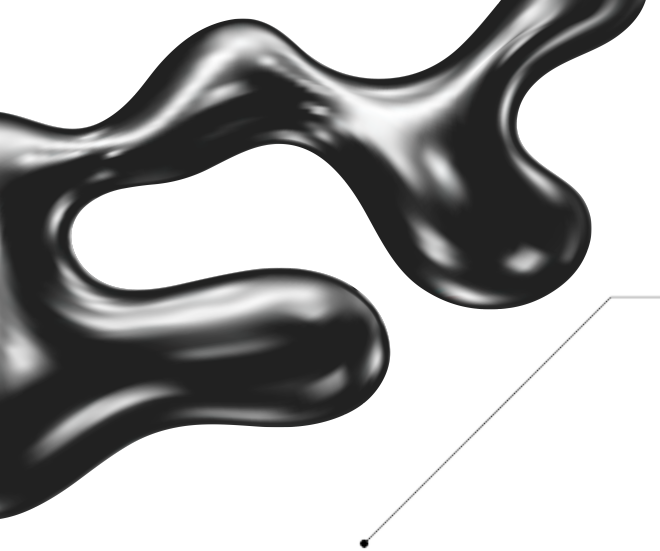
This holistic approach extends beyond traditional productivity tools by combining study planning, well-being awareness, and rest optimization within one application, supporting both academic success and sustainable study habits.

The benefits and value to the potential users

“Lingis” provides users with a clearer and more personalized study plan, helping them prepare for assignments and examinations more effectively. The application enables students not only to record their tasks but also to understand when and what they should study based on deadlines, priorities, available time, and personal well-being.

Integrated rest breaks help reduce fatigue, maintain concentration, and prevent the chaotic last-minute studying that often occurs before important assessments. Users can adjust their schedules according to their individual needs, allowing the application to function as a flexible learning companion rather than a rigid control tool.

The core value of “Lingis” lies in reducing stress, increasing structure, and promoting a healthier balance between studying and rest, ultimately supporting both academic performance and overall well-being.





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