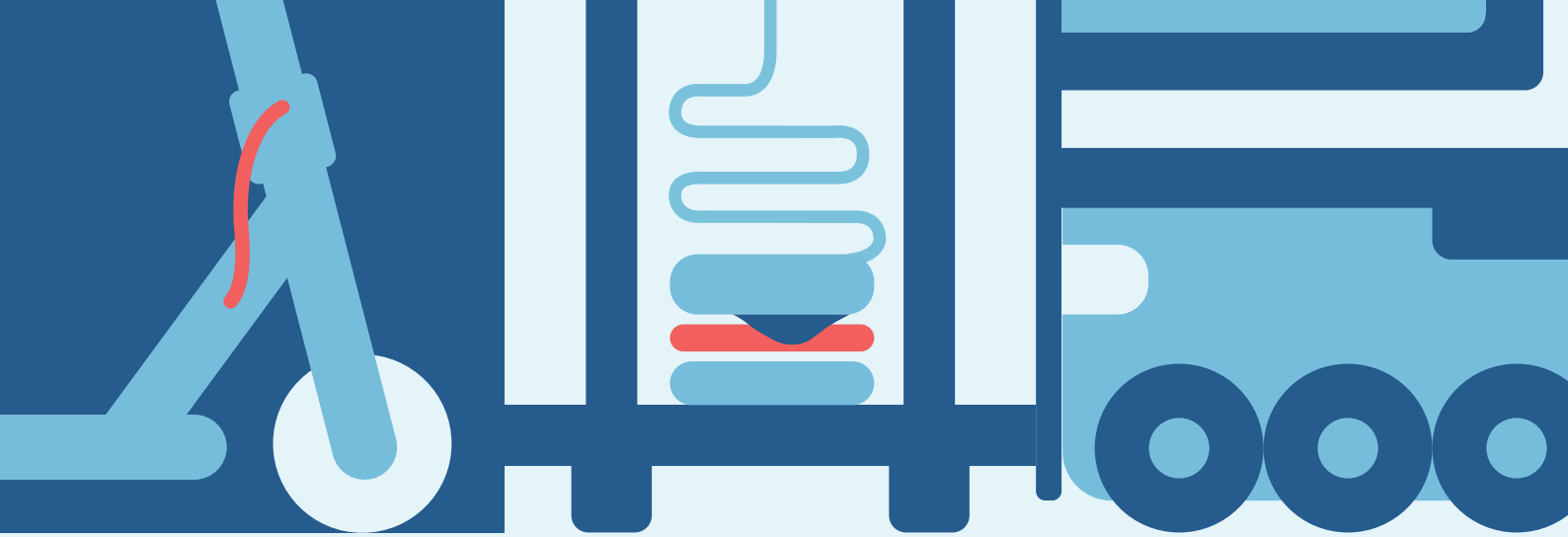


TECHNO RAMA'25

LET'S MAKE IT!

ktu
1922

Catalogue
technorama.ktu.edu

TECHNORAMA is an innovation exhibition organized by Kaunas University of Technology (KTU) Startup Space and its partners, bringing together innovation creators - students, researchers, and technology enthusiasts - for over two decades.

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 2025, 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	75 innovative projects presented at the exhibition
Participants	Over 300 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 €10,000, dedicated to fostering innovation and supporting future development

Public vote:

Partners	9 key partners collaborating to make the event success
Public Voting	Up to 10,000 votes for the best innovation from public voting
Pitch Battlet	27 teams presented their ideas on the "Pitch Battle" stage

More information: technorama.ktu.edu

Organizers:

ktu 1922

ktuSTARTUP space

Main partner:

Rocket® software

Partners:

FESTO

HOSTINGER

Littelfuse®
Expertise Applied | Answers Delivered

LEMONA electronics

esa BUSINESS INCUBATION CENTRE Lithuania
operated by VITP
VISORIAI. TECHNOLOGY PARK

TutoTOONS

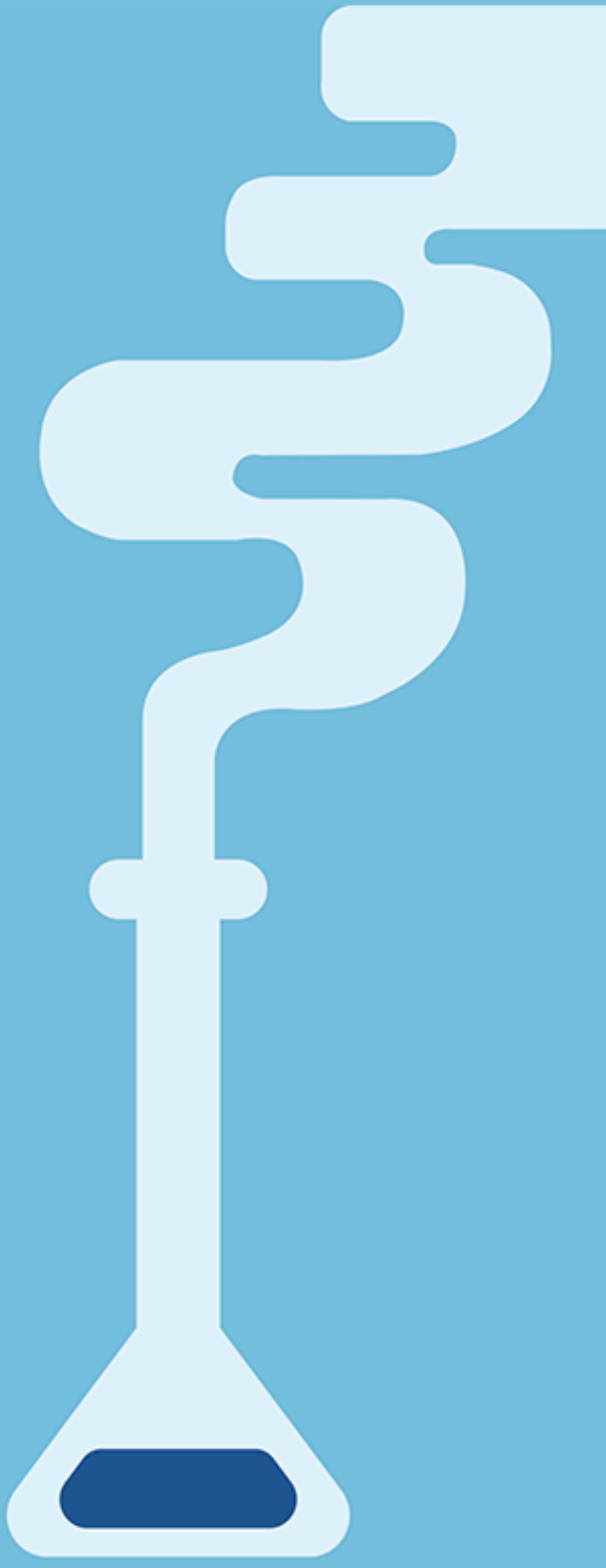
ktu alumni

Information partner:

Lrytas

Content

Chemical technologies



TRL 4 – technology validated in lab

Crispy cookies “Traški nostalgija”

Field of science Chemical Technologies
Type of innovation Food (e.g. new food product, novel food ingredients)

Agnė Stankaitytė
Gintas Neverauskas
Head: Aura Kaminskaitė

Kaunas University of Technology

Description of the work

These crispy cookies with pieces of caramelized nut brittle and a light cinnamon aroma invite you to return to cosy childhood memories. The traditional composition – wheat flour, vegetable oils, egg powder, sugar, and a surprising but familiar ingredient, caramelized nut brittle – ensures a real taste without artificiality. Every bite is a moment of warmth, comfort, and emotional connection.

Technical or other problems that are solved with the work

Cookies with caramelized nut brittle are the perfect solution for those seeking genuine taste without disappointment, for anyone wanting to find comfort in the everyday, or to surprise loved ones with a heartfelt, meaningful treat. The product's target market includes those who seek nostalgic flavours, appreciate retro aesthetics, and are emotional consumption buyers.

Novelty of the work

The only cookies on the market made with real caramelized nut brittle pieces.

The benefits and value to the potential users

The product stands out with its distinctive crunch, a surprisingly short ingredient list, and the use of familiar, high-quality components. These cookies bring back a nostalgic, traditional taste while offering a fresh flavour combination (cookie + candy) that revives warm childhood memories.

TRL 2 – technology concept formulated

Cloud Seeding - weather modification technique

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

Ignas Mikolaitis
Miglė Cirtautaitė
Head: Simonas Aukštuolis

Thunderclap Labs

Description of the work

Team "Thunderclap Labs" presents a project on Cloud Seeding. This is a weather modification technique aiming to enhance precipitation by introducing specific substances (e.g., silver iodide or salts) into clouds, which act as condensation or ice nuclei. Our goal is to explore this technology's potential in Lithuania and develop a rocket prototype designed for accurately dispersing these seeding agents within clouds. We have completed extensive research, created a 3D rocket model, and have built part of the physical prototype. The project investigates possibilities for increasing water resources, aiding agriculture, or reducing hail damage. We aim to develop an effective and adaptable cloud seeding system.

Technical or other problems that are solved with the work

The project addresses problems arising from uneven or insufficient precipitation distribution and damaging weather phenomena like hail. In Lithuania, farmers periodically face losses due to droughts, and sudden hailstorms can destroy parts of the harvest. Climate change may further exacerbate these issues. Cloud seeding, using the rocket system we are developing, offers a potential method to locally increase precipitation at strategically important times (e.g., during drought) or reduce the size of hailstones, thereby protecting crops and potentially stabilizing water resources on a local scale.

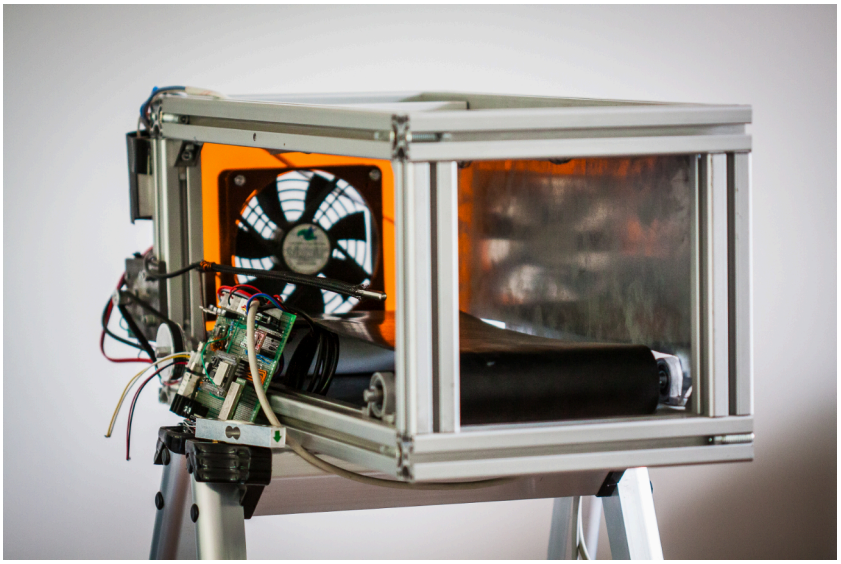
Novelty of the work

The work introduces a novel approach to cloud seeding, differentiating itself from current market solutions by researching and utilizing a new, eco-friendly seeding agents, employing a more precise, drone and rocket-based dispersal system, demonstrating higher precipitation

enhancement efficiency. Unlike traditional methods that face environmental challenges or variable effectiveness, our solution aims to minimize ecological footprint and achieve consistent results. This represents a significant step forward in weather modification technology.

The benefits and value to the potential users

For potential users, particularly farmers, our cloud seeding technology offers financial stability and risk reduction. Locally enhanced precipitation during droughts would help save harvests and ensure more stable incomes. Hail suppression could protect crops from destruction, reducing losses. For governmental institutions, it could serve as an additional tool for water resource management and agricultural support during crises. For the insurance sector, a potential means to reduce payouts for weather-related damages. The core value created is increased resilience against adverse weather events and their resulting economic consequences.



TRL 4 – technology validated in lab

Fermented and Encapsulated Phycocyanin-Rich Spirulina Extract for Healthcare Applications

Field of science Chemical Technologies
Type of innovation Materials (e.g. nanomaterials, composites, smart materials, sustainable materials)

Dovilė Liudvinavičiūtė
Shahana Aboobacker
Aušra Šipailienė
Ramunė Rutkaitė
Vaida Kitrytė-Syrpa
Head: Dr. Michail Syrpas

Kaunas University of Technology

Description of the work

There has been a growing emphasis on human health and a healthy lifestyle in scientific research and public health initiatives. In this work, fermentation of phycocyanin-rich extracts from A. platensis, known for its immunomodulatory, antioxidant, anti-inflammatory, antihypertensive, antidiabetic, and anti-obesity properties, was employed to further enhance the bioavailability and physiological efficacy of these health-promoting constituents. The fermentation process also introduces potential probiotic effects and further boosts biofunctional attributes. To maintain the stability and integrity of these bioactive compounds, we applied encapsulation using food-grade materials, such as modified starch and whey protein isolate. Advanced drying techniques were subsequently utilized as a science-driven solution to prevent degradation and produce shelf-stable powdered formulations, ensuring the effective delivery of active components to consumers.

Technical or other problems that are solved with the work

Fermentation of phycocyanin-rich extracts from Arthrospira platensis (spirulina) using lactic acid bacteria, combined with encapsulation, offers a solution to several nutritional and health challenges. Fermentation enhances bioavailability by breaking down complex nutrients for easier absorption and improves sensorial properties and biofunctional attributes by introducing beneficial probiotics that support gut health and immune function.

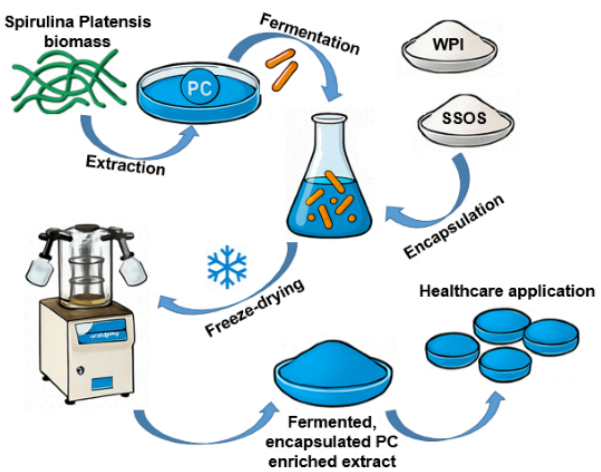
Encapsulation further stabilizes the bioactive ingredients, such as phycocyanin and probiotics, ensuring their controlled release within the body. This dual approach addresses common issues, including poor nutrient absorption, unstable active ingredients, and unpleasant taste, thereby increasing the viability of spirulina-based formulations in functional foods, nutraceuticals, and dietary supplements. Moreover, fermented encapsulated spirulina extracts provide a natural alternative to synthetic supplements and food colorants, contributing to sustainable health and wellness solutions. By combining enhanced stability, optimized absorption, probiotic support, and improved biofunctional properties, these innovative formulations offer substantial potential in developing nutrient-dense functional foods.

Novelty of the work

The novelty of this work is its innovative dual approach, combining lactic acid bacterial fermentation and encapsulation of phycocyanin-rich spirulina extracts. Fermentation improves bioavailability by breaking down complex nutrients into easily absorbed forms and introduces beneficial probiotics that support gut health and immunity, while also enhancing flavor and sensory qualities. Encapsulation protects these sensitive bioactives from degradation, ensuring controlled release and sustained efficacy in the body. This synergistic strategy overcomes common limitations of spirulina formulations—such as poor stability, nutrient loss, and off-putting taste—offering a natural, sustainable alternative to synthetic supplements and food additives, and paving the way for advanced nutrient-dense functional foods and nutraceutical products.

The benefits and value to the potential users

Fermented encapsulated spirulina extracts offer enhanced nutrient absorption and stability, improving overall health benefits. Fermentation breaks down complex nutrients and introduces beneficial probiotics that support gut health and immune function, while enhancing flavor and texture. Encapsulation protects sensitive compounds like phycocyanin, ensuring controlled, effective release in the body. This natural, sustainable solution serves as an attractive alternative to synthetic supplements and food colorants. Ultimately, users gain a nutrient-dense, functional product that addresses common challenges such as poor absorption, instability, and unappealing taste, making it highly valuable for those seeking to optimize wellness and integrate advanced nutritional support into their daily diets.



TRL 4 – technology validated in lab

Ni-Cu catalyst for cleaner water – Science against Pollution

Field of science Chemical Technologies
Type of innovation Materials (e.g. nanomaterials, composites, smart materials, sustainable materials)

Dr. Ming-Chun Lu
Head: Dr. Dainius Martuzevičius

Kaunas University of Technology

Description of the work

The aim of this work is to develop a sustainable and efficient technology for the removal of textile dyes from water. The study applies a bimetallic Ni-Cu catalyst synthesized using two methods: simple chemical precipitation and fluidized bed homogeneous crystallization (FBHC). The latter technique allows for the initial removal of heavy metals from wastewater, which are then reused to produce the catalyst. The results showed that the dye can be effectively removed even with low amounts of reagents. The study aimed to evaluate not only the efficiency of the technology, but also its potential for application in industrial wastewater treatment, considering both environmental and economic criteria.

Technical or other problems that are solved with the work

The textile industry generates large volumes of wastewater contaminated with synthetic dyes. These compounds are highly stable, resistant to degradation, toxic, and significantly reduce water quality. Conventional treatment methods are often ineffective or introduce new problems, such as requiring strong acidification of the medium, the use of toxic reagents, and excessive sludge generation. At the same time, many industrial wastewaters are also polluted with heavy metals, which are difficult to remove.

The proposed solution aims to address both issues simultaneously: using a fluidized bed method, heavy metals are removed from wastewater and subsequently used as a catalyst for dye degradation. In this way, both heavy metal and organic pollutant loads are reduced, and hazardous wastewater components are transformed into valuable resources. This solution is

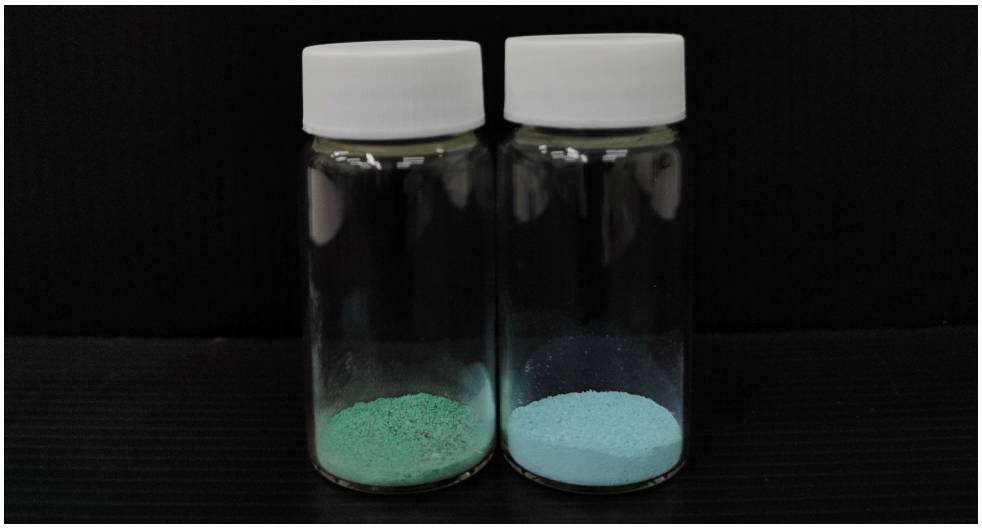
designed to help industrial companies tackle environmental challenges in a comprehensive, efficient, and resource-saving manner.

Novelty of the work

This solution applies an iron-free Ni-Cu catalyst that operates across a wide pH range, eliminating the need for medium acidification and making the process simpler and more sustainable. The innovation lies in the use of fluidized bed homogeneous crystallization: during this process, heavy metals recovered from wastewater are precipitated into a solid form that is directly used as an active catalyst for the oxidation of organic pollutants. In this way, one pollution removal step becomes a resource for another. Hazardous contaminants (heavy metals) are transformed into a useful product, contributing to pollution reduction. This approach not only lowers environmental impact but also significantly supports the development of sustainable and resource-efficient technologies.

The benefits and value to the potential users

This technology enables industrial companies to optimize wastewater treatment processes and reduce the need for chemical reagents. As the catalyst operates across a wide pH range, there is no need for additional acidification of the medium, which simplifies the process and lowers operational costs. The solution is particularly relevant for the textile, surface treatment, and other industries dealing with dye-contaminated wastewater. Moreover, the use of recovered materials aligns with circular economy principles and promotes responsible resource management. This technology not only reduces operational expenses but also helps companies comply with increasingly strict environmental regulations and enhances their corporate social responsibility.



TRL 4 – technology validated in lab

ChloreUp: Probiotic-Enhanced Fermented Algae Chlorella vulgaris for Health Innovation

Field of science Chemical Technologies
Type of innovation Food (e.g. new food product, novel food ingredients)

Hakki Bilgin
Head: Dr. Michail Syrpas

Kaunas University of Technology

Description of the work

Recently, there has been a rising demand for natural-based products and a growing interest in natural, sustainable health solutions. Microalgae have gained attention due to their rich nutritional value and potential health benefits. Among species, the full potential of Chlorella vulgaris has still not been investigated. This work helps to uncover its unexplored potential by using enzymatic hydrolysis and fermentation with lactic acid bacteria to investigate improvements on bioavailability and bioaccessibility of value-added compounds. This novel, integrated bioprocessing could help enhance the nutritional value of Chlorella vulgaris, which could have valuable health benefits. The final product could also have the potential to be used in functional foods, supplements, and pharmaceuticals. By exploring the hidden potential of Chlorella vulgaris, this work might open the door to new opportunities for creating innovative health products from microalgae.

Technical or other problems that are solved with the work

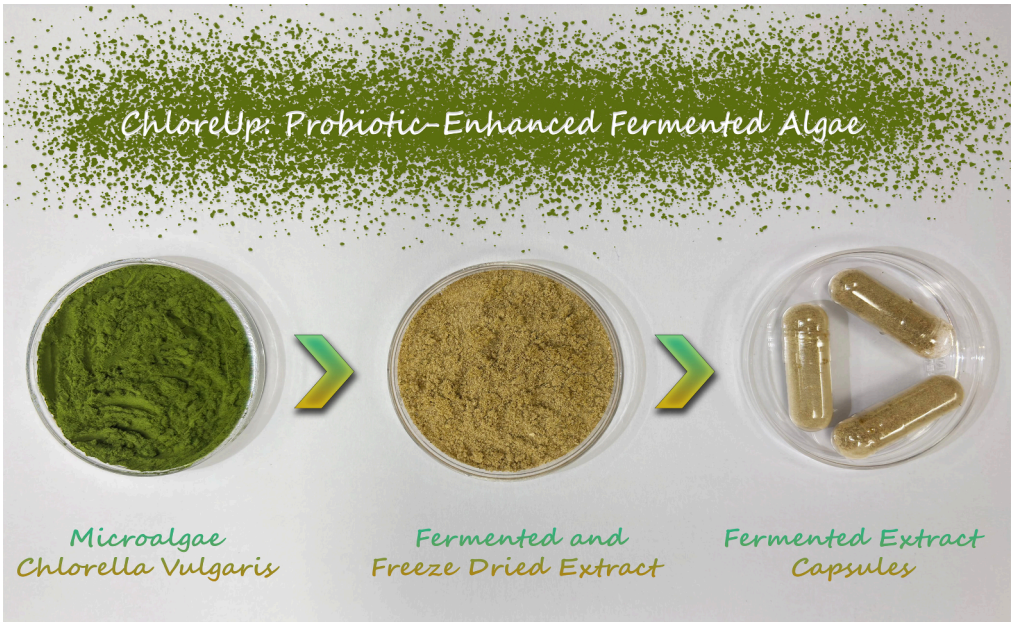
Chlorella vulgaris is a nutrient-dense microalgae. However, its rigid cell wall structure limits the bioavailability, which could limit the potential utilisation of these valuable components. To address this limitation, the biomass undergoes enzymatic hydrolysis followed by fermentation with lactic acid bacteria. The first step of the process, enzymatic treatment, helps enhance the accessibility of carbon sources and valuable compounds, which improves the efficiency of the further fermentation process. This integrated bioprocess could enhance the potential utilization of Chlorella vulgaris. Besides, it could also provide a final product with better sensory characteristics to be used in various food, nutraceutical, and pharmaceutical formulations. Including the probiotic aspect, the final fermented product could potentially develop health–promoting products and supplements.

Novelty of the work

The novelty of this work lies in the integrated bioprocessing of Chlorella vulgaris to a higher added-value product using enzymatic hydrolysis and lactic acid bacterial fermentation. Unlike traditional microalgae applications, which face digestibility and bioavailability challenges, this approach could enhance the release of nutrients and bioaccessibility of value-added compounds while enriching the product with health-promoting microbial metabolites. This dual enhancement could offer a novel strategy for transforming microalgal biomass into a value-added ingredient for functional foods, nutraceuticals, and pharmaceuticals targeting gut health, immune support, and chronic disease management. Also, the potential of Chlorella vulgaris in probiotic-enriched forms has been largely unexplored, making this work a valuable contribution to the development of this field.

The benefits and value to the potential users

The fermented product created by integrated bioprocessing could have multiple health benefits for potential users, such as providing a rich source of bioavailable proteins and antioxidants, which could support immune function. Besides, including probiotic strains and their metabolites could promote a healthy gut microbiome, for improved digestion and reduced inflammation. Fermented Chlorella vulgaris product could be used in functional foods, supplements, and therapeutic formulations, making it appealing to health-conscious consumers and individuals seeking plant-based nutrition. Its natural origin and sustainable production add further value for users prioritising wellness and environmental responsibility.



TRL 4 – technology validated in lab

KarTU su VANDENVALA: a smart monitoring system for individual domestic wastewater treatment plants

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

Taurantas Uzdila
Martynas Tichonovas
Dalia Jankūnaitė
Head: Dr. Inga Urniežaitė

Kaunas University of Technology

Description of the work

The team presents a smart monitoring system for individual domestic wastewater treatment plants (DWTP), developed in cooperation with JSC Vandenvala. This is a unique and modern solution designed to effectively monitor and manage the maintenance of DWTPs, ensuring optimal performance and timely servicing, thus preventing environmental pollution.

The system combines a sensor module for monitoring DWTP performance parameters with software for data collection, processing, and transmission. One of the system's key features is its compatibility with most types of DWTPs, regardless of manufacturer or technological solution.

The technical devices (sensors) integrated into the monitoring system provide remote information on the performance of the DWTP. The sensors, integrated into the BNVI, ensure continuous and reliable data collection and timely notification to the service company when maintenance is needed.

Technical or other problems that are solved with the work

The developed monitoring system will ensure timely maintenance of the DWTP and thus improve the efficiency of the treatment of polluted water from individual houses, preventing

malfunctioning of the equipment and avoiding the release of inproperly treated wastewater into the environment. Compliant treatment of individual domestic wastewater is critical for the provision of safe and high quality drinking water and for the preservation of the environment due to the high prevalence of such treatment plants.

There is a strong emphasis on the quality wastewater treatment worldwide. With the continuous increase of wastewater management requirements and effluent quality standards, ensuring the proper functioning of DWTP systems is very important task. Therefore, in the future, systems capable of simultaneously monitoring and maintaining a large number of individual DWTPs will become critical and the need for such systems will continuously increase. As DWTPs are widespread throughout the world, it is likely that the development of a reliable, user-friendly, stable monitoring system could be adapted and deployed anywhere in the world. This innovation could potentially fill a unique niche in the market, offering a solution that currently has no direct competitors.

The product being developed is aimed at both DWTP users and service companies. Potentially, the product could also be used for monitoring the performance of the biological treatment stage in large wastewater treatment plants. It is estimated that a single system should be able to monitor several thousand individual DWTPs, each of which will have to be equipped with the sensor presented at the exhibition.

Novelty of the work

The DWTP monitoring sensor, presented in the exhibition, and the complete integrated monitoring system, which is now under development, are considered as innovations. There are currently about 70 000 individual DWTPs in Lithuania, designed to serve one or several families and small groups of people. However, there is no system in the Lithuanian and foreign markets that could monitor the operation of the devices, identify and plan the need for servicing the devices. The monitoring system to be developed will allow for efficient maintenance of DWTPs by remote monitoring of their operation and informing about the need for servicing of the equipment, as well as for detection and recording of malfunctions of the wastewater treatment system, thus avoiding possible spillage of polluted water into the environment or costly repair of the equipment. This technological innovation, which has a global novelty level, will help to save on maintenance costs and reduce the financial and environmental impact of potential incidents.

The benefits and value to the potential users

The innovative system includes innovative technological solutions to monitor DWTPs and to collect, process and communicate information on the DWTP performance and need of servicing. The product will have a wide range of positive effects: it will make it easier for DWTP owners to maintain their installations, avoid disruptions in DWTP operation and allow

more efficient planning of the work of the companies servicing the installations, and reduce the risk of environmental pollution. The monitoring data collected will also allow to perform increasingly reliable forecasting of plant performance over time and for anticipating targeted maintenance and repair needs.

This will reduce the risk of having to deal with non-operational wastewater treatment plants, avoid the risk of environmental pollution, and ensure long-term environmental sustainability by avoiding potential pollution inputs that would negatively impact local ecosystems.

TRL 4 – technology validated in lab

High-Protein Cookies With Whey Protein and Almond

Field of science Chemical Technologies
Type of innovation Food (e.g. new food product, novel food ingredients)

Md. Sagar Hossain
Head: Dr. Loreta Bašinskienė

Kaunas University of Technology

Description of the work

High-protein cookie made with almonds and whey protein was developed; which is the ideal snack for those with taste-conscious and health-conscious lifestyle. Here's a protein-packed cookie that will replace those sugary, processed snacks for the health-conscious and active folks among us. Made to be easily fit into any lifestyle, the product enhances intestinal wellness, satiety, and muscle condition.

Technical or other problems that are solved with the work

Many people, including working professionals, athletes, students, and health-conscious consumers, find it difficult to locate reasonably priced, high-protein snacks in the hectic pace of today. Offering little to no nutritional value, traditional snack options including fast food, candy bars, or processed cookies are frequently heavy in sugar, trans fats, and artificial additives. Lack of good choices for healthy snacking fuels bad eating patterns, low energy, and uneven nutrient intake.

High-protein cookie fills this nutritional gap by offering a clean-label, nutrient-dense snack that supports muscle health, boost energy etc. Made from natural food ingredients, it offers a balanced macronutrient profile high in fiber, good fats, and protein.

Moreover, many nations – especially where fast food rules snacking behavior – have a growing demand for better options that fit current dietary awareness. This product is especially designed to satisfy this demand, so enabling people to enjoy a great snack without sacrificing their health objectives.

Such a multifarious snack combining protein, fiber, clean-label ingredients, and taste is rare in the Lithuanian and more general Baltic markets. For active people who want convenience without compromising nutritional integrity, it provides a contemporary answer.

Novelty of the work

High biological value protein needed for muscle repair and maintenance is supplied by using whey protein and egg powder. Meanwhile, almonds contribute healthful fats, and ingredients such as chia seeds, dried berries, and desiccated coconut offer natural sources of nutritional fiber and antioxidants. These assist digestion, control of hunger, and immune system function. Unlike conventional cookies, which concentrate mostly on flavour or unique dietary characteristics, developed cookie combines taste and usefulness in a single composition.

This product distinct is its combination of clean-label formulation, multi-functional ingredients, and nutritional density, all given in a familiar and accessible cookie structure. Rarely encountered in the Lithuanian functional food market, this synergistic mix, offering protein, fiber, antioxidants, and natural sweetness, makes this cookie a creative and useful substitute for more conventional munchies.

The benefits and value to the potential users

Most cookies sold on the market tend to focus solely on either taste or a single dietary need such as being gluten-free or sugar-free often compromising nutritional balance in the process. In contrast, the high-protein cookie is carefully developed to offer both physiological benefits and great taste.

By including natural dietary fiber from chia seeds and desiccated coconut, heart-healthy fats from almonds, and high-quality protein from whey and egg, the cookie delivers functional value that supports satiety, digestive health, muscle repair, and stable energy levels. Unlike traditional snacks that spike blood sugar or leave consumers unsatisfied, this cookie promotes a feeling of fullness and supports a more balanced diet.

TRL 4 – technology validated in lab

Cookies With Chia Seeds, Dark Chocolate, and Bee Pollen – Innovative, Sweet, Crunchy, And Beneficial for Health

Field of science Chemical Technologies
Type of innovation Food (e.g. new food product, novel food ingredients)

Neringa Somaitė
Arnoldas Keibas
Head: Dr. Loreta Bašinskienė

Kaunas University of Technology

Description of the work

Crisp cookies with improved nutritional and sensory properties were developed to offer consumers a new and attractive food product. The goal was to use natural, fiber-rich ingredients while ensuring a pleasant taste and proper technological characteristics. Wheat and oat flours, egg powder, and chia seeds were selected to increase fiber content and improve texture. Coconut oil was used as natural alternative to margarine. For flavor and aroma, spices such as cinnamon, nutmeg, and cloves, vanilla extract were added. Cookies were also enriched with dark chocolate pieces, which provide antioxidants. Baked cookies are glazed with dark chocolate and lightly sprinkled with bee pollen to increase aesthetic attractiveness and bioactive compound content. The effect of ingredients on dough consistency, baking process, texture and nutritional value of cookies was analyzed during product development. The final product is wire-cut cookies – crunchy, aromatic, fiber-rich, and ideal for health-conscious consumers seeking both taste and benefits.

Technical or other problems that are solved with the work

The modern world is facing numerous challenges - from unsustainable food consumption to public health problems and the increasing daily tempo that drives each of us to find quick but quality solutions. The developed cookies with chia seeds, pollen and chocolate chunks can open the way to the market and contribute to solving current nutritional problems. In many countries, the growing number of people suffering from chronic obesity, diabetes and heart disease is creating a demand for value-added healthier products. Such biscuits are useful for

maintaining energy levels and improving general well-being. In the same way, biscuits containing chia seeds and pollen become not only a quick snack or dessert, but also a nutritious food with health benefits and bioactive substances. These ingredients not only improve the taste of the biscuits, but also create an opportunity to innovate, to expand the food market, to increase the range of products to satisfy the consumer who may be constantly looking for healthier, tastier and more exclusive products on the store shelves. Due to their health benefits, these cookies may be especially beneficial for elderly people, supporting digestion, metabolism, and providing antioxidants and other bioactive compounds valuable for maintaining well-being and good mood.

Novelty of the work

The developed cookies are unique, as there are currently no similar products on the market that integrate bioactive ingredients like chia seeds and bee pollen into flour confectionery goods - typically considered indulgent snacks high in sugar and fat. This product is made without palm oil, preservatives, artificial colorants, or flavor enhancers. As a sweet snack, it offers a healthier alternative, helping to enrich the diet with dietary fiber, omega-3 fatty acids, and other valuable bioactive compounds such as polyphenols, flavonoids, carotenoids, and vitamins A, C, and E, as well as essential minerals like iron, magnesium, and zinc. Desired product properties -nutrition, taste, and texture - are ensured by careful selection of ingredients, including chia seeds, oat flour, dark chocolate, and bee pollen.

The benefits and value to the potential users

Potential consumers who choose these specially developed cookies - enriched with dark chocolate, chia seeds, and bee pollen - receive a unique, flavorful product with notable health benefits and enhanced nutritional value. This product serves as a functional snack alternative, offering nutrients such as dietary fiber, antioxidants, vitamins, and minerals. These contribute to a stronger immune system, improved cognitive function, active metabolism, potential protection against certain cancers, better cardiovascular health, digestive support, and blood sugar regulation. Additionally, due to minimal processing and the ability to provide significant benefits in small amounts, chia seeds and bee pollen are gaining popularity as superfoods. The cookies combine indulgence with wellness, making them ideal for health-conscious individuals seeking both taste and nutritional functionality.

TRL 4 – technology validated in lab

Black Chocolate Cookies with Chili Flakes

Field of science Chemical Technologies
Type of innovation Food (e.g. new food product, novel food ingredients)

Greta Tverskytė
Margarita Klizaitė
Martynas Blažys
Head: Dr. Loreta Bašinskienė

Kaunas University of Technology

Description of the work

Black Chocolate Cookies with Chili Flakes were created to turn a classic treat into something bold and memorable. The recipe uses simple, high-quality ingredients in a carefully balanced blend. The base co mbines wheat flour, baking powder, and salt, with added ground cinnamon and cayenne pepper for gentle warmth. Intense 99% cocoa powder gives deep, smoky chocolate flavor, while baking margarine, white sugar, and vanilla sugar provide richness without being overly sweet. Eggs bind the dough, and dark chocolate chunks (50%) melt into pockets of bittersweet indulgence. Chili flakes offer a precise, slow-building heat that enhances the chocolate. A sprinkle of flaky sea salt tops each cookie, elevating the flavor and adding a refined touch.

Technical or other problems that are solved with the work

This product solves the problem when consumers are looking for a unique, unexpected dessert flavour - something that combines sweetness with a mild spiciness and high quality chocolate. Traditional biscuits are often too sweet, monotonous or do not have a clear flavour balance. The biggest challenge was to combine the intensity of 99% cocoa with the sweetness and mild heat of chilli. Several trials led to a perfectly balanced recipe that retains depth of flavour, texture and subtle spiciness.

The product is aimed at curious aged between 20 and 45, who are interested in non-traditional sweets and appreciate quality and taste innovation. The target market is the segment of healthier or exclusive desserts, which is growing rapidly both in Lithuania and across Europe. Based on consumption trends, the growing interest in premium confectionery and flavour experimentation shows the great potential of this product in a niche but growing market.

Novelty of the work

Black Chocolate Cookies with Chili Flakes offer a completely new tasting experience for dessert lovers. They appeal to people looking for complexity in their sweets — a mature, layered flavor that tells a story from first bite to lingering finish. They are perfect for upscale bakeries, cafes seeking signature items, specialty food markets, and food lovers who crave something beyond ordinary sweets. These cookies can easily become a conversation piece at events, a standout addition to a high-end dessert table, or a special gift for chocolate and spice enthusiasts. They also cater to the growing consumer demand for adventurous, global-inspired flavors in everyday foods. In a market flooded with predictable desserts, our cookies are a statement: that sweets can be bold, elegant, and unforgettable.

The benefits and value to the potential users

Chocolate and chili together is a combination that has ancient roots, but in the world of modern cookies, it remains rare and unexpected. Our use of 99% cocoa is especially novel — it brings an intensity of chocolate flavor that few cookies dare to explore. Instead of leaning into extreme spiciness or cloying sweetness, was created sought a sophisticated middle path: a cookie that whispers its chili heat slowly after the rich chocolate flavor fades. The dramatic dark color from the black cocoa, the sparkle of sea salt flakes, and the depth of flavor make these cookies not just a dessert, but an experience. It's a bold reinvention of the classic chocolate cookie — elegant, adventurous, and memorable.

TRL 4 – technology validated in lab

Cheese Onion Paratha: A Fusion of Flavor, Tradition, and Modern Convenience

Field of science Chemical Technologies
Type of innovation Food (e.g. new food product, novel food ingredients)

Sulaiman Eesha
Muhammad Ahsan Shahzad
Head: Dr. Loreta Bašinskienė

Kaunas University of Technology

Description of the work

Cheese Onion Paratha represents a new ready-to-cook frozen food item which aims to bring Asian flavor to European markets. With its origins in South Asia the savory flatbread undergoes a global adaptation by inserting grated fermented cheese within spiced wheat flour dough that features onion layers. The manufacturing process includes machine handling (dough mixing and bread forming) followed by freezing the product at -18°C to preserve both flavor and texture and freshness of the finished product. A few minutes on a hot pan transforms this paratha into a contemporary ethnic dish which provides European and Lithuanian consumers an easy method to enjoy traditional South Asia ethnic cuisine.

Technical or other problems that are solved with the work

Convenience, food safety, and product 'mix' are the criteria used by European families when deciding on household food items. On the other hand, traditional Asian stuffed breads like paratha typically demand time-consuming preparation, and specific manners of cooking and access to specific ingredients such as ghee, cheese, and regional spice blends. These ingredients and techniques are rarely used outside the home by non-native cooks, leading to barriers when trying to enjoy authentic parathas away from the country of origin. Our easy-to-cook Cheese Onion Paratha provides the answer by providing the original taste and texture without the hassle. Freezed, no preservatives, this product does away with kneading dough, layering of fat or sourcing of hard-to-access ingredients, all while still maintaining the standard of quality and safety. The target market of this product for the health and time-conscious consumers between twenty-five to forty-five years of age in the urban population of Lithuania and the wider region of Europe, where there is an increasing degree or cultural

diversity. This will include second-generation South Asians, global food explorers, and busy families desiring to eat, multicultural, and fast. According to a report by Market Data Forecast, the European Frozen Ready Meals Market was valued at approximately USD 95.86 billion in 2024 and is projected to reach USD 123.51 billion by 2029, growing at a CAGR of 5.2% during the forecast period. Our Cheese Onion Paratha is ideally placed to utilize this opportunity, with authentic, convenient, and clean-label appeal.

Novelty of the work

A South Asian traditional dish received a cultural fusion through the addition of a universally appealing ingredient: cheese. The product brings together flatbread basics from European cooking traditions while delivering original flakey layers and spiced cheese and onion filling. Standard offerings with this combination and format are absent from Lithuanian frozen food marketplaces.This innovative product belongs to the flourishing ethnic and global food category while serving consumers of all ages during various eating situations.

The benefits and value to the potential users

Our Cheese Onion Paratha is a quick and easy meal operation which is ideal for students and professionals and for families. Made of wheat flour, onions, and cheese, it provides balanced nutrition carrying carbs, protein, and fiber. Enjoy real South Asian taste in minutes directly from the freezer – no cooking skills required. It is vegetarian friendly, kids' approved, packed individually for portion control and less waste. Whether consumed in the morning, as a midday snack, or with soups and dips, it is a multi-purpose eminently clean label product free from preservatives and additives. At an affordable price, but gourmet, it unites second generation South Asians and the world's food lovers with their cultural roots – it is an experience that combines the comfort food and culinary adventure.

TRL 6 – technology demonstrated in relevant environment (industrially relevant)

Optimization of a Model for Organic Compound Generation

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

Meda Antanaitytė
Meda Surdokaitė
Emilijus Kaušpėdas
Gabrielius Salyga
Valdas Mizaras
Head: Dr. Audrius Bučinskas

Kaunas University of Technology

Description of the work

The project is based on the idea of generating organic compounds for the investigation of OLED emissive layers and predicting their HOMO/LUMO energy levels, glass transition temperature (Tg), absorption/emission spectra, and ΔEst values. This concept is being developed by researchers at the Department of Polymer Chemistry at Kaunas University of Technology (KTU) using their custom-built robotic process automation (RPA) model. However, the current model has several limitations, such as an underdeveloped user interface, duplication of generated structures, excessive analysis steps, and slow result generation. Inspired by their approach, we set out to improve the KTU Polymer Department's RPA model by implementing a data optimization mechanism using SMILES notation, with the goal of eliminating duplicate structures and accelerating computational processing.

Technical or other problems that are solved with the work

The project addresses problems arising from uneven or insufficient precipitation distribution and damaging weather phenomena like hail. In Lithuania, farmers periodically face losses due to droughts, and sudden hailstorms can destroy parts of the harvest. Climate change may further exacerbate these issues. Cloud seeding, using the rocket system we are developing, offers a potential method to locally increase precipitation at strategically important times

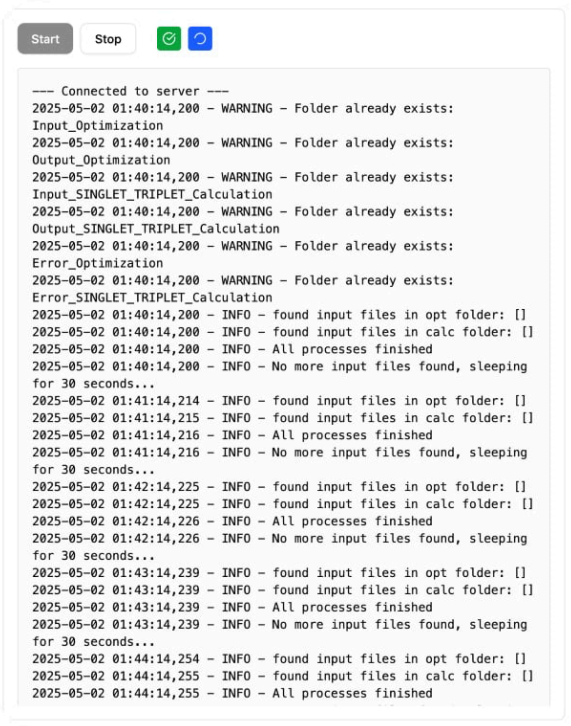
(e.g., during drought) or reduce the size of hailstones, thereby protecting crops and potentially stabilizing water resources on a local scale.

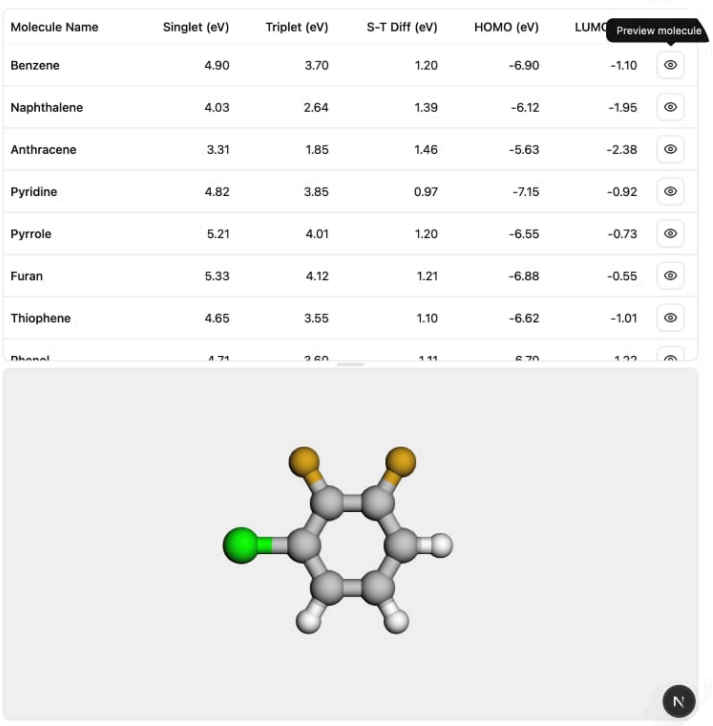
Novelty of the work

The Gen-DL model is capable of generating new molecules based on input and uses artificial intelligence to calculate only the HOMO/LUMO gap values and absorption/emission spectra in different solvents. Although the model is a direct competitor, it does not provide the same benefits. It cannot calculate ΔEst values or glass transition temperature (Tg)—parameters essential for OLED emissive layer research. The QMugs model does not meet the same needs and is not a direct competitor, as it cannot generate new molecules based on an initial scaffold. Although it does calculate one parameter relevant to OLED emissive layer research, the model is publicly available.

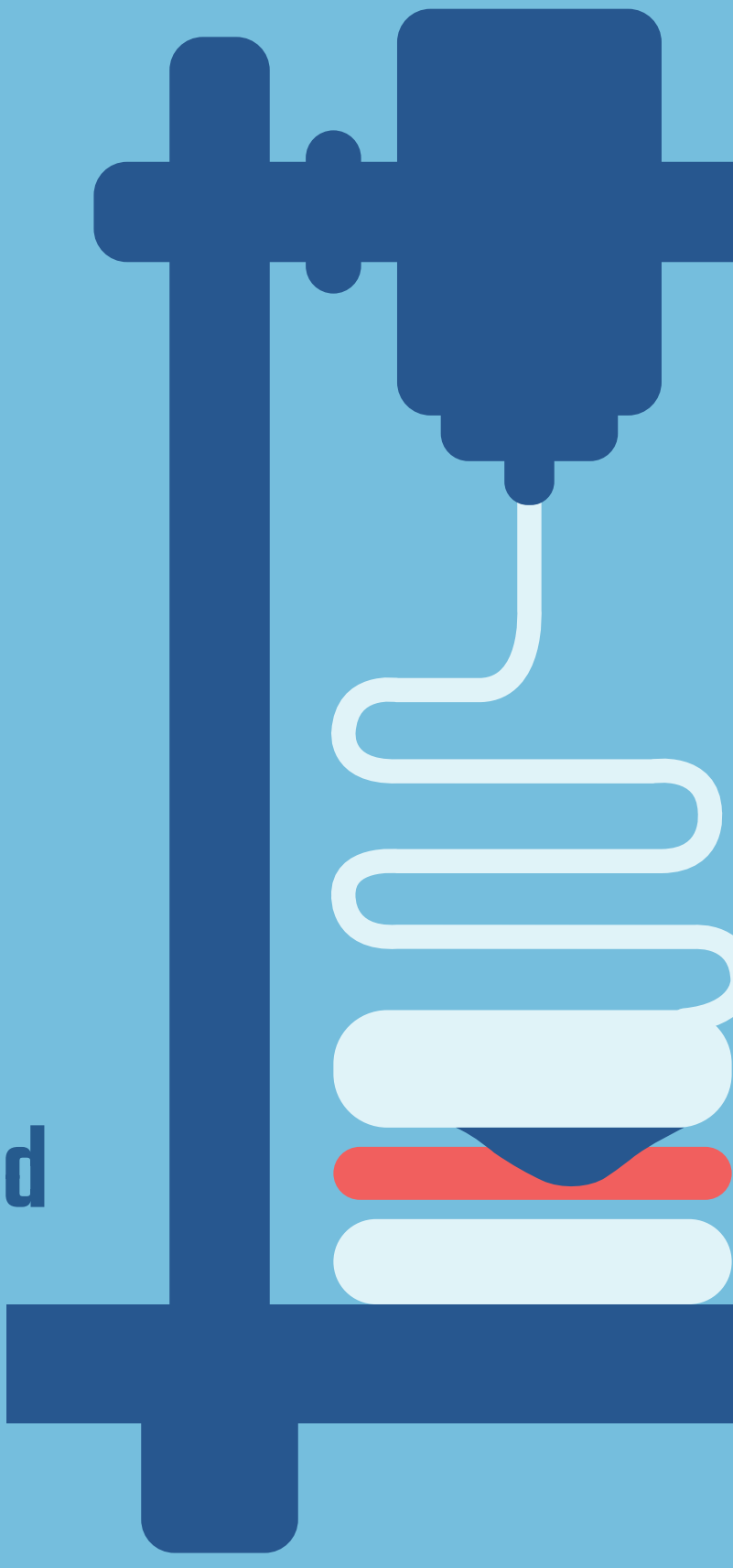
The benefits and value to the potential users

Such a model enables the generation of molecules tailored for organic light-emitting diodes (OLEDs) based on specified parameters, using quantum mechanical calculations and physicochemical principles to ensure high parameter accuracy and process optimization. This model is particularly important for scientists specializing in OLED synthesis and green technologies due to the following reasons: optimization of chemical reactions – it simplifies the selection of compounds suitable for use in OLED devices by allowing the generation of molecules with targeted properties. Resource efficiency – it reduces the need for real experimental research, as the selection of molecules with suitable properties takes place on a virtual platform.





Construction and Architecture



TRL 5 – technology validated in relevant environment (industrially relevant)

LightMirror

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

Oleksandra Bulanova
Marcel Dong
Head: Ionescu Dimitri

Description of the work

LightMirror develops innovative reflective panels that channel sunlight into hospitals and care homes, reducing reliance on artificial lighting and heating. Installed along roof edges, these panels redirect natural light into surrounding buildings, transforming it into a controllable resource that lowers energy costs while enhancing the well-being of patients and residents.

Technical or other problems that are solved with the work

LightMirror addresses the challenge of high energy consumption and insufficient natural lighting in hospitals and care homes. For example, Polish hospitals consume around 611 kWh/m² annually, far above the EU benchmark of 110 kWh/m². This results in higher operational costs and carbon emissions while also compromising patient recovery and staff well-being especially since 68% of hospital rooms lack direct sunlight.

Target Market

LightMirror primarily focuses on large healthcare facilities. Secondary markets include public schools and government buildings, but healthcare remains the priority due to its urgent modernization needs, high energy demand, and increasing sustainability requirements.

Market Size and Growth Potential

The market for energy-efficient healthcare renovations is projected to reach €150 billion in Central and Eastern Europe by 2030, driven in part by initiatives such as Rebuild Ukraine. Within this context, LightMirror estimates a serviceable obtainable market of €3–5 million over the next three years, targeting 50 healthcare facilities in Poland, Ukraine, and Lithuania, with individual project values ranging from €50,000 to €250,000.

Globally, the energy-efficient building market is growing at a CAGR of 8–9% through 2030, with healthcare emerging as a key growth driver due to its high energy intensity and strong regulatory incentives for decarbonization.

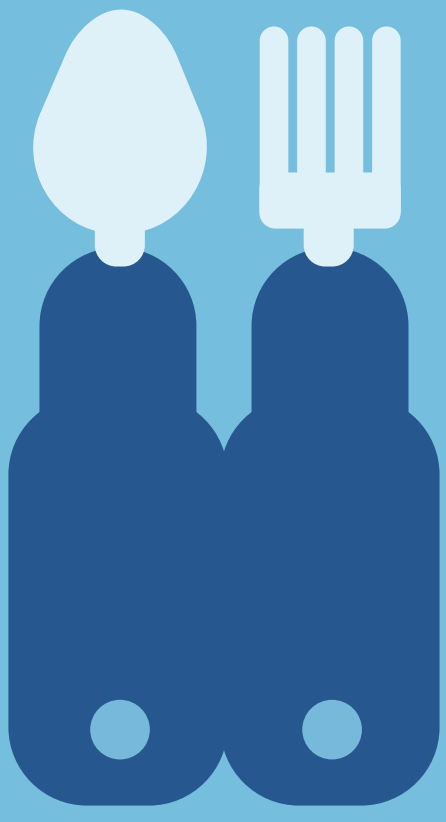
Novelty of the work

LightMirror's panels lower energy costs by channeling natural sunlight into hospitals and care homes, reducing reliance on artificial lighting and heating. This creates healthier indoor environments for patients and staff, while also lowering utility bills and improving comfort. The system is simple to install, requires minimal maintenance, and helps institutions meet sustainability goals by cutting carbon emissions.

The benefits and value to the potential users

Our Cheese Onion Paratha is a quick and easy meal operation which is ideal for students and professionals and for families. Made of wheat flour, onions, and cheese, it provides balanced nutrition carrying carbs, protein, and fiber. Enjoy real South Asian taste in minutes directly from the freezer – no cooking skills required. It is vegetarian friendly, kids' approved, packed individually for portion control and less waste. Whether consumed in the morning, as a midday snack, or with soups and dips, it is a multi-purpose eminently clean label product free from preservatives and additives. At an affordable price, but gourmet, it unites second generation South Asians and the world's food lovers with their cultural roots – it is an experience that combines the comfort food and culinary adventure.

Design and Mechanics



"ConnRAD" – Multifunctional Background Radiation Detector

Field of science Design
Type of innovation Design (e.g. product design, user experience design concept, architectural design, fashion design)

Head: Dr. Daiva Milašienė

Kaunas University of Technology

Description of the work

With growing geopolitical tensions and the rising threat of conflict, demand for personal safety solutions is increasing. In response, ConnRAD was developed - a multifunctional personal radiation detector designed for both everyday use and emergency situations.

The device integrates four key functions: a highly sensitive Geiger–Mueller counter, ambient temperature and atmospheric pressure sensors, a real-time clock, and an FM radio receiver - an unmatched feature set in the market. ConnRAD allows users to monitor radiation levels while simultaneously receiving critical updates via radio broadcasts.

Powered by two lithium-ion batteries and rechargeable through a USB-C port, the device operates autonomously for up to 10 days. It is designed to be both comfortable to hold and practical in diverse conditions.

More than just a piece of advanced technology, ConnRAD is a personal safety solution for those who value awareness and preparedness in an unpredictable world.

Technical or other problems that are solved with the work

In today's climate of geopolitical tension and heightened awareness of nuclear risks, individuals often lack accessible tools to independently monitor environmental radiation. Existing detectors tend to be expensive, specialized for professionals, or too limited for real-world emergencies.

ConnRAD addresses this gap with a multifunctional, user-friendly, and affordable personal radiation detector that integrates four key features: a Geiger–Mueller counter, barometric sensor, real-time clock, and FM radio receiver. This unique combination enables users not only to measure ambient radiation but also to receive vital updates via radio broadcasts during crises - a capability unmatched by competing products.

Target Market

The target market includes civilians near critical infrastructure or conflict-prone areas, disaster-preparedness enthusiasts, humanitarian workers, and individuals prioritizing personal safety.

Market Potential

While currently a niche sector, the personal radiation detector market is expected to grow steadily, fueled by global instability, increasing demand for survival gear, and rising concern over environmental threats. As consumers place greater value on self-reliance and accessible information, ConnRAD is well positioned to meet this demand with a solution that is technologically advanced, thoughtfully designed, and sustainability-conscious.

Novelty of the work

ConnRAD offers a unique combination of features not found in other personal radiation detectors. It integrates a Geiger-Mueller counter, barometric sensor, real-time clock, and FM radio receiver into a single, portable device designed specifically for non-professional users. This combination enables individuals to monitor radiation levels while simultaneously receiving emergency information via radio—a critical advantage in crisis situations.

Unlike most commercial detectors, which are often highly specialized, expensive, or visually outdated, ConnRAD blends technical capability with a purposeful, modern design. Its usability, long autonomous operating time, and convenient USB-C charging emphasize clarity and practicality.

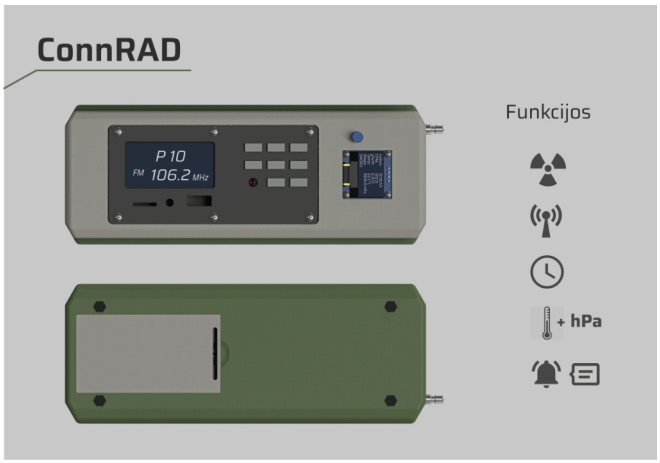
More than just a technological innovation, ConnRAD is an accessible, reliable, and versatile safety tool—equally suited for everyday readiness and emergency use.

The benefits and value to the potential users

ConnRAD provides a reliable, self-contained solution for monitoring environmental radiation and staying informed during emergencies. Its integration of a precise Geiger–Mueller detector, barometric sensor, real-time clock, and FM radio receiver delivers unmatched functionality in a single, portable device.

For individuals living near high-risk areas or preparing for crises, ConnRAD offers peace of mind, self-reliance, and immediate situational awareness. Its rechargeable battery, long operating time, and robust design ensure practicality in real-world conditions.

Designed with both ease of use and sustainability in mind, ConnRAD features intuitive operation, material-conscious engineering, and recyclable cardboard packaging-enhancing accessibility and long-term value. While official information channels remain vital, ConnRAD provides a dependable personal backup when access is limited or disrupted.



TRL 2 – technology concept formulated

HaptiAid

Field of science Design
Type of innovation Design (e.g. product design, user experience design concept, architectural design, fashion design)

Head: Dr. Erika Adomavičiūtė

Kaunas University of Technology

Description of the work

HaptiAid is an innovative haptic bracelet designed for individuals with hearing impairments. It improves safety and situational awareness by detecting key environmental sounds-such as alarms, alerts, or voices-and providing real-time feedback through vibrations and on-screen visual messages.

With its ergonomic design, comfortable wearability, and discreet appearance, HaptiAid empowers users to remain active, confident, and independent. Beyond its practical benefits, the project supports social inclusion and promotes the full participation of people with disabilities in society.

Technical or other problems that are solved with the work

People with hearing impairments often miss critical environmental sounds such as fire alarms, sirens, doorbells, or someone calling their name. This lack of auditory awareness can create safety risks, contribute to social isolation, and reduce independence in daily life.

Traditional assistive technologies like hearing aids or cochlear implants are not always suitable, affordable, or effective-particularly in dynamic environments where sound direction and urgency matter.

HaptiAid provides a discreet, wearable solution that translates key environmental sounds into intuitive haptic (vibration) and visual alerts. By enhancing situational awareness without relying on hearing, the bracelet enables users to move confidently in public spaces, interact more freely, and respond to potential dangers in real time.

Novelty of the work

Unlike traditional hearing aids or static alert systems, HaptiAid is a fully wearable, real-time solution. Equipped with multiple microphones and AI-driven sound recognition, it can detect specific sounds and determine their direction.

The bracelet delivers discreet, intuitive feedback through vibrations and a visual display, allowing users to respond quickly without drawing unwanted attention. Its ergonomic, minimalist design integrates all components into a compact form, making it comfortable for everyday use.

By combining haptic technology with AI-powered sound awareness, HaptiAid provides a unique balance of safety, discretion, and inclusivity-setting it apart from existing solutions.

The benefits and value to the potential users

HaptiAid enhances the safety, independence, and confidence of individuals with hearing impairments by transforming important environmental sounds into vibrations and visual cues. It enables users to better perceive their surroundings and respond to everyday situations such as alarms, voices, or approaching vehicles.

Designed for comfort and discretion, the bracelet can be worn throughout the day without drawing attention. By bridging the gap between sound and perception, HaptiAid empowers users to engage more fully in social, professional, and public life-reducing dependence on others and helping to combat social isolation.

“rewind” – a waste sorting system made of wind turbine blades

Field of science Design
Type of innovation Design (e.g. product design, user experience design concept, architectural design, fashion design)

Head: Dr. Kristina Žukienė

Kaunas University of Technology

Description of the work

Wind turbines built in the 1990s and early 2000s are now reaching the end of their service life. Their blades, however, pose a major challenge: most end-of-life blades are currently stockpiled in specialized landfills or incinerated, contributing to environmental pollution. Sustainable solutions for reuse and recycling are urgently needed.

Rewind offers one such solution-a minimalist waste-sorting system crafted from recycled wind turbine blades. Its design reflects the aerodynamic form of the original blade, making it not only a functional product but also a striking interior accent.

With its large dimensions, the system is particularly well suited for spacious offices, public areas, and shopping centers. It features three separate compartments for convenient sorting of glass, paper, and plastic. Most of its components are made from recycled materials, ensuring reduced environmental impact.

Rewind combines sustainability, aesthetics, and innovation, transforming industrial waste into a practical and expressive product for modern spaces.

Technical or other problems that are solved with the work

The waste-sorting system made from recycled wind turbine blades addresses two major challenges: the growing volume of hard-to-recycle industrial waste and the lack of effective, engaging waste-sorting solutions in shared environments.

End-of-life wind turbine blades are often landfilled or require complex recycling processes, making their reuse a vital step toward a circular economy. At the same time, sorting

infrastructure in offices, institutions, and shopping centers is frequently uninspiring, sub-standard, or ineffective in encouraging behavioral change.

This product tackles both issues by transforming discarded blades into a functional, design-driven object that promotes sustainability while enhancing interior spaces.

Target Market

The primary target market includes companies, offices, shopping centers, public institutions, architects, and the interior design community-all seeking sustainable, visually appealing solutions.

Market Potential

Demand for waste segregation systems is expanding, driven by EU sustainability policies, stricter waste management requirements, and rising public environmental awareness. Within this context, the product has strong potential to establish itself as a leading solution in the growing market for sustainable office and public-space infrastructure.

Novelty of the work

Architects and designers have begun reusing decommissioned wind turbine blades to create products such as bike shelters, benches, playgrounds, and even building structures. However, a waste-sorting system made from a wind turbine blade is not yet available on the market. This makes the product novel not only in its form and design language, which reflects the blade's aerodynamic shape, but also in its innovative use of material to create a functional and sustainable sorting solution.

The benefits and value to the potential users

A waste-sorting system made from a wind turbine blade adds both functionality and meaning to office environments. Beyond its practical role, it communicates sustainable values, raises awareness of waste management, and contributes to the circular economy by reducing environmental pollution.

Its distinctive design makes it an aesthetic interior accent, brightening and enriching shared spaces. By giving wind turbine blades a second life, the product showcases an innovative approach to design and sustainability - a quality that resonates with employees, clients, and visitors alike, while reinforcing a company's commitment to environmental responsibility.

EPILO – a smart protective helmet designed for people with epilepsy

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

Head: Dr. Kristina Žukienė

Kaunas University of Technology

Description of the work

EPILO is a smart protective helmet designed for people with epilepsy. Equipped with integrated sensors, it can detect impending or ongoing seizures and automatically send alerts to family members, enabling timely assistance.

The helmet's microlattice structure efficiently absorbs shock while allowing it to remain much thinner than traditional epilepsy helmets-thin enough to be worn discreetly under a cap. At the same time, its thoughtful design ensures it can also function as a visible style accessory, helping to reduce the stigma often associated with protective helmets.

EPILO combines safety, discretion, and aesthetics, offering users both protection and greater confidence in daily life.

Technical or other problems that are solved with the work

Epilepsy is a chronic neurological disease affecting around 50 million people worldwide, across all age groups. It is characterized by recurrent seizures that often occur suddenly, causing loss of consciousness, falls, twitching, or other motor disturbances. These episodes not only disrupt daily life but also pose serious physical risks-particularly head injuries, which are both common and potentially life-threatening. Research shows that the vast majority of epilepsy patients have suffered at least one significant injury during a seizure.

While helmets for people with epilepsy exist, most are unattractive, uncomfortable, or unsuitable for long-term wear. Furthermore, there is a lack of smart solutions that not only provide physical protection but also monitor seizures and enable timely intervention in real time.

At the same time, growing demand for innovative healthcare products, coupled with advances in wearable technology, creates a favorable environment for the development of smart protective devices tailored to the needs of people with epilepsy.

Novelty of the work

EPILO distinguishes itself from conventional epilepsy helmets through its smart features and advanced design. While most helmets offer only physical head protection, EPILO goes further-absorbing impact, detecting seizure symptoms, and automatically alerting family members to ensure timely support.

Thanks to its microlattice structure, the helmet is both thin and lightweight, making it discreet enough to wear under a cap or attractive enough to serve as a style accessory.

EPILO combines safety, intelligence, and design, reducing stigma while empowering users with confidence and protection in daily life.

The benefits and value to the potential users

EPILO provides people with epilepsy greater safety, confidence, and freedom in everyday life. It reduces the risk of injury during seizures while ensuring that loved ones are immediately notified in case of an emergency.

With its thin, lightweight, and comfortable design, the helmet does not restrict movement and can be worn either discreetly under a cap or as a visible, stylish accessory. By doing so, it helps reduce the stigma still associated with epilepsy helmets.

EPILO delivers more than physical protection-it offers emotional peace of mind. As a smart, design-forward solution, it empowers people with epilepsy to live more boldly, actively, and safely.

TRL 5 – technology validated in relevant environment (industrially relevant)

BirdHub

Field of science Design
Type of innovation Software & Hardware

Manfredas Lamsargis
Rusnė Roščinaitė
Ugnius Stašaitis
Rokas Karosa
Edas Kvietkauskas
Head: Dr. Egidijus Kazanavičius

Kaunas University of Technology

Description of the work

This project aims to develop a smart nest box system to help monitor birds and their habitat. The nest box will record various environmental data such as temperature, humidity, light intensity and analyse bird behaviour. This will not only allow you to monitor the birds' lives, but will also give you a better understanding of how changes in the environment affect their behaviour. The system is suitable for both amateur and professional use. The data can be accessed through an account on the website.

Technical or other problems that are solved with the work

This project introduces a smart nest box system designed to monitor birds and their habitats. Equipped with sensors, the nest box records environmental data such as temperature, humidity, and light intensity, while also analyzing bird behaviour.

The system enables users to observe not only the daily lives of birds but also to better understand how environmental changes influence their behaviour. Suitable for both amateur enthusiasts and professional researchers, the data is easily accessible through a personal online account.

The smart nest box combines technology, ecology, and accessibility, supporting bird conservation while engaging users in meaningful environmental monitoring.

Novelty of the work

Currently, there is a lack of smart solutions for systematically monitoring bird behaviour and environmental conditions. Most existing nest boxes lack any form of environmental monitoring, leaving scientists and conservationists dependent on limited and often inaccurate data.

The benefits and value to the potential users

The BirdHub smart nest box stands out from existing solutions by simultaneously recording environmental data and bird activity, then integrating both into a seamless analysis system. Unlike most current smart nest boxes, BirdHub has the functionality to monitor not only bird behaviour but also the internal and external conditions of the nest box-providing a far more complete picture of the habitat.

TRL 4 – technology validated in lab

Balance maze – table game

Field of science Design
Type of innovation Design (e.g. product design, user experience design concept, architectural design, fashion design)

Reda Stonkutė
Milda Norkaitytė
Titas Šelkovskis
Head: Agnė Rumšaitė

Kaunas University of Technology

Description of the work

Balance Maze is a table game developed during the Product Design module. The game consists of six components-four of which were 3D printed-and is designed for easy assembly and disassembly.

Created for two players, the game develops fine motor skills by requiring precision and careful control. Each player's objective is to guide a ball to their chosen maze exit by balancing the board with weights of different sizes. The first player to successfully guide the ball to their exit wins the game.

Balance Maze combines play, skill development, and design innovation, offering both entertainment and a tool for practicing coordination and control.

Technical or other problems that are solved with the work

Balance Maze addresses the growing challenge of reduced physical engagement and fine motor skill development in the digital age. As screen time increases, children and young adults have fewer opportunities for hands-on activities, which can negatively affect coordination, focus, and problem-solving abilities.

Balance Maze offers an engaging, interactive alternative that combines play with skill-building. The game challenges players' precision, coordination, planning, and quick thinking, while encouraging face-to-face interaction and healthy competition.

Target Market

The game is designed for families with children aged 7+, educators seeking interactive classroom tools, and rehabilitation centers looking for enjoyable ways to support fine motor therapy.

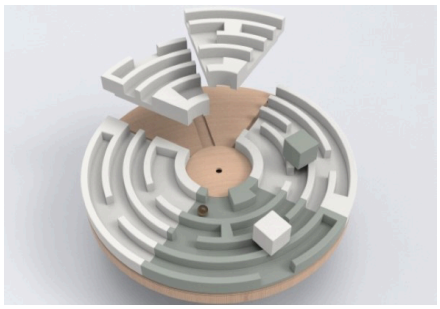
Balance Maze stands out by combining entertainment with developmental value, making it a versatile addition to both the family gaming and educational game markets.

Novelty of the work

Balance Maze is a unique tabletop game featuring a round maze divided into eight interchangeable parts. The segments can be rearranged to create multiple layouts, ensuring each game feels fresh and different.

Players guide a ball through the maze by placing randomly drawn weights on a hanging board-each weight varies, and once drawn, it must be used. This mechanic adds both surprise and strategy to the gameplay.

If the board tilts too far and everything collapses, both players lose—meaning they must compete while also maintaining balance together. This blend of unpredictability, strategy, and light teamwork makes Balance Maze stand out from other games, keeping it fun and challenging every time.



The benefits and value to the potential users

Balance Maze offers meaningful value by combining fun, learning, and skill development.

- For families, it provides an engaging way to spend quality time together while helping children strengthen fine motor skills, coordination, focus, and logical thinking.
- For educators, it serves as a creative, hands-on classroom tool that promotes active participation, problem-solving, and collaboration.
- For rehabilitation centers, the game supports the recovery of hand control and precision in a playful and motivating way.

More than just a game, Balance Maze fosters essential skills, encourages social interaction, and delivers a screen-free, educational form of entertainment.

TRL 2 – technology concept formulated

Mottus

Field of science Design

Type of innovation Integrated hardware and ergonomic design solution for mobility support in healthcare – a combination of mechanical engineering, electronics, and user-centered design.

Head: Dr. Kristina Žukienė

Kaunas University of Technology

Description of the work

An electric walker prototype is being developed to reduce physical strain for elderly users and individuals with mobility challenges.

The device features automated motor assistance, which activates in response to the user's initial push - supporting movement on both flat terrain and slopes. A tracked chassis ensures stable performance across uneven ground and even at stair edges, while an integrated braking system provides enhanced safety.

Designed to promote greater independence and mobility in everyday environments or rehabilitation settings, the walker is both compact and lightweight, minimizing the load of electronic components. This makes it a practical, supportive solution for users with limited strength.

Technical or other problems that are solved with the work

Many people experience limited mobility due to age, illness, or injury, yet conventional walkers often fail to meet their needs. They require significant physical effort, perform poorly on uneven ground or slopes, and provide little active support.

This product addresses these limitations with a smart motor system that automatically engages when the user begins to push, reducing fatigue and enhancing safety. By offering reliable assistance, the walker promotes greater independence and confidence in daily life.

Target Market

The primary users include individuals with temporary or chronic mobility challenges, while secondary markets include healthcare institutions and rehabilitation centers seeking effective tools to support patient recovery.

Market Potential

With global populations aging and demand for assistive technologies steadily rising, the market for smart mobility aids is expanding rapidly. This product is well positioned to meet that demand with a solution that is safe, practical, and user-friendly.

Novelty of the work

This walker introduces a unique combination of features not found in conventional mobility aids. While most walkers are passive, bulky, and require full manual control, this prototype incorporates advanced design elements to improve both usability and safety.

Its tracked chassis system provides superior grip and stability on uneven terrain—including stairs—while an automatic traction and braking system intuitively responds to the user's movements and environmental changes. The compact structure ensures the walker remains upright without tipping and allows for easy maneuvering, even in tight spaces.

Unlike most walkers on the market, this prototype can be controlled with just one hand, making it especially valuable for people with reduced arm strength or injuries.

The benefits and value to the potential users

The walker offers increased safety, confidence, and independence for users with limited strength or mobility. Its traction system assists movement with minimal physical effort, especially on slopes or uneven surfaces. Users can walk short distances more comfortably and without fear of instability or exhaustion. Additionally, the device can support patients in rehabilitation phases, offering assistance when movement is just being regained. Its ease of use and supportive features provide real value for both personal and clinical use.

JŪRAMÌ – breathing regulation device

Field of science Design
Type of innovation Design & Hardware

Alina Grigonytė
Joris Vėžys
Head: Dr. Virginija Jankauskaitė

Kaunas University of Technology

Description of the work

The JŪRAMÌ breathing regulation device is a portable and effective solution for halting hyperventilation during panic attacks while soothing users through aromatherapy and sensory stimuli.

The device operates on the principle of rebreathing exhaled air. An integrated CO_2 sensor with an automatic valve continuously monitors carbon dioxide levels to ensure safety, while a collapsible air chamber reduces overall dimensions, making the device easy to carry and keep accessible at all times.

Its ergonomic shape and textured surface stimulate the fingertips, helping redirect attention away from anxiety. Gentle rhythmic vibrations further assist users in regulating their breathing rhythm. In addition, several components are made from bioplastic, underscoring an environmentally conscious and sustainable design approach.

Technical or other problems that are solved with the work

Over 300 million people worldwide experience recurring panic attacks, most often affecting young people aged 15 to 30. Women are statistically 1.75 times more likely to be affected than men, meaning that in Lithuania alone, more than 300,000 women fall into the risk group for panic disorder.

In today's age of constant information flow, anxiety levels are rising, with chronic stress and ongoing worry among the leading causes of panic attacks. These episodes can occur unexpectedly, bringing symptoms such as dizziness, limb numbness, nausea, and disorientation. Accelerated breathing often leads to hyperventilation, which reduces carbon dioxide absorption in the body, worsening symptoms, increasing dizziness, and raising the risk of fainting.

One of the most effective ways to stop a panic attack is by regulating breathing. Yet in the midst of panic, achieving this independently is extremely difficult. Currently, the market lacks a solution that fully meets users' needs, creating a clear demand for a portable device that can both reduce hyperventilation and calm the user during an attack.

Novelty of the work

Currently, no portable breathing regulation device exists that both calms the user and reduces hyperventilation by adjusting air composition in a combined way. Existing products focus mainly on training respiratory muscles or restricting airflow, making them unsuitable during an acute panic attack.

A common alternative - breathing into a paper bag - may temporarily help, but it is unsafe due to uncontrolled CO_2 levels, while also being single-use and unattractive to users.

JŪRAMÌ provides a safer, more user-friendly solution. It combines controlled breathing regulation with sensory elements such as scent, vibration, and touch. This multisensory approach not only restores physiological balance but also offers emotional comfort, making JŪRAMÌ a unique and practical tool for managing panic attacks in real time.

The benefits and value to the potential users

JŪRAMÌ provides immediate support during a panic attack by reducing hyperventilation and calming the user through sensory stimulation and aromatherapy. Because hyperventilation can be both a cause and a consequence of panic, breaking this cycle is essential.

By slowing the breath and restoring carbon dioxide levels, JŪRAMÌ helps dilate blood vessels and activate the parasympathetic nervous system. This physiological shift directly eases anxiety and guides the user back to a calmer state.

The device's holistic approach - combining controlled breathing support with soothing scents and tactile feedback - offers an effective way to interrupt the panic cycle. JŪRAMÌ bridges the gap between psychological need and practical support, delivering a user-centered solution precisely when it is needed most.

TRL 6 – technology demonstrated in relevant environment (industrially relevant)

Search & Rescue Buoy Drone – Swift, Smart, and Ready to Save

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

Armin Madadkhanivahidi
Vladyslav Dmytrenko
Yevhenii Sylchenko
Tadiwanashe Mkonto
Head: Dr. Gediminas Monastyreckis

Kaunas University of Technology

Description of the work

The Search and Rescue Drone is a multifunctional solution designed to support lifeguards and emergency services in water rescue operations. Particularly valuable in coastal and high-risk areas, it enables swift, effective intervention during drowning incidents - where every second matters.

Equipped with an integrated buoy system, the drone can keep victims afloat while transporting them safely to shore or designated rescue points. It also carries essential first-response medical supplies, providing critical support until emergency personnel arrive.

Constructed from lightweight yet durable composite materials, the drone ensures stability and resilience even in adverse weather conditions. Its advanced features include GPS navigation, water-resistant components, and a live video feed for real-time situational awareness.

By combining innovation, reliability, and practicality, this prototype strengthens national rescue efforts and sets a new standard for rapid water emergency response systems in Lithuania.

Technical or other problems that are solved with the work

The Problem

Lithuania has one of the highest drowning rates in the EU—over six drownings per 100,000 residents in 2016, compared to the EU average of 1.1. Contributing factors include alcohol consumption and non-compliance with safety regulations. Despite preventive efforts in some regions, tragic incidents continue to occur, underscoring the urgent need for more effective rescue solutions.

Target Market

The primary market consists of local municipalities responsible for lifeguard services in coastal cities such as Palanga, Klaipėda, and Nida, as well as towns with lakes and rivers requiring enhanced water safety measures. These municipalities are key stakeholders in public safety and emergency response. A secondary market includes private companies in sectors such as tourism and water sports, where rapid response capabilities can provide both safety and reputational benefits.

Target Size

In the first year of operations, the goal is to sell approximately 20 drones in Lithuania. Major coastal cities alone would require an estimated three drones each to strengthen their rescue capabilities, helping close the critical gap in rapid water emergency response.

Expansion Plans

While the initial focus is on Lithuania, the strategy includes expansion to other Baltic countries (Latvia and Estonia), followed by entry into broader European markets. This phased approach supports both sustainable growth and meaningful impact in addressing drowning incidents regionally.

Novelty of the work

The Search and Rescue Drone addresses a critical market gap with its distinctive combination of affordability, functionality, and user-friendliness. Unlike many higher-priced alternatives, the prototype is specifically designed as a cost-effective solution for municipal rescue units.

Its buoy water-landing feature, lightweight construction, and extended range enable rapid deployment and precise control during rescue operations. The drone can deliver flotation aids from a considerable distance, improving both the efficiency of interventions and the safety of victims and responders.

By combining cost-effectiveness, ease of operation, and targeted rescue functionalities, the Search and Rescue Drone stands out in a market often dominated by overly complex or limited solutions.

The benefits and value to the potential users

The Search and Rescue Drone offers significant advantages to lifeguards, first responders, and local authorities. Its versatile design enables rapid deployment, real-time location tracking, and the ability to keep victims afloat while ensuring safe transport. An integrated buoy system provides immediate assistance, while the drone can also carry essential first-response medical supplies.

These features make the drone an invaluable tool for lifeguards and emergency teams, allowing them to focus on the most critical aspects of rescue missions. By enhancing operational efficiency and safety, the system improves response times, reduces risks to personnel, and increases overall success rates in high-risk aquatic environments across Lithuania.

Prototype of equipment for measuring the flow characteristics of a small unmanned aircraft propeller

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

Head: Dr. Martynas Lendraitis

Kaunas University of Technology

Description of the work

This project introduces the design and development of a test bench stand for measuring the aerodynamic characteristics of small UAV propellers in a wind tunnel. The system enables precise measurement of thrust, torque, and rotational speed, making it possible to perform detailed performance analysis under both static and dynamic airflow conditions.

By utilizing affordable components such as an Arduino UNO microcontroller, strain gauges, and 3D-printed parts, the project demonstrates that reliable and accurate measurements can be achieved on a limited budget. The stand was tested with propellers of varying pitch, providing comparative efficiency data that can be used to optimize UAV propulsion systems.

This solution offers a cost-effective experimental platform for researchers, students, and UAV developers, supporting advancements in aerodynamics and propulsion design.

Technical or other problems that are solved with the work

Current problem

Most UAV propeller manufacturers provide data obtained only under static conditions, which do not reflect real flight environments. This makes it difficult to select the right propellers and reduces UAV efficiency.

Our solution

A test bench stand has been developed that enables the measurement of thrust, torque, and rotational speed not only in static but also in dynamic airflow using a wind tunnel. Built with

affordable components (Arduino, strain gauges, 3D-printed parts), it delivers precise and cost-effective analysis.

Target audience

UAV developers, engineers, and academic institutions that need reliable yet affordable testing tools.

Market potential

The UAV market is rapidly expanding in defense, agriculture, logistics, and surveillance sectors. As demand grows, so does the need for accessible testing technologies. Our equipment provides the ability to optimize UAV systems even on a limited budget.

Novelty of the work

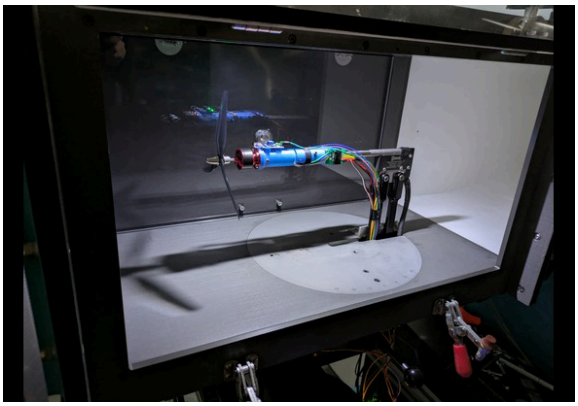
The two-cassette weapon weighs just 120 grams and is loaded with 32 shots. Despite holding dozens of rounds, the device weighs several dozen times less than the target it is designed to hit. The ammunition is non-lethal to humans and is classified as pyrotechnics.

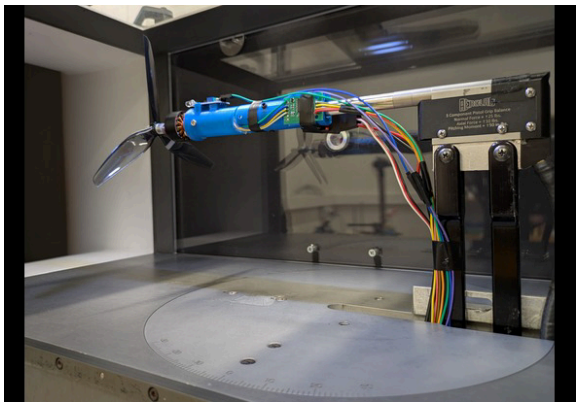
The benefits and value to the potential users

Our interactive game solution delivers an immersive and engaging experience that goes far beyond passive entertainment. Players receive real-time feedback, face dynamic challenges, and enjoy personalized progression, ensuring motivation and long-term engagement.

Interactive technologies are powerful drivers of engagement and user experience across industries. In education, they personalize learning and improve knowledge retention. In healthcare, they enhance patient engagement and decision-making. In retail and corporate training, they create gamified, interactive product or training experiences that simplify complex tasks, build stronger connections, and improve outcomes.

By combining gamification, real-time interactivity, and personalization, our solution generates value through better results, time savings, and higher user involvement across diverse sectors.

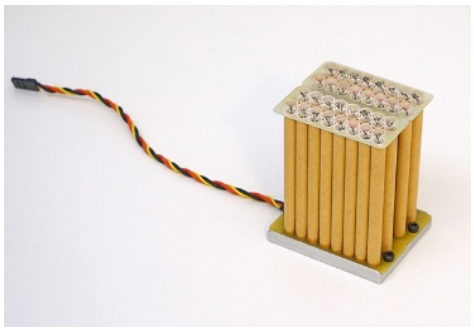


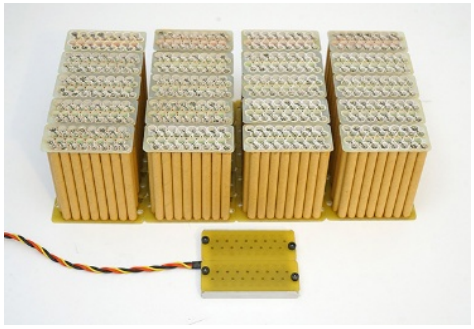


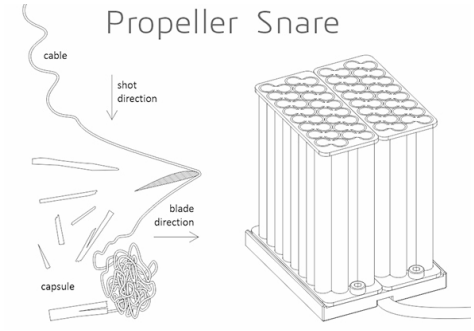
"Spider Shot" gun for a drone interceptor

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

Head: Dr. Zaitsevsky Aleksey Vadimovich







Description of the work

Multi-barrel ammunition that allows a racing drone to be turned into an interceptor.

Technical or other problems that are solved with the work

The invention relates to Counter-Unmanned Aircraft Systems and Hard Kill solutions. The task is to defeat the most common drones with protection against jamming. The ammunition is used on a drone interceptor to combat other drones.

Novelty of the work

The two-cassette weapon weighs just 120 grams and is loaded with 32 shots. Despite holding dozens of rounds, the device weighs several dozen times less than the target it is designed to hit. The ammunition is non-lethal to humans and is classified as pyrotechnics.

The benefits and value to the potential users

Gun allows you to attack several times in one flight and go back. The fired propeller snares entangle the rotor of most unmanned aerial vehicles weighing up to 3 kg and some targets up to 10 kg. The low weight of the weapon allows it to be used on small and fast interceptor drone.

TRL 6 – technology demonstrated in relevant environment (industrially relevant)

ESharktek - Unlocking potential through Innovations

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

Anupriya Rettagunta
Head: Charan Narayan

Kaunas University of Technology

Description of the work

Our interactive solution delivers real-time, dynamic experiences that adapt to each user's needs and preferences, creating personalized content across industries. By combining gamification, interactivity, and instant feedback, it enhances learning, decision-making, and problem-solving. From education and healthcare to retail and corporate training, the solution boosts engagement, knowledge retention, and overall satisfaction, turning passive participation into active involvement.

Technical or other problems that are solved with the work

Our interactive solution addresses the limitations of traditional static systems, which often lack engagement, require costly specialized hardware, and demand precise sensor placement. These inefficiencies reduce effectiveness across industries such as education, healthcare, retail, and corporate training.

We developed a cost-effective system using widely available components - a camera sensor, projector, and PC - making interactive experiences more accessible. Our solution enables real-time adjustments, ensuring content stays relevant and tailored to each user's needs. By integrating gamification and social elements, it boosts motivation, retention, and overall effectiveness.

Applications are broad: in education, it delivers personalized learning; in healthcare, it improves patient education; in retail, it powers virtual try-ons; in corporate training, it

enhances engagement with gamified modules; in finance, it simplifies decision-making; and in real estate, it transforms property exploration with interactive virtual tours.

Ultimately, our solution improves user engagement, efficiency, and satisfaction across industries, making interactivity both practical and impactful.

Novelty of the work

Our interactive solution enables real-time adjustments, ensuring content is always relevant and tailored to each user's needs. By integrating gamification and social elements, it boosts motivation, increases retention, and fosters deeper connections. This approach enhances overall engagement and delivers significantly better outcomes compared to passive methods.

What sets our solution apart is its ability to provide personalized, adaptive, real-time experiences that respond to user behavior. In contrast, traditional methods often result in engagement fatigue, lack of personalization, and inefficiency. With our solution, users stay motivated, connected, and empowered to achieve more.

The benefits and value to the potential users

Our interactive game solution delivers an immersive, engaging experience that goes beyond passive entertainment. With real-time feedback, dynamic challenges, and personalized progression, it keeps users motivated and invested. Beyond gaming, interactive solutions drive engagement across education, healthcare, retail, and corporate training by personalizing learning, improving decision-making, and boosting satisfaction. Tools such as virtual tours, gamified training, and interactive product experiences simplify complex tasks and foster deeper connections - creating measurable value through better outcomes, time savings, and stronger user involvement across industries.

Economy, Social Sciences and Humanities

QueryLogFlow

Field of science Economy, social sciences and humanities
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game and etc.)

Sandra Karapet
Nojus Butrimavičius
Thoufeeq Palliyali Peediyekkal
Muhammed Thanzeel Mannarichalil
Head: Dr. Asta Tarutė

Kaunas University of Technology

Description of the work

We are developing a web-based Inquiry Management Application that centralizes all incoming customer inquiries into a single, unified inbox. The system integrates messages from multiple platforms - email, Facebook, Instagram, WhatsApp, and LinkedIn - streamlining communication and ensuring no inquiry is overlooked.

Technical or other problems that are solved with the work

The team is collaborating with a logistics company that faces a common yet critical challenge:

- Too many communication channels (email, Facebook, WhatsApp, etc.)
- Customer inquiries managed manually
- Lost messages, delayed responses, and internal confusion

Novelty of the work

While similar applications exist to address the challenges mentioned earlier, there is not yet a solution designed specifically for logistics companies. This specialization makes it possible to apply tailored solutions for the industry, helping businesses grow and expand.

The benefits and value to the potential users

- Collects all customer messages from multiple platforms.
- Displays them in a single, unified inbox.
- Categorizes messages by channel and context (e.g., sales, marketing, accounting, partnerships).
- Enables direct replies within the platform or easy assignment to team members.
- Adds predictive analytics to forecast logistics demand based on inquiry trends.

TRL 4 – technology validated in lab

Your Lithuanian journey, simplified. All the information, one destination

Field of science Economy, social sciences and humanities
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game and etc.)

Daria Friahina
Martynas Barzdžius
Gerda Žemaitaitytė
Diana Tomakh
Head: Daria Shmielova

Kaunas University of Technology

Description of the work

We are addressing the fragmented information landscape faced by Lithuania's 218,000 foreign residents. Our centralized website consolidates essential resources from Migris, Sodra, and other systems into intuitive categories with full multilingual support.

An integrated LLM-powered chatbot provides instant guidance, giving foreign workers accessible knowledge of their rights and helping prevent exploitation across sectors.

Inspired by the economic success of Estonia's e-Residency program - which has generated €67.4 million in direct tax revenue - this project aims to transform the migrant experience in Lithuania. By improving workforce integration and ensuring compliance, the platform supports both individual empowerment and the growth of Lithuania's economy.

Technical or other problems that are solved with the work

Our product addresses the systemic information barriers faced by Lithuania's 217,988 foreign residents. Despite their significant contributions to the economy - particularly in transport, construction, and manufacturing - foreign workers encounter fragmented information systems that hinder integration and increase vulnerability to exploitation. The risks are further compounded by the potential for sudden disruptions in times of war or emergency.

Essential details on residency permits, employment rights, healthcare access, and tax obligations are dispersed across multiple platforms such as Migris and Sodra, often with

limited translations and critical documents available only in Lithuanian. In our research with migrant workers, participants consistently reported challenges in meeting Lithuania's complex administrative requirements.

This fragmentation leads to serious consequences: a threefold increase in labor exploitation cases in the transport sector, wage theft and contract violations, unexpected tax bills due to unclear obligations, and application rejections caused by technical errors - one worker noted being refused for applying "three months and one day early."

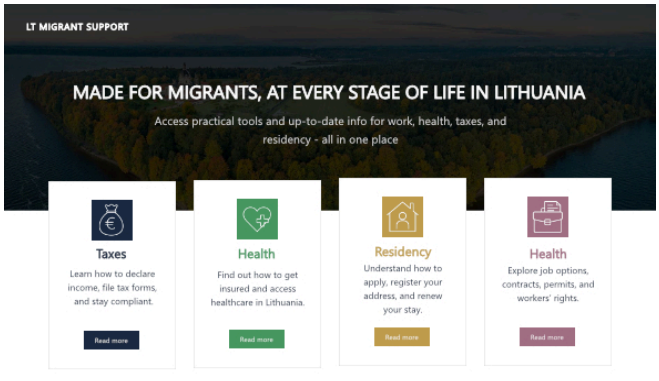
Our unified digital platform consolidates this scattered information into a single, category-based interface with comprehensive multilingual support and AI-powered assistance. This empowers foreign workers to navigate Lithuania's legal and administrative landscape effectively, reducing compliance risks and protecting them from exploitation.

Novelty of the work

- Comprehensive scope: Unlike competitors that focus on specific aspects such as IOM's crisis response, Work in Lithuania's recruitment services, or Omnipresent's employer solutions - we provide complete post-arrival support.
- Personalized assistance: Our LLM-powered chatbot delivers tailored guidance, a feature entirely absent from current market offerings.
- User-centered design: Unlike government platforms organized by institutional structures, our interface is built around migrant needs and integration journeys, making navigation intuitive.
- Full accessibility: We provide comprehensive translations of all content, addressing a critical gap where many essential documents remain available only in Lithuanian.

The benefits and value to the potential users

- Centralized Information Access – eliminates the frustration of navigating multiple government websites by consolidating essential resources in one intuitive place.
- Language Barrier Elimination – provides comprehensive multilingual support, ensuring critical legal and administrative information is accessible to non-Lithuanian speakers.
- Personalized Guidance – features an LLM-powered chatbot offering instant, reliable answers to complex questions about taxes, health insurance, and residency requirements.



TRL 5 – technology validated in relevant environment (industrially relevant)

PersoAI – "Turning Data into Deals – Smarter Outreach with AI"

Field of science Economy, social sciences and humanities
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game and etc.)

Sairon Mindaugas Romeika
Viltė Želnytė
Head: Mantas Vaitkus

Kaunas University of Technology

Description of the work

We developed an AI-powered tool designed to help export sales teams save time and achieve better results when reaching out to potential clients.

The tool analyzes public LinkedIn profiles and generates personalized messages tailored to the recipient's job, interests, and communication style. This avoids generic outreach - messages that are often ignored - and instead creates relevant, human-like communication that increases the likelihood of a reply.

Beyond personalization, the platform enables users to plan message sequences, automate follow-ups, and track responses. Real user interviews and research-based testing guided development, allowing us to refine features and improve usability.

The solution is aimed at B2B sales teams who want to expand their client reach more effectively without spending hours crafting individual emails. Our goal is to combine AI and personalization to make sales communication faster, smarter, and more human.

Technical or other problems that are solved with the work

The Problem

Export salespeople spend countless hours writing cold messages in an attempt to make each one feel personal. Most existing tools only assist with contact finding or bulk sending and

provide little support for personalization. As a result, many messages are ignored and valuable time is wasted.

The Solution

Our AI-powered product automatically generates personalized messages using public LinkedIn data such as job titles, interests, and post history. This approach saves time, increases response rates, and helps salespeople communicate more effectively at scale.

Target Market

The primary market consists of B2B sales professionals, particularly those in export, lead generation, and business development roles, who often contact dozens or even hundreds of leads per week and require effective, scalable communication tools.

Market Potential

Globally, there are over 5 million B2B salespeople, a number that continues to grow with the rise of digital commerce. As AI-based personalization tools become essential in modern sales, demand for smart, time-saving communication solutions is expanding rapidly. Our product meets this need by combining automation with true personalization, enabling sales teams to reach more clients, more effectively.

Novelty of the work

Most existing tools either help find contacts or automate message sending, but they lack deep personalization.

Our solution stands out by combining AI-generated personalization with LinkedIn profile analysis. It automatically creates tailored messages based on a recipient's job role, tone, interests, and activity—tasks that currently require manual effort or multiple separate tools.

Unlike other platforms, our tool can:

- Generate entire message sequences
- Adapt to different audience types (e.g., specialists vs. executives)
- Maintain the user's own writing style

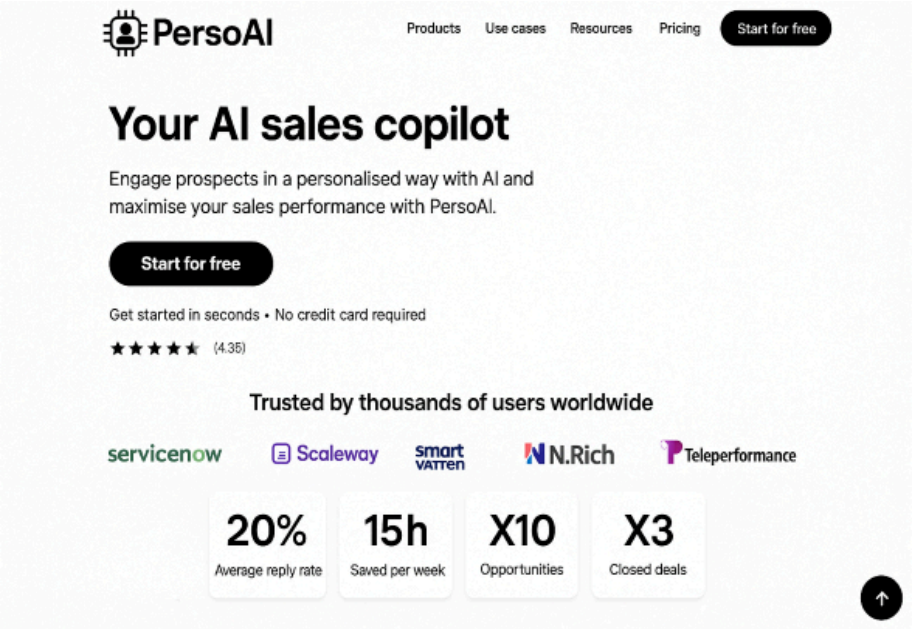
Delivered as a single, easy-to-use platform, it simplifies outreach while boosting effectiveness. This unique combination of personalization, automation, and user control makes the tool a novel and powerful solution in B2B sales communication.

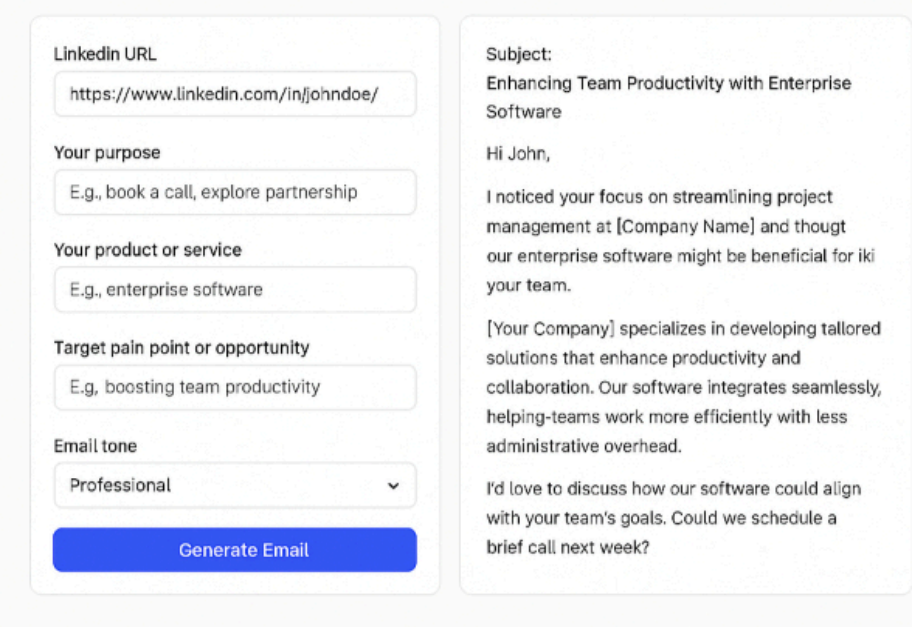
The benefits and value to the potential users

Our tool helps export sales professionals save time, reach more potential clients, and achieve higher response rates. Instead of writing each message manually, users receive AI-generated personalized texts based on the recipient's LinkedIn profile - making outreach feel more relevant and human.

The platform also enables users to plan outreach sequences, track replies, and adjust messages with ease, allowing salespeople to focus on building relationships rather than spending hours on repetitive tasks.

The value is clear: less time writing, more replies, and better results. For companies, this translates into greater efficiency, more leads, and stronger opportunities to enter new markets.





"Locatr" – a mobile application for personalized event search

Field of science Economy, social sciences and humanities
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game and etc.)

Vesta Kudriavcevaitė
Gabija Sarkanaitė
Tadas Cikanavičius
Head: Giedrius Tribandis

Kaunas University of Technology

Description of the work

The project introduces Locatr - a mobile application for personalized event discovery. The app enables users to track ongoing and upcoming events as well as explore entertainment and sightseeing locations nearby.

With its advanced filtering system, users can search by event type, location, time, and price, while personalized recommendations are generated based on past activities and individual interests.

Beyond search, Locatr enhances the social aspect of leisure planning. Users can coordinate event attendance with friends, connect through a built-in chat function, and even find new companions to share experiences.

Designed for young, active individuals, Locatr offers a fast, personalized, and community-driven way to organize free time and make the most of local opportunities.

Technical or other problems that are solved with the work

Despite the abundance of information sources, users still lack a centralized and personalized platform that helps them easily find activities and events matching their interests. Most people discover events through social networks or random websites, but the information they find is often fragmented, outdated, or irrelevant. Existing applications typically lack convenient filtering, personalized recommendations, and tools for planning activities with friends.

Locatr offers a solution - a single platform that provides users with relevant information tailored to their location and interests.

The app is aimed at young, active urban residents aged 16–30 who are interested in culture and entertainment and who seek convenient ways to plan their free time. With the cultural and leisure events sector growing - and young people being its most active participants - this target audience represents strong potential for growth and engagement.

Novelty of the work

Locatr distinguishes itself from similar applications through its personalized user experience and social features. Unlike competitors, the app not only enables event discovery but also allows users to find companions, plan activities with friends, and receive event suggestions based on location or past attendance.

Most competing platforms provide only general information without individualized recommendations. By contrast, Locatr enhances the event search and leisure planning process, delivering a user-centered experience tailored to individual needs.

The benefits and value to the potential users

Locatr helps users quickly and conveniently find events and attractions that match their interests. Users can easily filter activities, read reviews, access recommendations, and plan attendance with friends.

A companion search feature makes it possible to find like-minded people, while notifications about nearby events increase opportunities for spontaneous participation.

Together, these features create a valuable and personalized leisure planning experience that saves time and helps users discover more opportunities for meaningful free time.

Snail Trail - a mobile app turns every step into a game

Field of science Economy, social sciences and humanities
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game and etc.)

Tauras Narvilas
Gabija Orlaitė
Edmundas Sabaliauskas
Evelina Sakalauskaitė
Adenas Tuma
Head: Julijus Jakutavičius

Kaunas University of Technology

Description of the work

Snail Trail is a mobile app that transforms every step into a game. The concept is simple: the more you move, the further you escape from a virtual snail chasing you.

Users can track steps, log workouts, earn badges, and compete with friends, while also discovering nearby public outdoor workout zones and fitness parks.

By blending fitness, fun, and motivation, Snail Trail turns physical activity from a chore into a daily adventure.

Technical or other problems that are solved with the work

Our mobile app Snail Trail addresses a modern societal challenge - low levels of physical activity, especially among young people. Many schoolchildren and young adults spend long hours in front of screens, often perceiving exercise as an obligation rather than enjoyment. Snail Trail motivates movement through gamification: a virtual snail chases the user, and the only way to keep distance is by staying physically active.

Target Market

The app is designed for young, tech-savvy people aged 12–30: schoolchildren, students, mobile gaming enthusiasts, and anyone looking to increase their physical activity. This audience is large and growing, representing a digital generation eager for innovative wellness solutions delivered through mobile apps.

Market Potential

With rising awareness of healthy lifestyles and the growing popularity of step-tracking technologies, the market has strong potential both in Lithuania and internationally. Snail Trail will launch with a free model, with opportunities to expand functionality and develop partnerships to increase both accessibility and appeal.

Novelty of the work

Our solution - Snail Trail - stands out with a unique gamification mechanism: the user runs from a virtual snail, and the distance between them depends on real physical activity.

Unlike other fitness apps, Snail Trail allows users to reach goals not only through steps but also through alternative activities, such as workouts that can be logged manually. An integrated map highlights nearby public outdoor sports fields and fitness equipment, encouraging users to explore free and accessible ways to stay active.

The app is localized in Lithuanian, tailored for young users, and offered for free. Additional value comes from motivational badges, leaderboards, and a streak system, making physical activity engaging and rewarding.

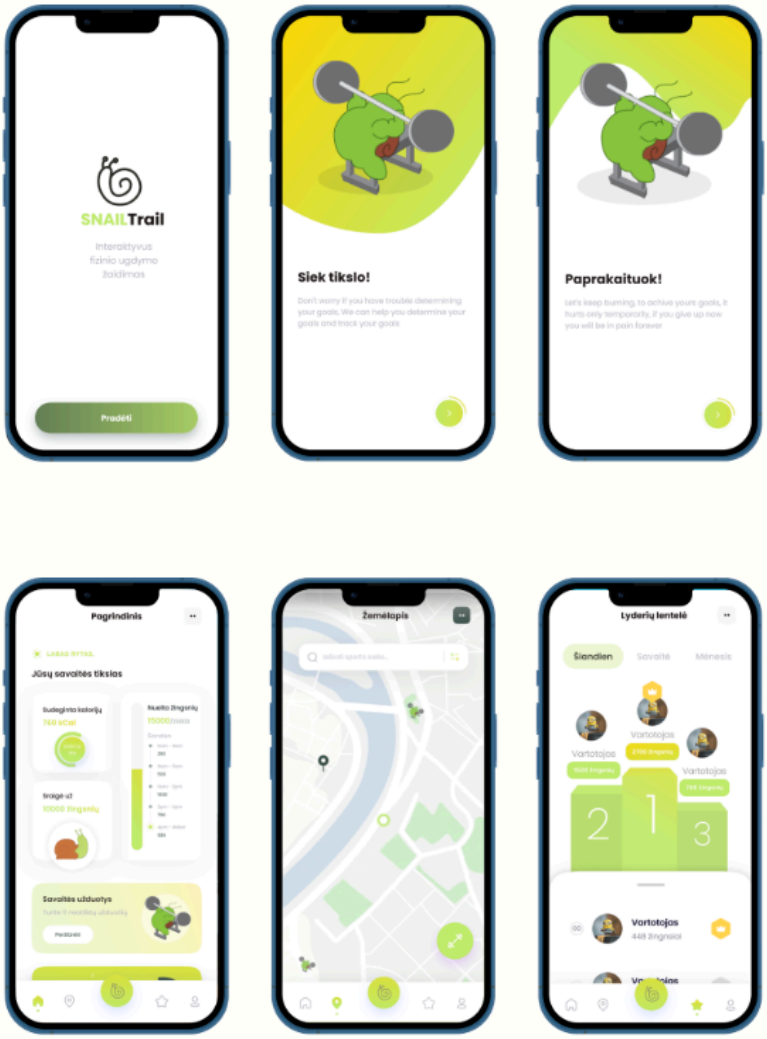
The benefits and value to the potential users

Snail Trail offers users a playful, motivating, and personalized way to stay physically active. The app not only tracks steps and workouts but also helps users discover nearby public outdoor sports fields and fitness equipment, encouraging the use of free infrastructure for active leisure.

This is especially valuable for young people who may not have

access to gyms but still want to stay active and improve their health. Users earn virtual rewards, compete with friends, and maintain motivation through daily challenges.

In this way, physical activity becomes more accessible, engaging, and enjoyable. Often, all it takes is a small push - a clear goal and visible progress - and that is exactly what Snail Trail provides.



TRL 6 – technology demonstrated in relevant environment (industrially relevant)

DITIS - chat bot with a trained AI module to imitate human emotions such as anger, sadness, jealousy, embarrassment, fear

Field of science Economy, social sciences and humanities
Type of innovation Software (e.g. mobile app, web application, software platform, algorithm, game and etc.)

Emilis Kaupas
Arnas Kizlaitis
Dovilė Dulinskienė
Airidas Vengrauskas
Head: Dr. Tomas Blažauskas

Kaunas University of Technology

Description of the work

Our product is a chatbot powered by an AI module trained to imitate human emotions such as anger, sadness, jealousy, embarrassment, and fear. After each user message, the chatbot responds by reflecting the emotions mentioned in the conversation.

At the end of an interaction, users receive a feedback form that evaluates key soft skills - including empathy, active listening, and emotional maturity - along with personalized suggestions for improvement.

To enhance engagement, the product offers two distinct characters, as well as customizable settings where users can select from two voices, text size, and volume controls.

This combination of emotional simulation, feedback, and personalization makes the chatbot a unique tool for developing communication and emotional intelligence skills.

Technical or other problems that are solved with the work

Our product addresses the challenge of communicating with sensitive individuals. After the Covid-19 pandemic, online communication became the norm, and psychological difficulties have become more visible.

The solution is a chatbot that imitates a sensitive person, capable of quickly becoming angry, scared, or jealous. By interacting with it, users can practice navigating emotional reactions and, at the end of the conversation, receive feedback on what can be improved.

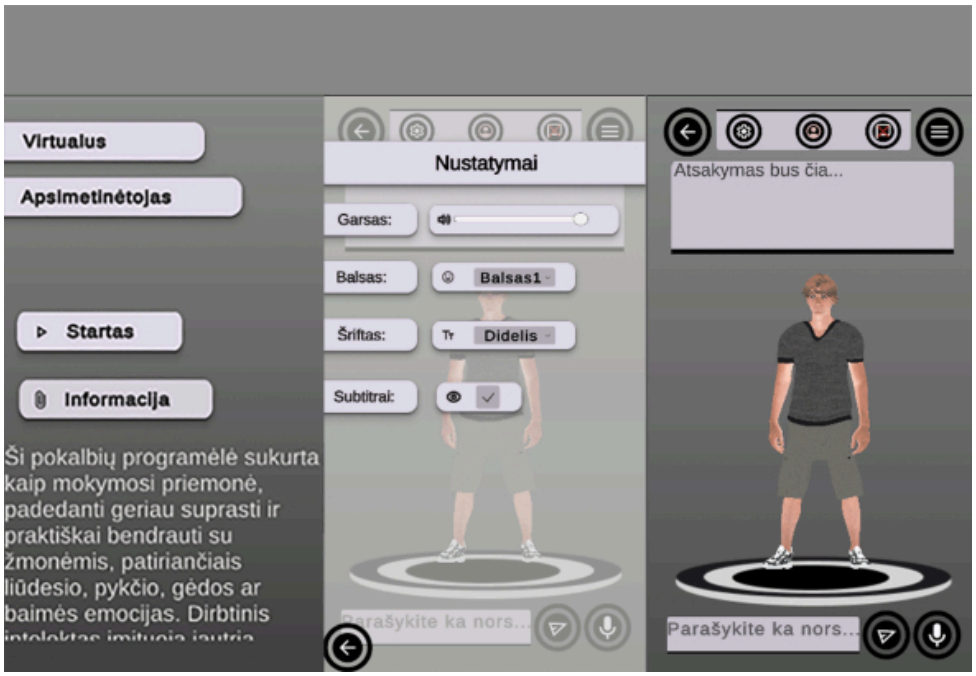
This tool helps users build empathy, resilience, and communication skills - essential abilities in both personal and professional relationships.

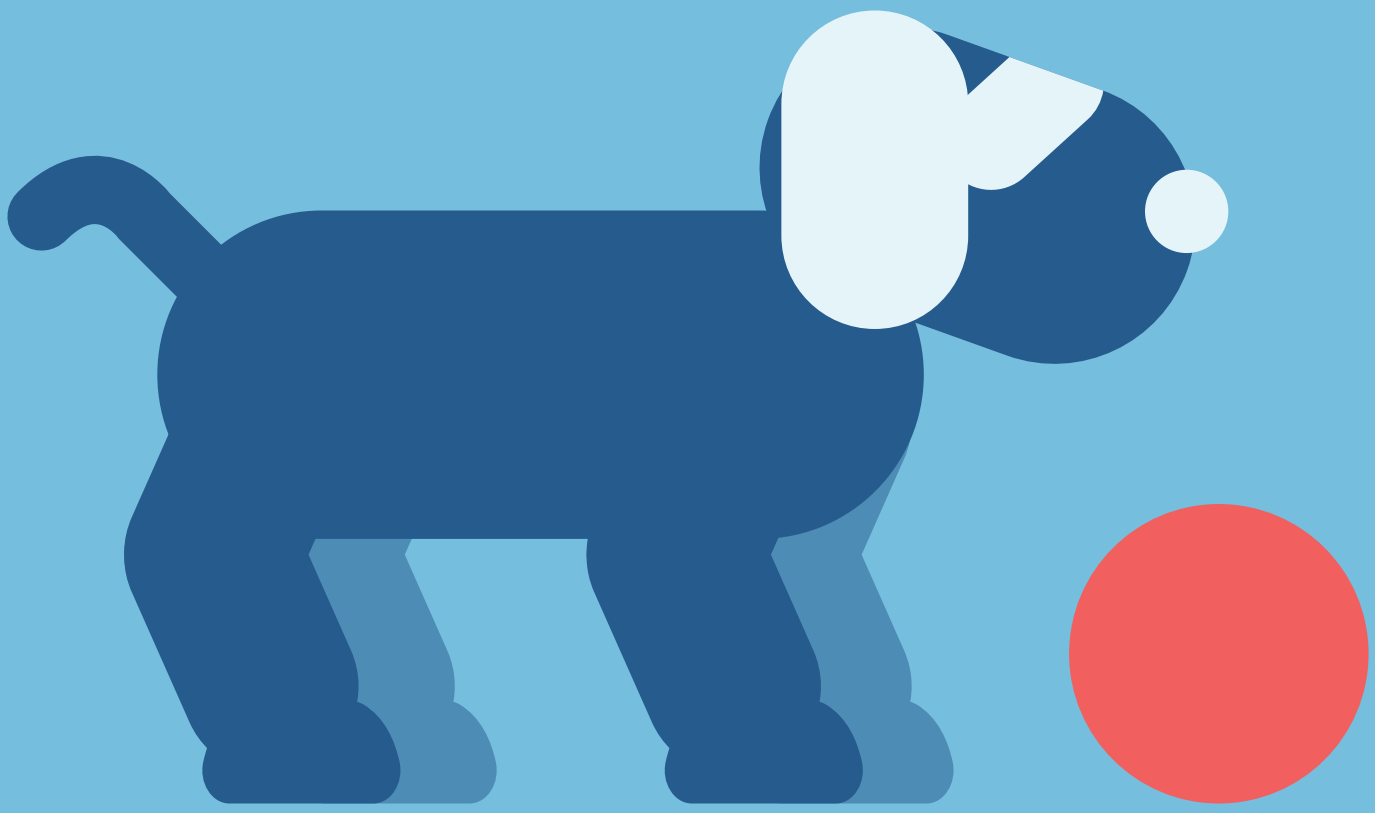
Novelty of the work

Our solution stands out because there are currently no AI-based products in the Lithuanian language capable of imitating emotions.

The benefits and value to the potential users

Potential users can engage in conversations with AI-simulated human emotions and receive feedback on their communication skills, highlighting strengths and areas for improvement.





Electricity, Electronics, and Energy

TRL 5 – technology validated in relevant environment (industrially relevant)

Vibration Wind Turbine

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

Illia Kekukh
Ilya Lazarenko
Yaroslava Polikarpova
Stas Kotlyar
Head: Artem Dedenok

Kaunas University of Technology

Description of the work

We present a lightweight, low-cost wind-powered energy harvester that generates electricity through piezoelectric vibration. The prototype features a small piezoelectric element paired with a wind-catching structure, which vibrates in response to air movement. This mechanical motion is converted into electrical energy via the piezoelectric effect.

The harvested energy is suitable for powering low-consumption devices such as LED lights or environmental sensors. Designed in the form of natural elements like bushes or flowers, the system blends seamlessly into outdoor environments - making it ideal for aesthetic energy generation in gardens, pathways, and public spaces.

Technical or other problems that are solved with the work

Many outdoor and garden lighting systems still depend on grid electricity or solar panels, which can be costly, visually intrusive, or inefficient in shaded environments. Both urban and rural areas hold untapped potential in ambient wind energy, yet conventional turbines are often too bulky, expensive, or impractical for small-scale, decorative, or residential use.

Our product offers a sustainable, aesthetically pleasing, and low-maintenance power source for outdoor lighting and small electronics. By harvesting wind energy through oscillation rather than rotation, the design avoids large blades or complex moving parts - minimizing noise, cost, and visual impact.

This enables decentralized, off-grid energy production well-suited for pathway lighting, sensors, and smart garden infrastructure, even in environments with limited sunlight.

Novelty of the work

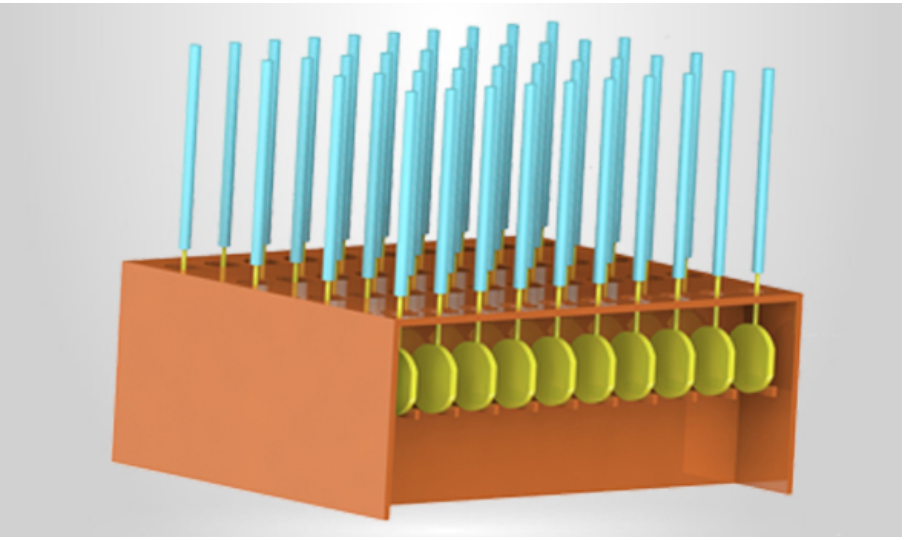
Unlike traditional wind turbines, our device generates electricity from wind-induced vibration, eliminating the need for rotational systems. Using piezoelectric discs embedded in a resonant, flexible structure, it is capable of harvesting energy even from light breezes.

Its modular, biomimetic design - inspired by natural forms such as flowers or coral - uniquely combines clean energy production with landscape aesthetics. This creates a new category of micro wind harvesters that are both decorative and functional, making them ideal for integration into smart outdoor environments where conventional energy solutions fall short.

The benefits and value to the potential users

Users gain an elegant, self-sustaining energy solution that powers gentle lighting or sensors without the need for wiring, batteries, or solar panels. Its nature-inspired design integrates seamlessly into gardens, parks, and public landscapes, serving both functional and decorative purposes.

The system is ideal for eco-conscious homeowners, urban planners, and communities seeking to reduce energy consumption while increasing resilience. Low-maintenance, scalable, and silent, it enables the creation of “smart nature” spaces with minimal environmental impact.



TRL 4 – technology validated in lab

ORION brushless motor ESC

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

Head: Karolis Žukauskas

Description of the work

As a drone-building enthusiast, I set myself the challenge of designing a custom brushless motor ESC (Electronic Speed Controller). The primary goal of this project was to create a miniature ESC board built exclusively with Western-sourced components, capable of supporting 6S LiPo batteries and sustaining a continuous current of at least 50 amps.

Technical or other problems that are solved with the work

In recent years, drones have surged in popularity - evolving from recreational and aerial photography tools into essential assets across industries such as agriculture, logistics, surveillance, search and rescue, and defense.

As global tensions rise, ensuring a reliable and uninterrupted supply chain for drone components has become increasingly critical. Developing in-house expertise and securing dependable suppliers provides both strategic security and independence from external factors.

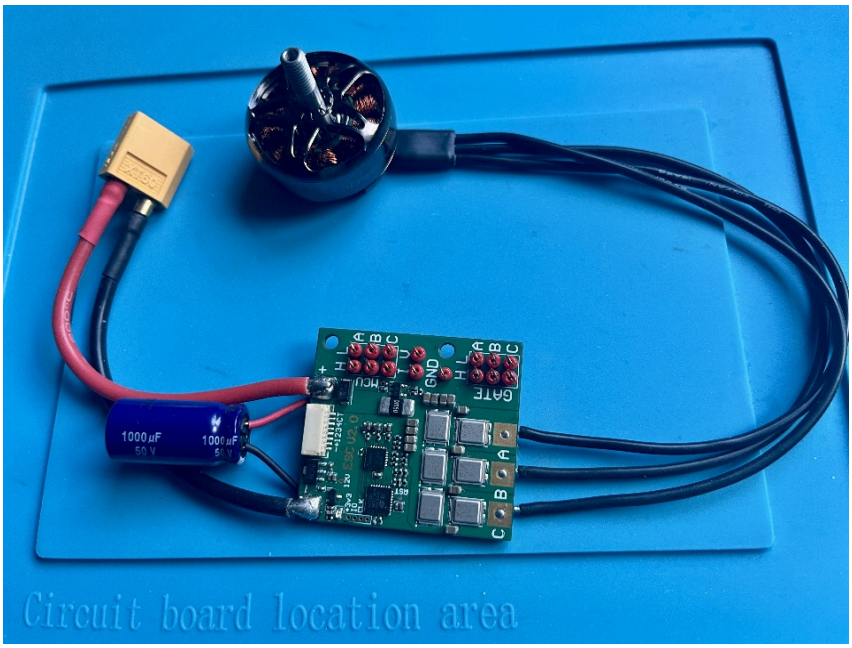
This objective forms the core mission of my project.

Novelty of the work

- Production supply chain security – ensures independence from external disruptions by relying on secure, reliable component sourcing.
- Flexibility and adaptability – the design can be modified and optimized for specific drone applications or custom use cases.

The benefits and value to the potential users

A relatively low-cost, high-performance ESC manufactured exclusively with Western-sourced components.



TRL 3 – experimental proof of concept

Innovative electricity monitoring system

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

Goda Esebua
Rokas Gudžiūnas
Juozas Vaitkevičius
Simas Bradaitis
Aistis Butvilas
Head: Dr. Kęstutis Valinčius

Kaunas University of Technology

Description of the work

The developed product is an innovative electricity monitoring system powered by data from a smart meter's P1 interface. It allows users to monitor, analyze, and optimize electricity consumption in real time, turning raw data into structured, visual, and easy-to-understand reports.

The system automatically collects data from the P1 interface and applies a machine learning algorithm to detect consumption patterns and anomalies, such as spikes or inefficiencies. In the event of irregularities, users are promptly notified.

Reports can be visualized by day, week, month, or year, with companies able to customize outputs based on specific metrics and timeframes. In addition, the system provides energy efficiency indicators, encouraging more conscious energy use and supporting long-term sustainability goals.

Technical or other problems that are solved with the work

The Problem

Electricity usage and prices are rising globally, yet most consumers still lack tools to track their consumption in real time. Without accessible and actionable insights, users miss opportunities to detect waste, recognize anomalies, and improve efficiency.

The Solution

Our smart electricity monitoring system closes this gap by helping users understand when and how they consume electricity. It provides clear visual analyses and sends alerts about unusual consumption patterns. While the system itself does not directly reduce energy use, it enables users to make informed decisions, change habits, and ultimately save money while supporting sustainable living.

Target Market

The product is designed for both households (over 1.4 million in Lithuania alone) and businesses (around 328,600 SMEs in Lithuania) seeking to optimize their energy costs.

Market Potential

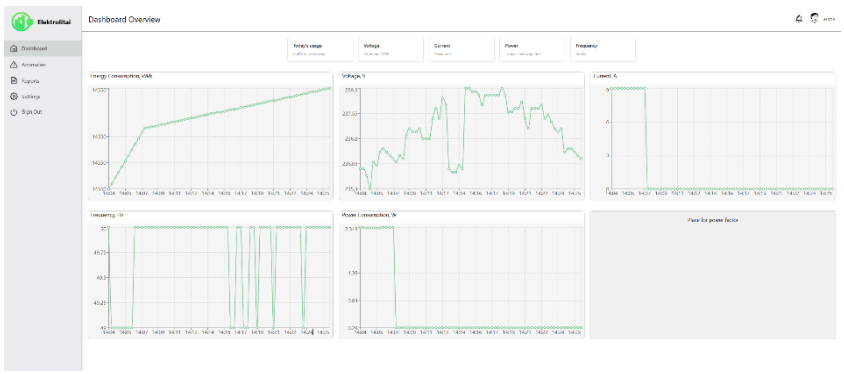
With the rollout of smart meter infrastructure, rising energy prices, and growing environmental awareness, the market shows strong growth potential. This product empowers users, promotes conscious electricity consumption, and contributes to broader energy efficiency goals.

Novelty of the work

The proposed solution stands out for its simplicity, supplier-independence, and enhanced functionality. Unlike Home Assistant, which requires advanced IT skills and complex setup, our system is easy to install and intuitive to use, even for non-technical users.

In contrast to utility provider apps—which typically present only general daily consumption data with a 24-hour delay—our product delivers real-time insights, detailed analytics, and clear visualizations of energy usage patterns.

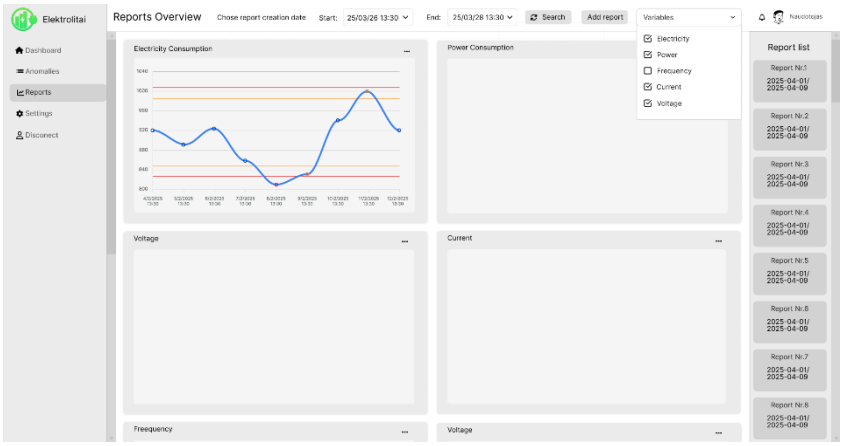
This makes it a universal, user-friendly platform that promotes energy awareness and supports smarter electricity consumption.



The benefits and value to the potential users

The system provides real-time electricity consumption data, enabling users to detect anomalies, monitor efficiency, and adjust usage habits. All indicators are displayed through clear, intuitive visualizations,

making the platform accessible and easy to understand.



For households, it offers greater control over consumption and the potential to reduce electricity costs. For businesses, it enables more efficient energy management and serves as a practical tool to comply with tightening regulatory requirements.

In addition, in cases of electricity supply failures, users have access to historical consumption data that can serve as evidence to support claims or clarify responsibility.

TRL 1 – basic principles observed

Dynostand for electric mobility vehicles

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

Head: Dr. Pranas Kuzas

Kaunas University of Technology

Description of the work

The project consists of a physical stand for testing electric mobility vehicles (e.g., scooters, e-bikes) combined with an embedded system for tracking dynamic parameters.

The propulsion wheel of the vehicle is placed between a freely rotating auxiliary wheel and a wheel generating controlled drag. As the scooter's motor rotates, a controlled brake on the stand applies resistance. The intensity of the resistance, along with power and speed sensor data, is recorded by the embedded system and transmitted to a computer.

The collected data is then visualized graphically, showing how motor speed and power vary over time depending on the applied resistance.

This setup provides a practical tool for analyzing performance characteristics of electric scooter motors under different load conditions.

Technical or other problems that are solved with the work

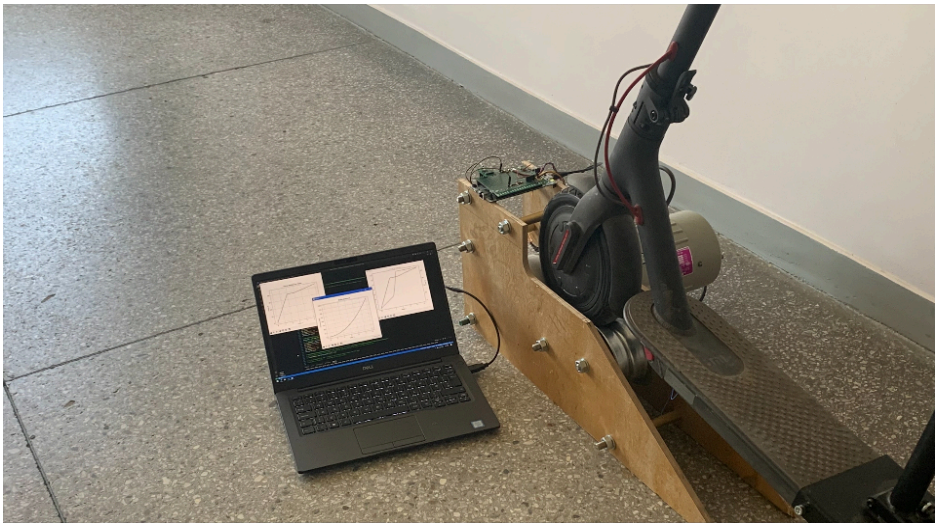
There is currently a lack of standardized, controlled methods for testing the dynamic performance of electric mobility vehicles such as e-scooters and e-bikes outside of real-world conditions.

Novelty of the work

The key innovation of the system lies in providing a simple interface for hardware-in-the-loop testing, enabling efficient evaluation of electric mobility vehicles under controlled conditions.

The benefits and value to the potential users

This device enables accurate and repeatable performance testing by simulating different loads, allowing manufacturers and engineers to analyze motor behavior, optimize designs, and validate performance under diverse conditions.



TRL 7 – system prototype demonstration in operational environment

High-resolution UV laser exposure device

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

Armel Tchuisseu
Asif Abdulsalam
Dhanu Shankar
Head: Dr. Pranas Kuzas

Kaunas University of Technology

Description of the work

This project introduces a high-resolution UV laser exposure device designed for in-house prototyping of printed circuit boards (PCBs).

Traditional PCB prototyping through European or Chinese factories often results in delays and high costs especially for large-area boards or cases where advanced features like solder mask and silkscreen are unnecessary during early development.

The proposed solution allows engineers to produce high-quality PCB prototypes quickly and at low cost, directly at the workplace. A compact, rigid, and lightweight mechanical system was developed, paired with specialized software and control electronics to ensure precise laser exposure.

This method minimizes the use of chemicals, delivers high-resolution results, and reduces dependency on external manufacturers. The project required solving engineering challenges across both mechatronics and electronics, resulting in a robust and practical prototyping tool.

Technical or other problems that are solved with the work

Prototype development in electronics engineering is directly linked to the production of printed circuit boards (PCBs). Factories in Europe and the People's Republic of China currently offer PCB prototyping services under very attractive conditions. However, in some cases particularly during the experimental stages of project development it is not necessary

for the prototype to include all the layers of the final product, such as a solder mask, metallization, or silkscreen.

Novelty of the work

To achieve the desired results, engineering challenges had to be solved in both mechatronics and electronics. By using the presented high-resolution UV laser exposure device, it is possible to produce a high-quality PCB prototype quickly, at low cost, and with reduced use of chemicals.

The benefits and value to the potential users

In some cases, large-area PCB prototypes are required—for example, for power supplies or planar antennas. In such situations, prototype costs increase significantly, and both manufacturing and shipping times directly affect overall expenses. Choosing a lower-cost prototype often means long waiting times, which slows project development, especially when working within a limited budget.

This creates the need for prototyping technologies that electronics engineers can use directly at their workplace. While chemical prototyping methods can deliver good results, the outcome largely depends on the quality of the exposure mask.

The proposed laser exposure device offers a high-resolution alternative. To achieve optimal results, a compact, rigid, and lightweight mechanical system was designed and manufactured, supported by specialized software and control solutions.

TRL 6 – technology demonstrated in relevant environment (industrially relevant)

Portable Aircraft Tracking System (ADS-B TRAC)

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

Kipras Jasiūnas
Tadas Rybelis
Lukas Nagulinas
Tautvydas Dirsė
Kasparas Jasiūnas
Darius Kybartas
Head: Dr. Pranas Kuzas

Kaunas University of Technology

Description of the work

ADS-B TRAC is a system designed to receive and process ADS-B communication packets, which are mandatory for commercial aircraft. These packets include key flight data such as aircraft ID, GPS coordinates, altitude, velocity, and planned trajectory. With U.S. government plans to make ADS-B transponders mandatory even in consumer drones under ~250 grams, this technology is becoming increasingly relevant.

Originally developed as a semester project at the Electronics Engineering Department of Kaunas University of Technology, ADS-B TRAC has since evolved into a fully functional prototype.

The system is capable of tracking aircraft using two methods:

1. ADS-B packet decoding – receiving and decoding ADS-B packets with a single device.
2. Multilateration – processing received packets on a server, calculating aircraft position based on packet arrival timestamps. This requires at least four ADS-B TRAC units to achieve a 3D coordinate solution in passive radar mode.

The research goal is to evaluate tracking speed, resolution, and precision of both methods, and to explore the feasibility of using this technology for high-speed tracking of consumer drones and other aircraft in distance-limited areas up to several kilometers.

Technical or other problems that are solved with the work

The portable ADS-B tracking system ADS-B TRAC can serve as a local solution for tracking drones and aircraft equipped with ADS-B transponders, including cases where an aircraft does not transmit global coordinates in its ADS-B messages.

Such failure conditions may occur when GNSS equipment malfunctions or when navigation signals are intentionally jammed for military purposes.

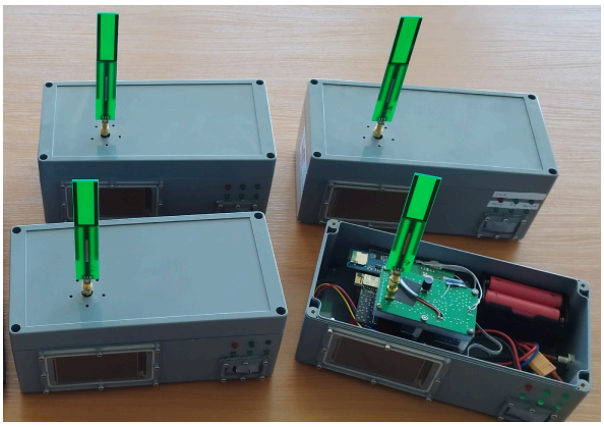
Novelty of the work

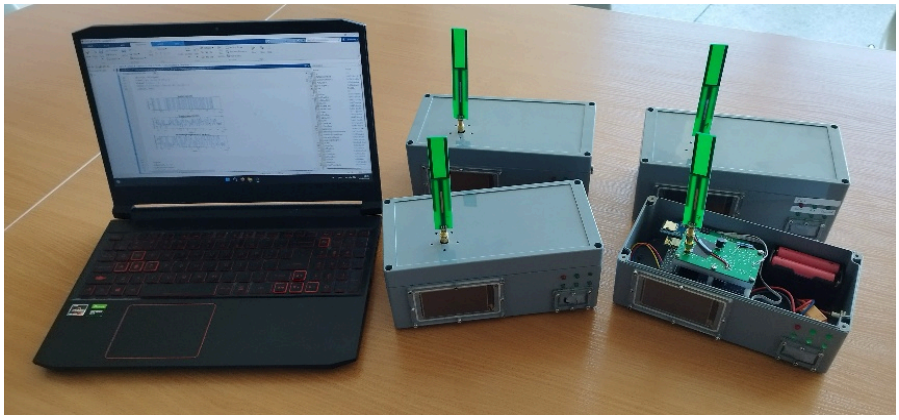
The novelty of ADS-B TRAC lies in its embedded tracking solution, which offers the flexibility to discriminate required signals or patterns within a selected frequency band and assign a unique high-resolution timestamp to each decoded packet. This is achieved using either a GNSS-synchronized or local time reference.

The benefits and value to the potential users

ADS-B TRAC is an integrated, modular, and portable solution capable of tracking, processing, and timestamping incoming ADS-B packets, with data stored on an Internet server for analysis, visualization, and long-term storage.

The prototype is housed in a water-resistant case and can operate autonomously for up to two hours, with the option of running from a 12–15V external power supply.





TRL 4 – technology validated in lab

Programable electric motor stator winding machine

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

Paulius Obolevičius
Renaldas Urniežius
Head: Dr. Renaldas Urniežius

Kaunas University of Technology

Description of the work

We have developed a programmable electric motor stator winding machine. It is designed to accommodate stators of various sizes and can wind with different gauges of copper wire, providing flexibility for a wide range of applications.

Technical or other problems that are solved with the work

A Lithuanian-made electric stator winding machine addresses the problem of slow, inconsistent, and labor-intensive stator winding in electric motor production. By automating the process, it ensures high precision, speed, and repeatability, significantly boosting both productivity and product quality.

The machine is particularly suited for manufacturers of motors used in robots, drones, and other advanced technologies. Beyond technical benefits, it also supports local innovation and reduces dependence on imports especially from China thereby strengthening regional manufacturing independence.

Novelty of the work

The novelty of this machine lies in its simple, modular design and high adaptability. Unlike complex foreign systems, it is easy to operate, maintain, and customize for different motor sizes and winding patterns.

This flexibility allows small and medium manufacturers to produce a wide range of stators without costly retooling. Locally developed, the technology is compact, efficient, and well-suited for rapid prototyping or low-to-medium volume production.

The benefits and value to the potential users

Potential users benefit from increased production efficiency, consistent winding quality, and reduced labor costs. The machine enables faster time-to-market, higher product reliability, and easier scaling of electric motor manufacturing.

It also adds value by strengthening local supply chains, reducing dependence on foreign equipment, and enhancing competitiveness in sectors such as robotics, drones, and other high-tech motor industries.

Open Source STM32 Based Smart Energy Meter with P1 Interface

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

Paulius Obolevičius
Renaldas Urniežius
Head: Dr. Vytautas Daunoras

Kaunas University of Technology

Description of the work

This open-source smart energy meter is designed for 230 V RMS residential grids. It integrates an STMicroelectronics STPM33 metrology IC with a ring-type current transformer for safe, accurate current sensing in the 0–50 A range.

The measurement stage is galvanically isolated from the STM32 microcontroller in compliance with IEC 60664-1, ensuring operator safety. Measured values are formatted into DSMR P1 telegrams and delivered via a UART-to-RJ12 port for easy connection to other devices.

A low-power e-paper display presents real-time data on voltage, current, power, and energy. Laboratory testing against an ELGAMA Class 1 reference meter demonstrated 1–3% accuracy up to 12 A after single-point calibration.

The prototype is ideal for research, education, and further customization, offering a flexible, accessible platform for energy metering applications.

Technical or other problems that are solved with the work

The Problem

Most commercial energy meters rely on closed-source hardware and software, which limits customization, flexibility, and usability in research and educational environments. Such closed systems hinder innovation, restrict integration with additional sensors, and complicate the collection and analysis of precise energy consumption data.

The Solution

This bachelor's thesis project introduces an open-source smart energy meter designed for easy integration, modification, and experimentation. By removing vendor restrictions, the system promotes advancements in energy management research and education, enabling new applications and innovative approaches.

Target Market

The primary users include universities, schools, research laboratories, and institutions engaged in energy management studies, innovation, and sustainability-focused education.

Market Potential

With the growing global emphasis on sustainability and smart systems integration in educational and research settings, this energy meter presents strong potential as a versatile, accessible, and highly adaptable solution tailored to the evolving needs of the sector.

Novelty of the work

The novelty of this project lies in the use of open-source technologies, which ensures flexibility, easy modification, and adaptability of the measurement device for a variety of research and educational purposes.

Unlike closed systems currently available on the market, the chosen components, software, and documentation are easily accessible, well-documented, and open to the public. This allows researchers, students, and other users to independently expand the device's functionality, integrate additional sensors or modules, and tailor the system to specific tasks.

This approach also encourages knowledge sharing and collaboration, contributing to the development of new innovative ideas and technologies in the field of energy monitoring and management.

The benefits and value to the potential users

Most commercial energy meters are closed-source, with limited functionality and little potential for adaptation to research or individual needs.

This open-source meter is different: it is easily modifiable and adaptable for personal, educational, or research applications, giving users full flexibility to customize and expand its functionality.

Data acquisition system with automatic sensor identification

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

Head: Dr. Vytautas Daunoras

Kaunas University of Technology

Description of the work

The system collects data from a variety of sensors via digital interfaces such as I²C and UART, while also supporting analog sensor inputs through the same connectors. All acquired data is logged to a microSD card and displayed in real time on the screen.

Technical or other problems that are solved with the work

This project addresses the challenge of integrating multiple types of sensors both digital and analog into a single data acquisition system. Normally, protocols such as I²C, UART, and analog inputs require custom wiring, configuration, and programming, which can be time-consuming and error-prone.

The proposed system enables automatic sensor identification and supports multiple interfaces through the same connectors, greatly simplifying sensor integration. It also provides real-time data visualization and local logging to a microSD card, removing the need for complex external infrastructure.

These features make the solution particularly suitable for field deployments, prototyping, and educational applications.

Novelty of the work

The novelty of this system lies in its unique combination of features: automatic sensor identification, multi-interface support (I²C, UART, analog), and an integrated display for real-time monitoring—all within a compact, standalone device.

Unlike conventional data acquisition solutions that require a computer or external display, this system enables users to instantly view sensor data on the built-in screen, greatly simplifying field use and reducing setup complexity.

The benefits and value to the potential users

This system offers users a fast, plug-and-play solution for collecting sensor data without complex setup or programming. With automatic sensor identification and support for multiple interfaces (I²C, UART, analog), it minimizes integration time and lowers technical barriers, making sensor-based projects more accessible and efficient.

TRL 4 – technology validated in lab

Programable electric motor stator winding machine

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

Rokas Briedis
Head: Dr. Vytautas Markevičius

Kaunas University of Technology

Description of the work

The developed solution is a remote power line monitoring and anomaly detection device designed for low-voltage (6 kV) distribution networks.

It consists of a measurement transformer, a data acquisition, encoding, and transmission module, and a radio antenna for wireless communication. Installed directly on the line, the device continuously observes voltage and current in real time and transmits the data to a substation receiver.

This enables immediate anomaly detection - such as fluctuations caused by short circuits or line and cable failures - and supports automated grid protection responses. In addition, it allows operators to monitor grid condition remotely, improving both maintenance planning and load management.

Technical or other problems that are solved with the work

The Challenge

In 6 kV low-voltage power distribution networks, real-time line state observation and anomaly detection are usually limited to substations. When issues such as short circuits or line damage occur outside substations, response may come too late - causing equipment damage, extended outages, longer repair times, and dissatisfaction among households.

The Solution

Our device brings real-time observation directly into the field. It enables early anomaly detection and immediate system response before failures escalate. This is increasingly relevant as more households generate renewable electricity and feed it into a distribution grid that spans over 120,000 km.

Target Market

The primary clients are public power distribution network operators. The solution empowers them to monitor remote grid points and respond instantly to issues.

Impact

As distributed energy generation expands and the number of always-connected devices grows, real-time insights into power distribution and grid health are becoming essential. This system helps operators reduce downtime, protect infrastructure, and ensure reliable service for households and businesses.

Novelty of the work

Our solution enables real-time voltage and current monitoring directly on low-voltage lines - a capability traditionally reserved for high-voltage infrastructure. Unlike existing systems that monitor only from substations, this device is installed directly on the line and transmits data wirelessly via RF to the substation.

It provides a low-cost, scalable, and easy-to-deploy method for extending smart grid functionality into underserved parts of the distribution network. This allows for faster anomaly detection, smoother integration of renewable energy sources, and improved maintenance planning.

The benefits and value to the potential users

Power grid operators gain a real-time view of their distribution network beyond substations. This allows them to detect faults quickly, isolate affected segments automatically, and minimize downtime.

The system also supports proactive maintenance, improves grid stability, and provides valuable data for load and health forecasting. By delivering these insights without the need for costly infrastructure upgrades—such as replacing power lines or entire substations—it enables smarter, more efficient decision-making.

Health Sciences

TRL 5 – technology validated in relevant environment (industrially relevant)

Tool for plaque segmentation in cardiac vessels in computed tomography images

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

Aivaras Dvareckas
Matas Gedžiūnas
Goda Jančiūnaitė
Lukas Malakauskas
Nojus Skirkevičius
Jurgis Šefleris
Head: Dr. Dovilė Verenė

Kaunas University of Technology

Description of the work

The goal of this work is to implement a self-supervised region growing algorithm for vessel and plaque segmentation and for determining the degree of vessel stenosis.

Plaques accumulations of fat, calcium, and other substances in blood vessels restrict blood flow and increase the risk of cardiovascular diseases. Analyzing cardiac computed tomography (CT) images adds to physicians' already demanding workload, increasing the risk of human error.

Our solution uses a self-supervised region growing algorithm combined with AI models to automatically detect plaques in CT images and calculate the degree of stenosis, i.e., the percentage of a vessel's cross-sectional area occupied by plaque. The model evaluates results using nine vessel projections for improved reliability.

By automating a previously manual task, the product reduces physician workload, lowers the risk of human error, and serves as a valuable second opinion in the diagnosis of cardiovascular diseases.

Technical or other problems that are solved with the work

The Challenge

As of 2023, cardiovascular diseases account for 52.1% of deaths in Lithuania. By 2070, the share of residents aged 65 and older is projected to exceed 33%. Plaque accumulations of fat, calcium, and other substances in blood vessels slows blood flow and increases the likelihood of cardiovascular disease.

Physicians analyzing cardiac computed tomography (CT) images receive nine vessel projections, where the area of the same plaque appears differently in each image. At present, these images are evaluated visually without automated support, adding to physicians' demanding workload and raising the risk of human error.

Target Market

The solution is aimed at medical institutions employing cardiologists and radiologists who examine vascular stenosis in CT images and seek to reduce human error and workload. In Lithuania, there are around 20–30 such institutions, but expansion into European markets is essential in later stages. With Europe facing both an aging population and a rising prevalence of cardiovascular diseases, the number of potential clients is steadily increasing.

Novelty of the work

The product is dedicated to a specific field—automatic plaque detection in CT images and stenosis evaluation. Unlike competitors such as HeartFlow, Medis Medical Imaging, and Siemens Healthineers, our solution offers:

- A fully automated algorithm based on a self-supervised region-growing method combined with AI models.
- A visual interface displaying both numerical indicators and a color-coded stenosis map.
- A semi-automatic mode enabling physicians to adjust plaque location and instantly receive updated results.
- Integration with existing hospital systems, ensuring fast and easy deployment.
- The agility of a smaller team, providing more personalized client support and faster, feedback-driven improvements.

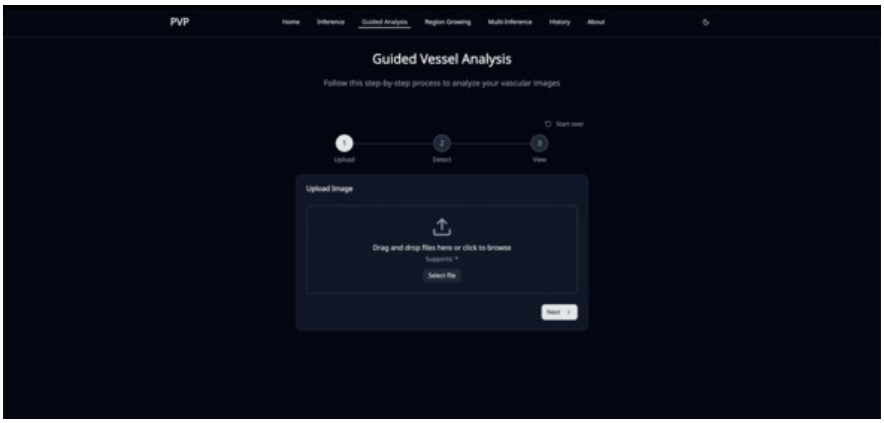
The benefits and value to the potential users

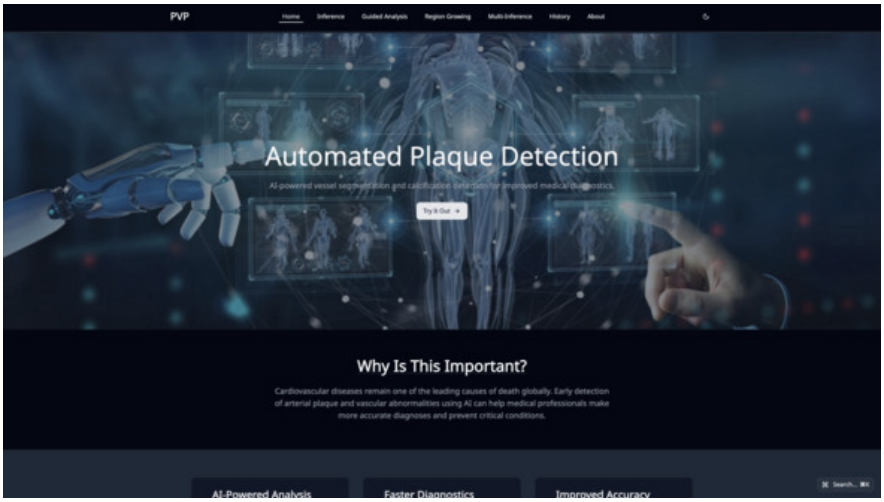
Our user research revealed a clear need for a tool that consolidates all images of a single blood vessel and delivers a final result showing how much of the lumen is occupied by plaque.

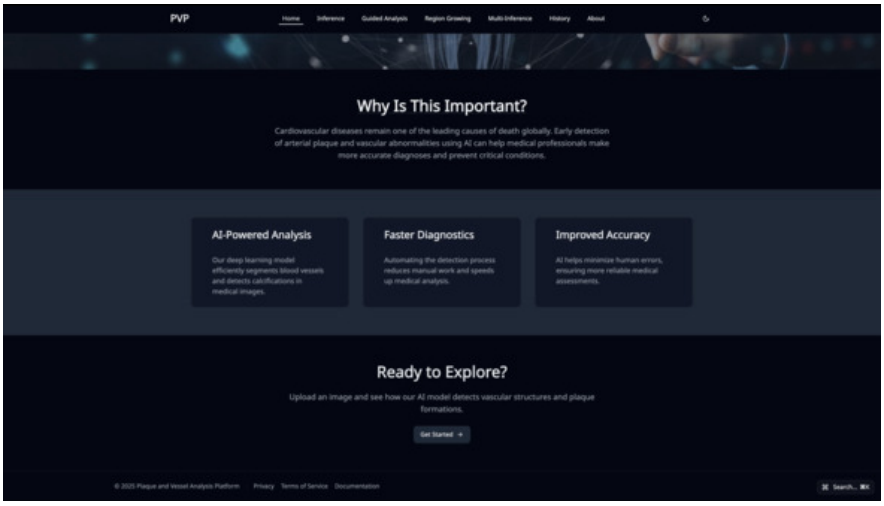
Our AI-based solution automatically detects plaque and determines its area. By analyzing nine image projections, it calculates the actual plaque size and stenosis degree - the percentage of the vessel's lumen narrowed by plaque.

The product functions as a second opinion in diagnosing cardiovascular diseases. Physicians simply upload nine images and instantly receive a stenosis evaluation, then review the images to validate the model's reliability.

Additionally, the system is designed for seamless integration with existing medical platforms, ensuring easy access and intuitive use in clinical environments.







Carehand lateral patient transfer system

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

Harleen Kaur
Kairi Koppel
Kira Pekshieva
Head: Dr. Hastinder Singh

Description of the work

We are a HealthTech startup dedicated to transforming healthcare through advanced robotics. Our mission is to make patient care safer, more efficient, and easier for caregivers, while ensuring that elderly patients receive the dignity and comfort they deserve.

Our flagship product, the CareHand Patient Transfer System (CPTS), is a fully automated, portable robotic device designed to assist healthcare professionals in transferring elderly patients smoothly and safely. By combining smart technology with practical design, CPTS reduces the physical strain on caregivers and delivers a secure, comfortable experience for patients.

Through innovation, we are setting new standards in healthcare that emphasize safety, efficiency, and patient well-being.

Technical or other problems that are solved with the work

The Challenge

Manual patient transfers place a heavy burden on healthcare environments. They often cause musculoskeletal injuries for nurses and caregivers, contributing to staff shortages, high turnover rates, and rising healthcare costs. For patients - especially the elderly - traditional transfer methods can result in pressure sores, joint strain, skin injuries, and accidental falls, making the process both unsafe and distressing. In addition, contact with non-sterile surfaces increases infection risks, further compromising patient safety.

The Solution

The CareHand Patient Transfer System (CPTS) eliminates manual lifting with a fully automated, high-torque motor-driven system that ensures smooth, safe, and effortless

transfers. Its lightweight, antimicrobial-coated surfaces help prevent infections, while an intuitive app enables remote operation, troubleshooting, and real-time support.

The Impact

By reducing workplace injuries, protecting caregivers, and preserving patient dignity, CPTS enhances both safety and efficiency in healthcare environments. It represents a new standard for patient transfer solutions, helping institutions optimize resources while delivering better care.

Novelty of the work

The CareHand Patient Transfer System (CPTS) revolutionizes patient handling with a fully automated transfer process. By eliminating the need for lifting, pushing, or pulling, it dramatically reduces caregiver strain while enhancing patient comfort.

Its lightweight design with antimicrobial-coated surfaces minimizes infection risks, simplifies cleaning, and lowers costs associated with specialized hygiene protocols. The intuitive app enables remote operation, real-time error diagnostics, direct support, and data collection for continuous improvement. With the built-in “Find My Device” feature, nurses can quickly locate available units, optimizing workflow efficiency.

CPTS combines safety, efficiency, and cost-effectiveness in a single solution—redefining patient transfers with cutting-edge automation and user-friendly technology. This makes it an indispensable tool for healthcare providers seeking to protect caregivers, preserve patient dignity, and streamline operations.

The benefits and value to the potential users

The CareHand Patient Transfer System (CPTS) provides a groundbreaking solution for effortless patient transfers, eliminating the need for lifting, pushing, or pulling. This significantly reduces caregiver strain while improving patient comfort and dignity.

Its lightweight, antimicrobial-coated design enhances hygiene, prevents infections, and ensures a safer healthcare environment. The intuitive app enables remote operation, real-time troubleshooting, and direct support, while the “Find My Device” feature allows quick location of available units, streamlining hospital and care facility operations.

CPTS delivers unmatched convenience, safety, and hygiene, transforming patient transfers in both hospitals and home care. By reducing caregiver fatigue, improving patient well-being, and increasing operational efficiency, it helps elevate healthcare standards and redefine modern patient care.

TRL 6 – technology demonstrated in relevant environment (industrially relevant)

LukGo: Your smart companion. Freedom to move, confidence in every step. Discover the world without fear.

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

Goda Škeliovaitė
Jonas Plukas
Head: Rūta Strumilienė

Jonava Jeronimas Ralis Gymnasium

Description of the work

The smart cane for the visually impaired combines multiple functions into one innovative device offering smarter touch, more senses, and greater independence.

By integrating ultrasonic sensors, GPS, and other navigation technologies, the cane enables users to move safely and confidently through their environment. Beyond being a mobility aid, it serves as an indispensable companion that empowers autonomy, reduces daily challenges, and supports an active lifestyle.

It is not just a cane it is a bridge to independence and a tool that helps shape a more inclusive tomorrow.

Technical or other problems that are solved with the work

The Challenge

People with visual impairments often face social exclusion and restrictions on their freedom. A striking example is the case of a girl with a guide dog being refused entry to public transport - highlighting the everyday barriers that limit independence and dignity for the visually impaired.

The Solution

Our smart cane for the visually impaired offers a practical and empowering alternative. By integrating modern technologies, it provides safe navigation, greater autonomy, and more inclusive mobility - helping to reduce reliance on others and avoid situations of exclusion.

Target Market

The product is designed for people with visual impairments of all ages. With rapid technological progress and growing recognition of accessibility needs, there is strong demand and growth potential for smart assistive devices like this one.

Novelty of the work

This smart cane stands out by integrating modern technologies that provide users with greater safety, independence, and confidence.

- A vibration function allows users to sense obstacles before physical contact.
- An integrated GPS receiver makes navigation and location tracking easier.
- An SOS button sends the user's exact coordinates to a loved one in case of danger or disorientation.

These features go far beyond the capabilities of a traditional white cane, offering a higher level of security, freedom, and comfort for people with visual impairments.

The benefits and value to the potential users

The smart cane for the visually impaired delivers significant benefits by enhancing both safety and independence.

By providing early warnings of obstacles, potholes, or changes in terrain, it helps users avoid injuries and move with greater confidence. In addition, the cane offers extra information about the surrounding environment, enabling more secure and informed navigation.

With these features, users can feel more independent, active, and less reliant on others, making daily life safer and more fulfilling.

TRL 4 – technology validated in lab

Sugar-free Biscuits With No Added Sugar

Field of science Health sciences
Type of innovation Food (e.g. new food product, novel food ingredients)

Gabija Trakšelytė
Aušra Šileikaitė
Beata Kvietkaitė
Head: Dr. Loreta Bašinskienė and Prof. Aušra Rūtelionė

Kaunas University of Technology

Description of the work

The product under development is a fibre-enriched, sugar-free biscuit produced using traditional wire-cut forming technology.

Developed in line with modern consumer trends such as reduced sugar consumption, the rise of functional foods, and a growing focus on sustainability the recipe replaces refined sugar with date paste and adds bamboo flour as a natural fibre source. To stay close to the familiar appeal of chocolate-chip cookies, the biscuits feature sugar-free chocolate chips complemented by the flavour of dried banana pieces.

The goal is to preserve the traditional qualities of wire-cut cookies while significantly improving their nutritional value and expanding their flavour profile. The product may carry the nutrition claims “NO ADDED SUGAR” and “SOURCE OF FIBRE” on its labelling.

Technical or other problems that are solved with the work

The Challenge

Fast food snacks on store shelves are dominated by sweet biscuits and bars high in refined sugar and food additives. These products deliver a short burst of energy followed by a sharp decline, known as glycaemic fluctuation.

The Solution

To reduce added sugar intake, the biscuits under development are naturally sweetened with date paste instead of refined sugar. This creates a sweet, fibre-enriched snack that offers a longer-lasting feeling of satiety and helps maintain balanced energy levels.

Target Market

The product is designed for three main consumer groups:

1. Families with children
2. Healthy lifestyle followers
3. People with diabetes

Market Potential

The global healthy snacks market is growing by 6–8% annually, while demand for sugar-free products is increasing even faster at 9–10% annually (Passport data). Consumers are paying closer attention to product composition, preferring less processed, plant-based foods. This shift, combined with the global trend of reducing sugar intake, highlights the strong growth potential of this fibre-enriched, sugar-free biscuit.

Novelty of the work

These biscuits stand out from conventional products by deriving their sweetness from natural ingredients—date paste and dried bananas. The addition of bamboo flour boosts fibre content, providing longer satiety and supporting digestive health. In this way, the product not only satisfies the craving for sweetness but also promotes healthier eating habits.

Currently, the sugar-free biscuit market is dominated by a few large manufacturers whose products are typically sweetened with the artificial sweetener maltitol. While maltitol reduces sugar intake, it is often associated with digestive discomfort.

In contrast, these biscuits offer a nutrient-rich, well-tolerated alternative that maintains an enjoyable taste experience while delivering better nutritional value and improved digestive compatibility.

The benefits and value to the potential users

Natural sweetness without added sugar – Date paste provides natural sweetness without triggering glycaemic fluctuations. The biscuits are suitable for diabetics and for consumers consciously limiting sugar intake. Enriched with fibre, they help slow glucose absorption and prolong satiety.

Emotional value – The product makes it possible to enjoy a “chocolate biscuit” guilt-free, without disrupting healthy eating habits. It satisfies cravings while motivating consumers to maintain conscious, balanced nutrition.

Convenience and versatility – A healthier snack that can be enjoyed anytime, anywhere. Its convenient shape makes it an ideal choice for active, health-conscious people seeking a quick, tasty, and nourishing energy boost.

Information Technologies

P.L.U.G.

Field of science Information technologies
Type of innovation Software and hardware

Miglė Cirtautaitė
Evelina Riukaitė
Nojus Vasiliauskas
Head: Vytautė Pratkevičiūtė

Kaunas University of Technology

Description of the work

This project introduces a convenient charging equipment and power bank rental network, operating much like public bike or e-scooter-sharing systems. Users can borrow a phone charger, cable, or power bank by paying a per-minute or hourly fee, then return it to any available station within the network.

- The service ensures that people no longer face the inconvenience of a dead device in public spaces, during transit, or while traveling. It is particularly useful for:
- Travelers who forget their chargers or don't have time to recharge.
- Students whose devices run out of battery during lectures.
- City dwellers needing a quick charge without carrying extra accessories.

Access is managed via a mobile app, which allows users to locate the nearest station, unlock a device, and pay seamlessly. Devices can be returned at any station in the network, just like car-sharing or bike rentals.

This is a cost-effective, eco-friendly, and flexible solution to an everyday problem: keeping mobile devices powered when people need them most.

Technical or other problems that are solved with the work

The Challenge

In today's world, mobile devices are essential to daily life. Yet when batteries die on public transport, during meetings, while traveling, or at events users face serious frustration. Chargers are often forgotten, incompatible, or impossible to use when needed. Existing

solutions, such as fixed outlets or charging stations, are limited, costly, and not always accessible.

The Solution

Our charging cable and power bank rental service offers a fast, flexible alternative. Users can borrow USB cables, adapters, or power banks for a small per-minute or hourly fee, returning them at any service point in the network. For those who don't need a rental, stations also provide short plug-in charging (e.g., 5–10 minutes) just enough to make an urgent call or access essential apps.

Target Market

- Travelers – airports, train stations, and transit hubs.
- Students & city residents – universities, cafés, shopping centers.
- Event attendees – festivals, conferences, and large gatherings.

Market Size & Growth Potential

The global power bank market reached ~$10 billion in 2023 and continues to grow at ~8% annually. With increasing dependence on mobile devices, demand for flexible, on-the-go charging solutions is expected to rise sharply. Our service has strong expansion potential in tourist hubs and major cities worldwide.

Competitive Advantages

- Flexibility – devices can be returned at any station.
- Eco-friendliness – reduces e-waste compared to disposable batteries.
- Accessibility – combines both quick charging and rental in one service.

This solution addresses a real consumer pain point with an affordable, practical, and sustainable approach to mobile device charging.

Novelty of the work

Uniqueness

Our solution goes beyond conventional power bank rentals or fixed charging stations by delivering a fully integrated charging service system.

Key Advantages:

- Comprehensive Charging Solution – provides not only power banks and phone chargers, but also laptop charging adapters, a rare offering in today's market.
- Instant Access Feature – users can plug in for a quick charge (e.g., 5 minutes) directly at the station, without renting, for emergency power needs.

- Flexible Return System – borrowed devices can be returned to any service point in the network, much like bike-sharing systems.
- Strategic Placement – stations are installed in high-traffic areas such as airports, cafés, co-working spaces, and shopping centers, maximizing accessibility.

This is the first truly universal charging solution catering to both smartphones and laptops. It combines the flexibility of bike-sharing with the practicality of on-demand power, setting a new standard for mobile device charging for travelers, students, and professionals alike.

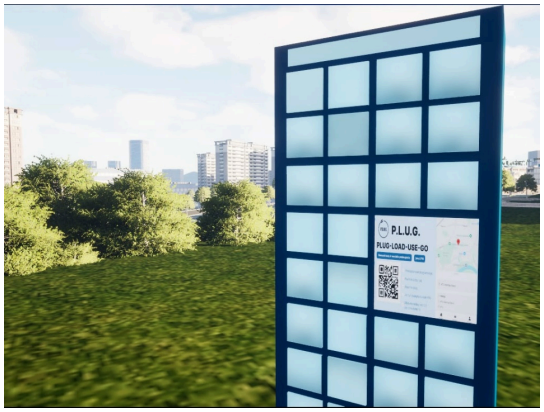
The benefits and value to the potential users

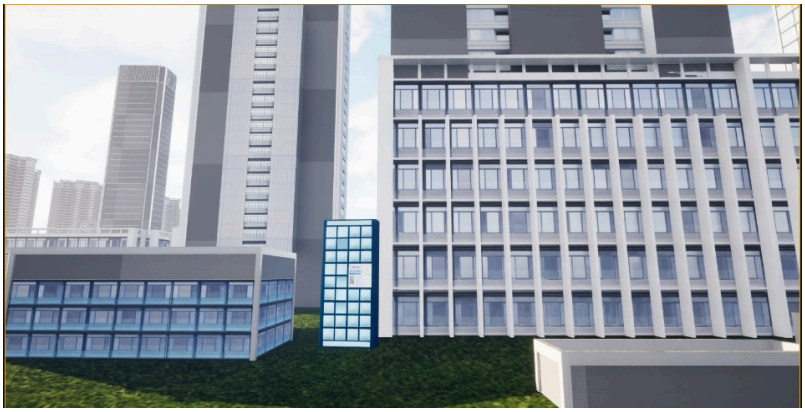
Benefits for Users

Our charging solution delivers peace of mind, flexibility, and convenience in everyday mobile life. With an extensive network of charging stations, users no longer face the frustration of dead batteries at critical moments.

- Always Connected – instant access to reliable power, whether for a quick emergency top-up or a longer rental.
- Travel Light – eliminates the need to carry multiple chargers or bulky backup batteries, reducing bag clutter and weight.
- Boost Productivity – professionals stay powered through back-to-back meetings, students through long study sessions, and travelers during transit.
- Affordable & Accessible – flexible pricing and high-traffic locations ensure charging is cost-effective and always within reach.
- Eco-Friendly Choice – reduces electronic waste by cutting reliance on disposable batteries and unnecessary backup devices.

By combining personal convenience with environmental responsibility, our service offers a universal charging safety net that adapts to every user's lifestyle.





TRL 6 – technology demonstrated in relevant environment (industrially relevant)

FitSpace an AI-powered Virtual Fitting Room

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

Prof. Tomas Krilavičius
Dr. Edgaras Ščiglinskas
Head: Andrius Marcinkevičius

Vytauto Didžiojo universitetas

www.fitspace.fashion

Description of the work

FitSpace is an AI-powered Virtual Fitting Room that allows online fashion shoppers to realistically visualize how garments fit their bodies in 3D.

By combining advanced 3D visualization, lifelike AI-generated avatars, and real-time garment simulation, FitSpace makes it possible to "try on" clothes digitally - bringing the in-store experience online.
For retailers, the solution helps to reduce return rates, increase conversions, and deliver a more personalized shopping experience. We are targeting mid-to-large European fashion brands eager to embrace innovation and sustainability in e-commerce.

Technical or other problems that are solved with the work

The Challenge

Online fashion shoppers often struggle to understand how clothes will fit their body before purchasing. This leads to high return rates, poor customer experience, and lost sales. In 2023, the global online apparel market reached $155.8 billion, with return rates averaging up to 40%—equal to $38 billion in returned goods.

The Solution

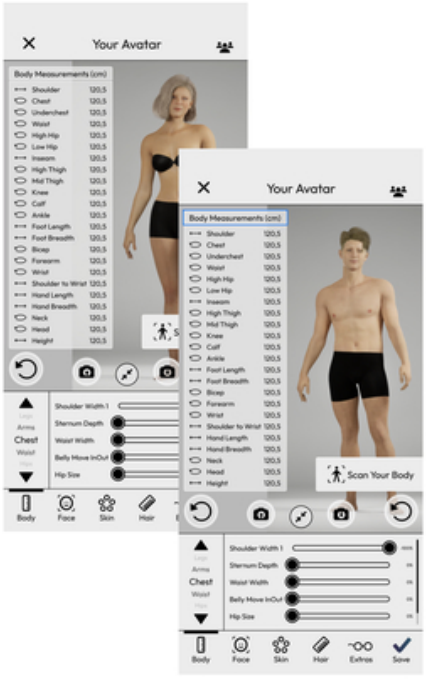
FitSpace addresses this challenge with a real-time, AI-powered 3D Virtual Fitting Room. Customers can visualize garments on lifelike avatars generated from their own body data, helping them make confident purchasing decisions and reducing costly returns.

Novelty of the work

FitSpace stands out by combining advanced AI-driven 3D avatars with real-time garment simulation, delivering a virtual fitting experience far more realistic than competitors that rely on flat 2D visuals or generic avatars.

Our innovation is strengthened through active R&D collaboration with Vytautas Magnus University, ensuring both technological novelty and continuous improvement. Unlike existing solutions, FitSpace prioritizes lifelike body representation, dynamic fabric behavior, and seamless integration into retailers' websites and apps.

This cutting-edge approach delivers superior fit accuracy and stronger user engagement, positioning FitSpace as a next-generation virtual fitting room solution.



The benefits and value to the potential users

FitSpace delivers a more accurate, immersive, and personalized online shopping experience. Shoppers can "try on" garments in realistic 3D using avatars based on their own body data, building trust and confidence in purchase decisions.

For retailers, the business impact is clear:

- Up to 30% reduction in return rates
- Up to 25% increase in average order value
- Up to 15% higher conversion rates

In addition, FitSpace drives greater customer engagement and increases time spent on product pages. For fashion brands seeking innovation and sustainability, it offers a cutting-edge tool to stand out, reduce environmental impact, and fuel revenue growth.

TRL 3 – experimental proof of concept

Water Quality Testing System

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

Matas Žilinskas
Rokas Mikelkevičius
Head: Dr. Egidijus Kazanavičius

Kaunas University of Technology

Description of the work

This project introduces a smart buoy designed to autonomously monitor water quality.

The system consists of three key components:

- a buoy equipped with sensors to collect data on key water parameters,
- a cloud infrastructure for secure data storage and analysis,
- and a web platform where users can easily track water quality from anywhere in the world.

By focusing on simple-to-measure parameters, the buoy provides reliable insights into pollution levels and makes environmental data accessible in real time through an intuitive online interface.

Technical or other problems that are solved with the work

The Challenge

Monitoring temperature, pollution, and river level changes is crucial for environmentalists, fishermen, and communities living near water bodies. Currently, this often requires expensive equipment or laboratory testing, making regular monitoring costly, time-consuming, and inaccessible.

The Solution

Our product provides a remote, automated system that continuously measures key water parameters. By making this information available online, it enables users to track changes in

real time and detect sudden pollution events or water level shifts much earlier than traditional methods.

This approach simplifies water quality monitoring, reduces costs, and delivers timely insights for better decision-making in environmental management and daily use.

Novelty of the work

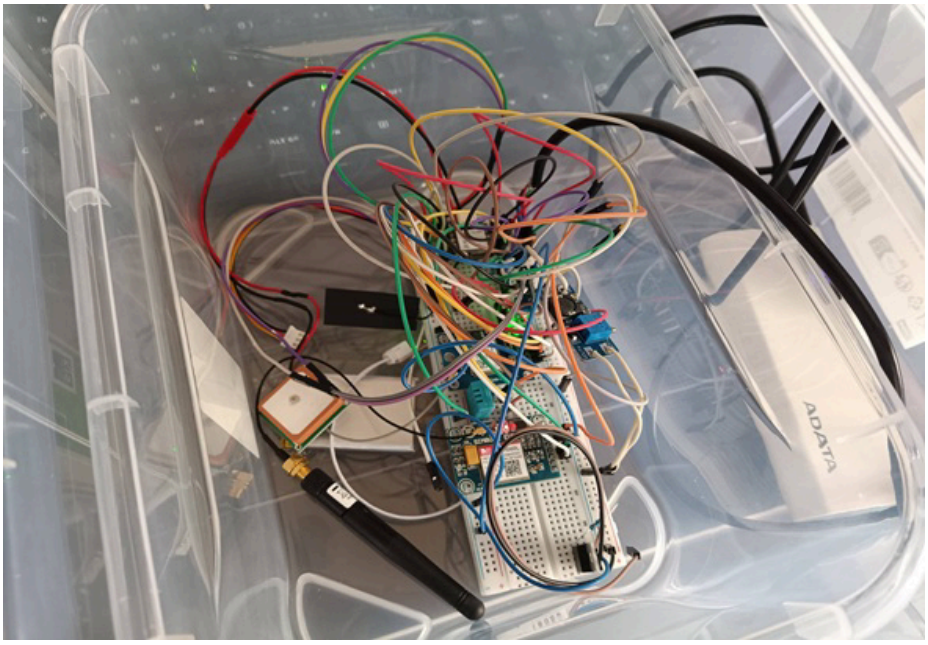
We aim to deliver a complete, end-to-end solution from the measurement buoy to the user-friendly web platform.

Unlike indirect competitors who offer only partial solutions, our system provides a fully integrated approach to water quality monitoring. This combination of on-site measurement, cloud-based analysis, and accessible online reporting ensures that users receive accurate, real-time insights in one seamless package.

The benefits and value to the potential users

The main benefit of the system is the ability to check water quality data from any location.

For environmentalists, it enables faster responses to significant changes, helping to mitigate environmental damage. For local communities and individuals, it provides clear information on whether nearby bodies of water are safe or contaminated, improving awareness and decision-making in daily life.



Ignited - Learn Smarter, Grow Faster

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

Ignas Gineitis
Aistė Lekavičiūtė
Rokas Čiuplinskas
Gvidas Valionis
Head: Dr. Eglė Butkevičiūtė

Kaunas University of Technology

Description of the work

This AI-powered learning platform enhances the learning experience by personalizing content and providing individual support.

The system selects and summarizes study materials according to defined criteria and user needs. Users can register, complete assigned courses, consult with an AI assistant, and use flashcards for test preparation. Each course has a defined duration and a final test.

For managers, the platform enables role assignment with specific courses and provides progress tracking through detailed reports.

The product follows a freemium model, making it accessible while offering premium features for advanced use.

Technical or other problems that are solved with the work

The Challenge

Current learning platforms often fail to provide personalized content and individual support, leaving learners with knowledge gaps.

The Solution

Our product is designed for self-directed learners and corporate employees who need an efficient, AI-powered learning solution. It adapts content to individual needs, ensures more effective knowledge acquisition, and provides guidance throughout the learning process.

Market Potential

The digital learning market is expanding rapidly and is projected to exceed $400 billion by 2030, creating strong growth opportunities for innovative AI-driven solutions.

Novelty of the work

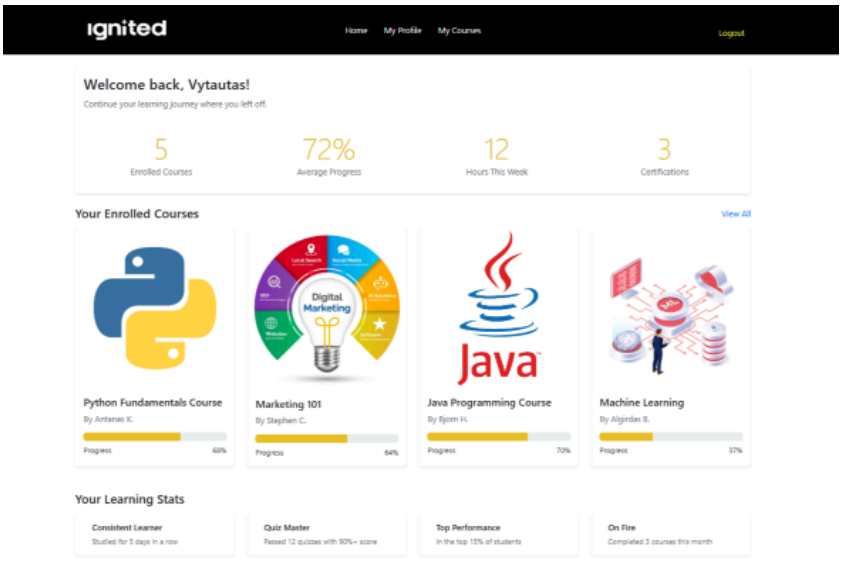
Our platform stands out by combining AI-driven content personalization, real-time assistance, and automated learning summaries into a single, user-friendly system.

This integration ensures that learners not only receive tailored content but also benefit from instant guidance and clear, structured summaries, making the learning process more efficient and engaging compared to conventional platforms.

The benefits and value to the potential users

Users benefit from personalized learning content, AI-powered assistance, and efficient preparation tools such as summaries and flashcards. These features improve understanding, retention, and test readiness.

The platform saves time, adapts to individual needs, and ultimately delivers better learning outcomes making education more effective, engaging, and accessible.



TRL 7 – system prototype demonstration in operational environment

Basketball analysis platform – NextGen Analytics

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

Eimantė Burauskaitė
Šarūnas Baltrušaitis
Dominyka Drunytė
Laura Barišauskaitė
Kajus Šilkaitis
Head: Giedrius Tribandis

Kaunas University of Technology

Description of the work

We present a basketball analysis platform designed to make EuroLeague player and game statistics easy to access and understand.

The platform delivers data not only as numbers but also through clear visualizations that highlight performance trends. Players are ranked using a custom formula developed in-house, offering unique insights beyond standard metrics.

In addition, the platform features personal facts about players, creating a more engaging and relatable experience for basketball fans.

Technical or other problems that are solved with the work

The Challenge

The market currently lacks interactive and user-friendly basketball platforms that deliver clear data and deeper insights for both fans and professionals. Most existing solutions are either too complex or fail to fully exploit the potential of data analytics.

The Solution

Our product addresses this gap by offering a modern basketball analysis platform that combines comprehensive statistics with interactive visualization tools. It makes data easier to understand while providing richer insights into player and game performance.

Target Market

The platform is designed for basketball fans, coaches, sports analysts, and journalists anyone interested in gaining a deeper understanding of basketball games and player performance.

Market Potential

Basketball is among the top three most popular sports in Europe, with a massive and engaged audience. Combined with the rapid growth of sports technology, this represents a strong and expanding market opportunity for innovative solutions like ours.

Novelty of the work

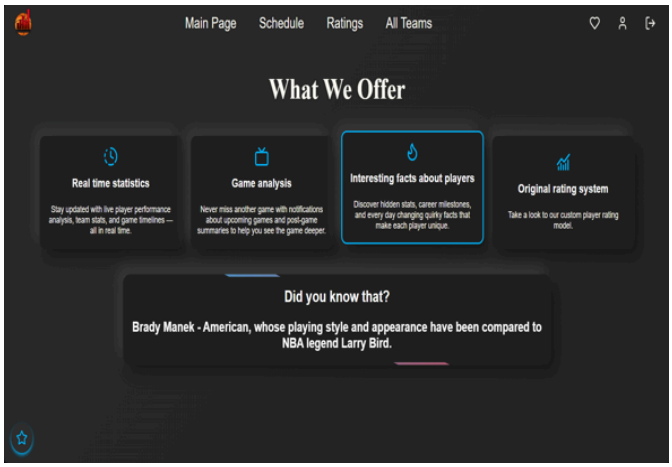
Data and insights are presented in a way that is easy for audiences to understand. The platform offers interactive, visually engaging content that keeps users involved and motivated to explore further.

Real-time analysis tools allow quick evaluation of player and team performance, while personalized features such as shooting percentages and individual player data help users expand their knowledge and deepen their understanding of basketball.

The benefits and value to the potential users

Our platform gives users quick and convenient access to key basketball statistics and personalized insights.

Fans can gain a deeper understanding of the game, coaches can analyze opponents' strategies, and analysts can easily interpret data to uncover valuable patterns and trends.



TRL 7 – system prototype demonstration in operational environment

Local navigation system

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

Gytis Kupstaitis
Martynas Mačiulaitis
Sikora Poleščiuk
Ugnė Salytė
Head: Dr. Jurgita Čyvienė

Kaunas University of Technology

Description of the work

Our proposed product is a local navigation system designed for the faculty premises of Kaunas University of Technology.

The mobile application works like “Google Maps” for indoor navigation, helping students quickly and easily find their way around university buildings. By simply entering a room number, users receive a step-by-step path guiding them directly to their destination.

This solution makes campus navigation more efficient, accessible, and student-friendly.

Technical or other problems that are solved with the work

The Challenge

Finding the right space at a university can be a daily challenge for students, lecturers, and guests. Complex building layouts, multiple faculties, and limited signage often lead to confusion and wasted time.

The Solution

We propose a local navigation system for Kaunas University of Technology a mobile application similar to Google Maps but designed specifically for indoor navigation. Users simply enter the room number or location name, and the system generates the optimal route.

The app also includes:

- Accessible routes for people with disabilities, including elevators.
- Navigation not only to classrooms, but also to administration offices, libraries, canteens, and student union spaces.

The Impact

The system will help the entire university community - students, faculty, and visitors to navigate buildings quickly and efficiently, saving time and improving the overall campus experience.

Novelty of the work

In 2023, Kaunas University of Technology had approximately 7,407 students. After the basic admission, 1,385 candidates were invited, of which 1,314 (94.87%) signed study agreements.

This scale of academic activity highlights the real need for a local navigation system that would allow students and staff to quickly and conveniently locate lecture halls, recreation areas, and other important spaces.

As Kaunas University of Technology currently lacks such a system, this project represents a new and innovative solution designed to improve the campus experience and save valuable time for the entire university community.

The benefits and value to the potential users

The app will enable students, lecturers, and visitors to easily navigate university buildings, saving time and improving the overall campus experience for everyone.

TRL 6 – technology demonstrated in relevant environment (industrially relevant)

K523

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

Augustė Mižutavičiūtė
Dovydas Rakšnys
Feona Šneider
Anastasija Suchonickaja
Head: Dr. Jurgita Dabulytė-Bagdonavičienė

Kaunas University of Technology

Description of the work

"Labour Market Barometer" is an interactive web platform that tracks labour market trends in Lithuania and provides users with personalized career insights.

The platform integrates job listings, salary statistics, and market forecasts to help users:

- analyze current job demand,
- compare their skills with market needs,
- and identify sectors with the highest growth potential.

With a clear and intuitive interface tailored to both job seekers and employers, the platform allows users to monitor competitive salaries by region, receive alerts about matching job opportunities, and make data-driven career decisions in real time.

It is a smart, accessible tool for navigating the challenges of a rapidly changing labour market.

Technical or other problems that are solved with the work

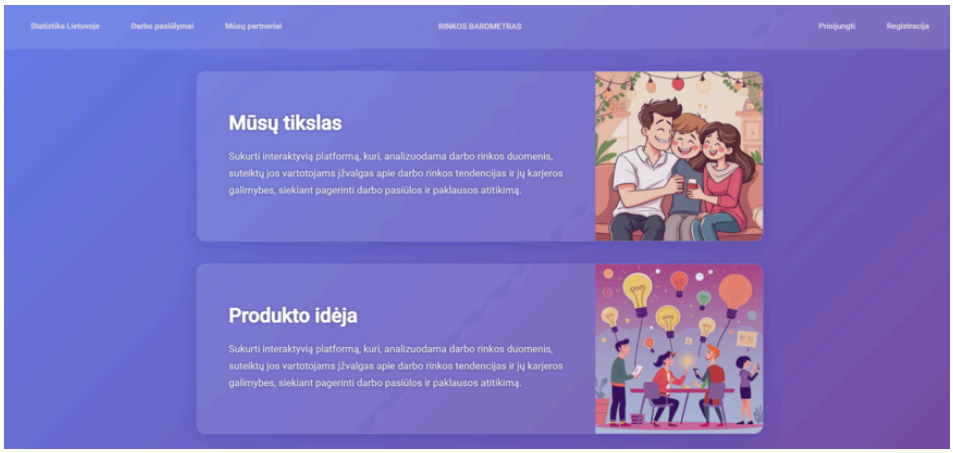
The Challenge

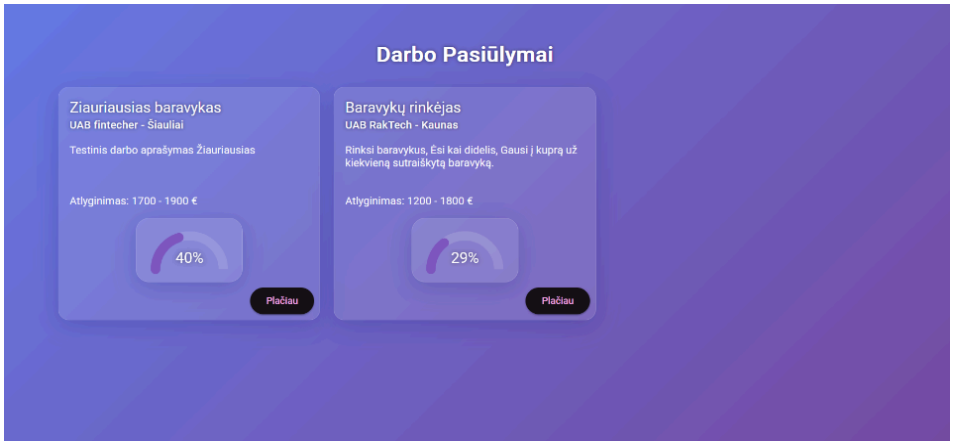
Today's labour market is defined by fragmented information, uncertainty, and rapidly changing skill demands. Job seekers often struggle to identify which competencies are most valued, where their skills fit best, and which regions offer competitive salaries. Employers,

Job seekers can explore demand trends, compare their skills with market needs, receive personalized career recommendations, and monitor competitive salaries by region.

Employers gain tools to plan recruitment more effectively, understand the competitive landscape, and tailor offers to market expectations.

By increasing transparency and awareness, the platform helps reduce mismatches in the labour market supporting better alignment between skills, opportunities, and employer needs.





TRL 5 – technology validated in relevant environment (industrially relevant)

Operacija: Šifras

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

Simona Miežlaiškytė
Mykolas Pėtelis
Ignas Jonas Kanapinskas
Sergej Grudkin
Head: Dr. Kęstutis Jankauskas

Kaunas University of Technology

Description of the work

"Operacija: Šifras" is an interactive browser-based educational game designed to spark student interest in cryptography and information technology.

Set in a visually engaging 3D environment, the game introduces classical encryption methods such as the Caesar and affine ciphers through interactive tasks and challenges.

Developed as a supplementary learning tool, it supports IT teachers by making abstract concepts more tangible and accessible. By gamifying cryptography, the project fosters curiosity, critical thinking, and foundational understanding for students in grade 5 and above.

Technical or other problems that are solved with the work

The Challenge

While information technology is becoming increasingly important in modern society, cryptography one of the foundations of data security remains relatively unknown to students. This gap limits early exposure to essential digital literacy skills.

The Solution

Our product makes the fundamentals of cryptography accessible and engaging for students in grade 5 and above. The game is designed to both prepare students for lessons involving cryptography and reinforce existing knowledge in a fun, interactive way.

Target Market

The target audience includes IT teachers, schools, and students interested in digital security and logical challenges. As digital literacy and cybersecurity awareness become more important, early introduction of these topics is essential.

Market Potential

The EdTech sector is rapidly growing, and browser-based educational tools can reach thousands of students in Lithuania and beyond. With its focus on cryptography and interactive learning, this project has strong potential for long-term growth and scalability.

Novelty of the work

Unlike most theoretical or text-based learning tools, “Operacija: Šifras” delivers a 3D game-based learning experience designed specifically for primary and middle school students.

By combining interactive puzzles and engaging challenges, it introduces the basic principles of classical cryptography in a way that is both fun and accessible. Its unique focus on cryptography, a subject still underrepresented in the EdTech space makes the project stand out among educational games in Lithuania.

The benefits and value to the potential users

“Operacija: Šifras” enables students to explore cryptography in a simple and enjoyable way, sparking interest in IT through gameplay.

For teachers, it serves as a practical teaching aid that explains complex concepts visually and interactively. The game also helps students develop logical thinking, problem-solving skills, and digital literacy all essential competencies for success in today’s world.


RAKTAS: 13
PRIEŠAS JUDĖS TIES UPĖS PO
PIETŲ

A group emotional well-being platform for 8th-12th grade students

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

Aleksas Vegis
Artur Rodz
Akvilė Mačiulytė
Maksim Butvinnik
Edgaras Mašaro
Vitalija Jasinkska
Head: Mantas Vičius

Description of the work

We are developing a group emotional well-being platform for students in grades 8–12, with a special focus on supporting youth with disabilities.

The program provides emotional education through two complementary parts:

- Theoretical learning – video-based lessons teaching strategies for improving and managing emotions.
- Practical application – small group sessions that bring together students facing similar challenges, guided by trained facilitators to encourage open discussion and peer support.

The full program spans four weeks and is designed to help young people build emotional resilience, self-awareness, and healthier ways of coping with difficulties.

Technical or other problems that are solved with the work

The Challenge

Research highlights a serious gap in emotional health education and support. In Lithuania, 83% of youth experience emotional difficulties and 40% exhibit suicidal behaviour. Despite

the scale of the problem, structured emotional education remains largely unavailable in schools.

Target Market

Our primary audience is 8th–12th grade students with moderate emotional difficulties. In Lithuania, this represents around 240,000 young people. The serviceable available market in the United Kingdom and Germany is estimated at 9.3 million youth.

Novelty of the work

We differentiate ourselves from competitors by combining several unique elements:

- operating as a social business with a clear societal mission,
- applying a group-based learning format that fosters peer support,
- integrating gamification to make learning more engaging,
- and focusing on creating a lasting, long-term impact on youth well-being.

The benefits and value to the potential users

Our platform offers young people the opportunity to help themselves and others, discover a supportive community, learn, and grow together.

It fosters self-development and mutual support, encouraging students to build resilience and emotional strength while connecting with peers who share similar challenges.

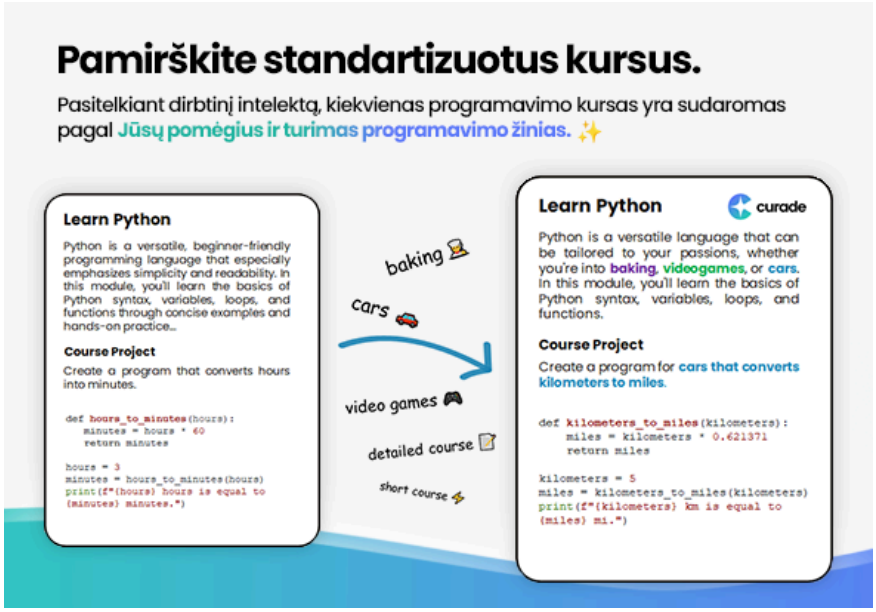
TRL 5 – technology validated in relevant environment (industrially relevant)

“Curade“ - e-learning platform

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

Justinas Teselis
Ainoras Marčiukaitis
Karolis Žemaitis
Martynas Česnauskas
Matas Reikertas
Head: Dr. Mikas Binkis

Kaunas University of Technology



Description of the work

“Curade” is a unique e-learning platform that leverages artificial intelligence to deliver personalized programming courses tailored to each user’s needs.

After completing a questionnaire about their knowledge and interests, learners receive a customized curriculum designed to help them master programming languages in a way that matches their skill level and goals.

Technical or other problems that are solved with the work

The Challenge

Traditional programming education through standardized courses or books can feel boring, abstract, and demotivating. Learners often struggle to stay engaged when examples do not connect with their personal interests.

The Solution

"Curade" is an AI-powered e-learning platform that transforms programming education by creating personalized courses adapted to each learner's knowledge, goals, and passions.

After completing a short questionnaire, users receive a customized curriculum where code examples are tailored to their interests. For example, a user passionate about fishing might learn programming through exercises like building an app to track caught fish, instead of working with generic, standardized examples.

Target Market & Potential

The platform is aimed at IT students, aspiring programmers, and technology enthusiasts. With the IT sector growing rapidly and global demand for digital skills increasing, Curade has strong potential for expansion in the e-learning market.

The Impact

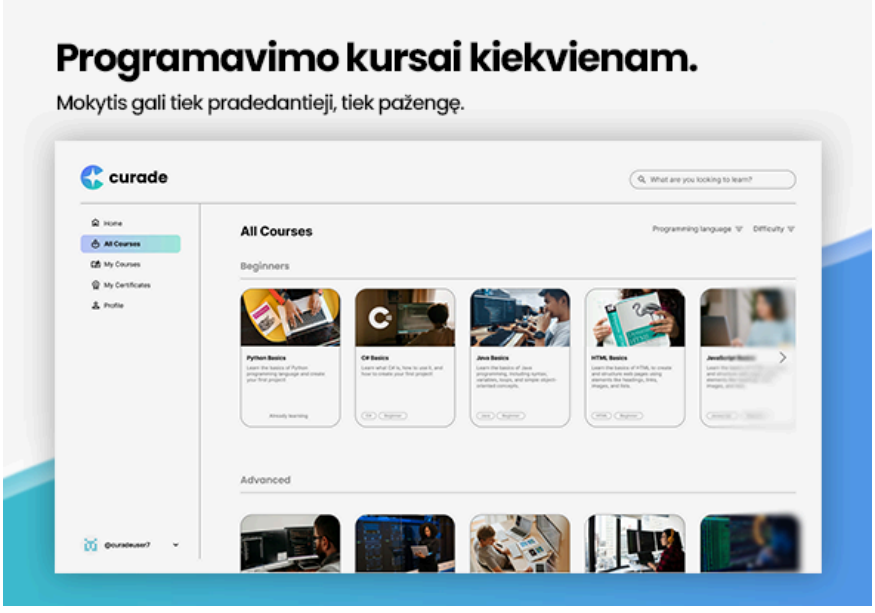
By combining artificial intelligence, personalization, and relatable examples, Curade makes programming more engaging, effective, and enjoyable, helping learners stay motivated and achieve better results.

Novelty of the work

The uniqueness of "Curade" lies in its ability to create truly personalized programming courses for each learner.

Unlike most existing solutions that deliver standardized, one-size-fits-all content, Curade leverages artificial intelligence to design a tailored learning journey. By analyzing a user's knowledge, goals, and interests, the platform prepares customized courses with examples and projects that are relevant and meaningful to each individual.

This approach keeps learners engaged, motivated, and more likely to succeed—making programming education both effective and enjoyable.



The benefits and value to the potential users

The “Curade” platform enables users to learn programming more effectively and engagingly through personalized courses tailored to their knowledge, goals, and interests.

Compared to traditional methods, Curade’s content is more relevant and immersive, helping learners reach goals faster, stay motivated, and absorb knowledge more effectively.

By working on projects and examples that are personally meaningful, users can more easily apply what they’ve learned in practice turning programming into a skill that feels both useful and rewarding.

Lerni - smart learning app

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

Justas Macys
Head: Nojus Balčiūnas

Vilnius TECH

Description of the work

Lerni is a smart learning app that helps students prepare effectively for final state exams.

Powered by artificial intelligence, it explains tasks, clarifies difficult topics, and creates a personalized learning path for each student. The app offers interactive tests and practice exercises designed to match real exam formats, while progress tracking ensures learners can study independently with structure and confidence without unnecessary stress.

Lerni is already available on Google Play, making smart exam preparation accessible to students today.

Technical or other problems that are solved with the work

The Challenge

Students preparing for state graduation exams often face an overload of information, stress, and difficulties in creating an effective study plan. Many lose motivation, don't know where to start, or cannot afford private tutors, which are often expensive and inaccessible to all.

The Solution

Lerni addresses this challenge by providing students with a personal AI-powered learning assistant that helps them study in a clear, structured, and independent way. The app guides exam preparation with personalized learning paths, practice tasks, and explanations adapted to each learner's needs.

Target Market

The primary audience is 10th–12th grade students in Lithuania preparing for state graduation exams. Additionally, younger students seeking to strengthen their knowledge can also benefit. With over 100,000 students in Lithuania who could use Lerni, and a rising demand for personalized, digital learning solutions, the market shows strong growth potential.

Novelty of the work

Lerni is a mobile learning app that brings an innovative approach to studying by leveraging artificial intelligence.

It doesn't just provide the correct answer it also explains how the solution is reached, clarifies the topic, and guides the student through the reasoning process. The app adapts to each learner's individual needs and pace, offering a more personal, clear, and stress-free learning experience.

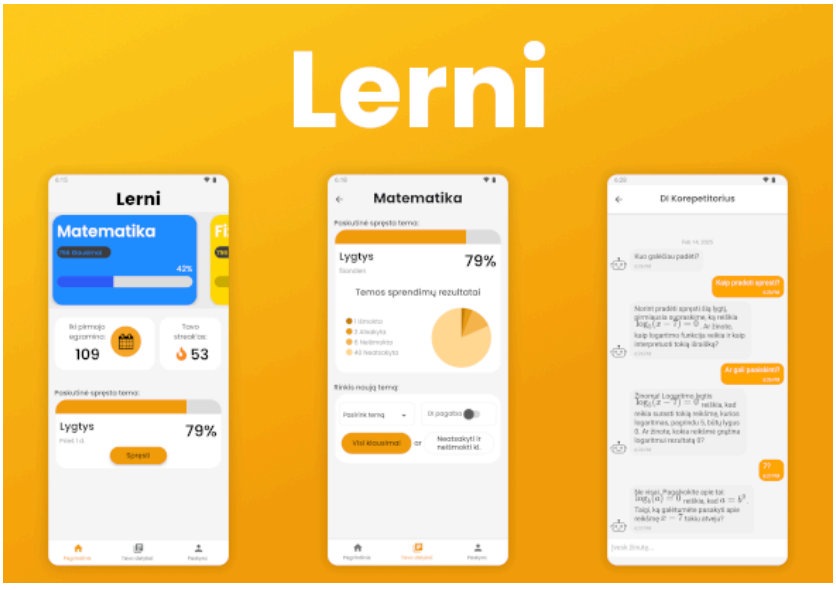
With Lerni, students can learn not only faster but also more meaningfully, gaining confidence in their knowledge and preparation.

The benefits and value to the potential users

Lerni gives students the opportunity to learn more effectively, clearly, and without stress.

Using artificial intelligence, the app helps explain complex topics, clarify tasks, and adapt learning content to individual needs. Students can track their progress, complete practice tests modeled after real exam formats, and prepare for graduation exams independently without the extra cost of private tutors.

Lerni helps learners save time, strengthen their knowledge, and achieve better results with confidence.



TRL 7 – system prototype demonstration in operational environment

Cheap Travels Search System

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

Austėja Laurikaitytė
Head: Dr. Rimantas Mockus

Kaunas University of Technology

Description of the work

The Cheap Travels Search System makes it easier and more convenient for users to discover affordable travel opportunities.

The system aggregates data on low-cost flights, providing key details such as destinations, dates, airlines, and prices. In addition, it offers seasonal travel recommendations, helping users choose the best destinations depending on the time of year.

This combination of affordable flight search and personalized travel advice creates a practical tool for budget-conscious travelers seeking to plan smarter journeys.

Technical or other problems that are solved with the work

The Challenge

Currently, there are no systems that show flight prices exactly as they appear on airline websites. As a result, travelers often lack clear information on the best time to book or travel, making it harder to plan affordable trips.

Target Market

The system is being developed primarily for travelers in Lithuania, with an estimated initial market size of around 50,000 people. As living standards improve and financial situations

strengthen, this market is expected to grow steadily, with more people traveling both for leisure and work.

Novelty of the work

There are currently no comparable solutions in Lithuania. While platforms such as Kiwi or Skyscanner offer similar services, their primary goal is to sell tickets, which often leads to prices that differ from those listed by airlines—and rarely cheaper.

The Cheap Travels Search System is different: it focuses on helping people travel more affordably by showing users the real prices directly from airlines. Instead of relying on ticket sales, the system is designed to generate financial benefits by searching and recommending individual travel deals, ensuring transparency and genuine savings for travelers.

The benefits and value to the potential users

The Cheap Travels Search System empowers travelers to find genuinely affordable deals while also building a sense of community.

Users can share tips, experiences, and travel wisdom with one another, making the platform not just a search tool but also a knowledge-sharing hub. In addition, the system provides seasonal insights and recommendations about destinations worldwide, helping travelers choose the best time and place for their journeys.

TRL 7 – system prototype demonstration in operational environment

SMARTAI: FROM PROMPT TO PROJECT

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

Sri Muthusivam Rethinasamy Resikesan Sathiya
Head: Tameem Ansari Mahadeer Ali

Kaunas University of Technology

Description of the work

SmartAI is an AI-powered Visual Studio Code extension designed to boost developer productivity through intelligent, real-time coding assistance.

The tool integrates OpenAI's large language models via Azure to deliver features such as inline code suggestions, ghost writing, code refactoring, project scaffolding, and even UI generation from screenshots. Unlike existing solutions, SmartAI introduces unique capabilities including image-to-code transformation and one-line project generation.

Built with JavaScript for the frontend and Python (Flask) for the backend, SmartAI is modular, lightweight, and supports multiple programming languages. The project emphasizes accessibility, making it valuable for both experienced developers and beginners.

Originally showcased as EchoCodeAI, the prototype has since been refined based on feedback from users and reviewers, evolving into SmartAI - a more robust and feature-rich extension.

Technical or other problems that are solved with the work

The Challenge

Programmers at all levels face constant context switching jumping between editors, browsers, documentation, and external AI tools. This interrupts focus, slows development, and creates a steep learning curve for beginners. It is especially inefficient when quick code examples, explanations, or bug fixes are needed.

The Solution

SmartAI embeds intelligent coding assistance directly into Visual Studio Code. Powered by Azure OpenAI large language models, it enables developers to generate code, fix bugs, refactor logic, and even build full project scaffolds through simple, natural prompts without ever leaving the editor.

Target Market & Potential

Our primary users are developers, students, and software teams seeking to reduce friction and stay in flow while coding. With over 15 million active VS Code users worldwide and the global developer population projected to exceed 28 million by 2026, the market for AI-assisted development tools is massive and rapidly growing.

Novelty of the work

While tools like GitHub Copilot focus mainly on code suggestions, SmartAI distinguishes itself with a unique feature set and a local-first innovation approach.

Developed entirely in Lithuania, SmartAI goes beyond simple completions by offering:

- Project scaffolding from a single prompt,
- Image-to-code transformation,
- and ghost writing (simulated typing) directly within VS Code.

The system leverages multiple Azure-hosted OpenAI models, each optimized for specific tasks such as refactoring, UI generation, or full-stack project creation, making it both modular and efficient.

Unlike other tools, SmartAI provides users with full control over prompts, behavior, and tuning, delivering a customizable and educational experience.

It is not just a coding assistant it's a complete AI-powered development environment designed to empower both beginners and professionals.

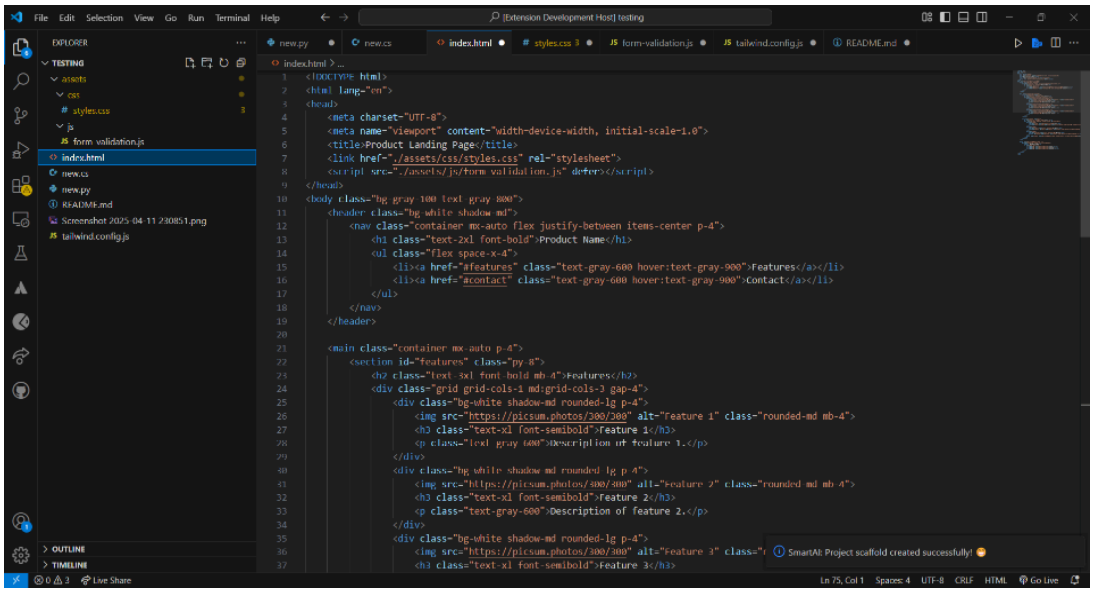
The benefits and value to the potential users

SmartAI brings the power of AI directly into the coding environment, eliminating the need for constant context switching between the editor, browser, and external tools.

Developers can generate code, fix bugs, scaffold projects, and even convert UI screenshots into HTML all without leaving Visual Studio Code. Powered by the latest AI models (GPT-40-

mini, GPT-4o, and GPT-4.1), SmartAI saves time, maintains focus, and significantly boosts productivity.

For beginners, it provides a guided and educational learning experience. For professionals, it enhances efficiency and accelerates development cycles. Supporting multiple programming languages and adapting to user intent, SmartAI delivers consistent, high-quality output making it a valuable tool for individual developers, software teams, and coding students alike.



TRL 7 – system prototype demonstration in operational environment

System to design solar power plants on the roof of a building

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

Head: Lukas Navickas

Kaunas University of Technology

Description of the work

This web-based system enables users to design solar power plants directly on building rooftops.

Through integration with Google Maps, users can locate an overhead view of their building, define roof perimeters, and design the rooftop in 3D (via Three.js) to place solar panels.

The system calculates:

- Solar efficiency of each roof plane based on direct sunlight,
- Optimal panel placement recommendations,
- Estimated plant capacity and monthly electricity output,
- and a financial analysis projecting the payback period of the investment.

Developed with the Python Django framework and JavaScript, the tool provides an accessible and practical way for users to explore renewable energy potential, optimize solar designs, and evaluate project feasibility.

Technical or other problems that are solved with the work

The Challenge

Professional solar power plant planning can take more than two months. First, users must coordinate project conditions with ESO, which alone can take up to 40 days. Afterwards, they need to consult with professional designers and installation companies.

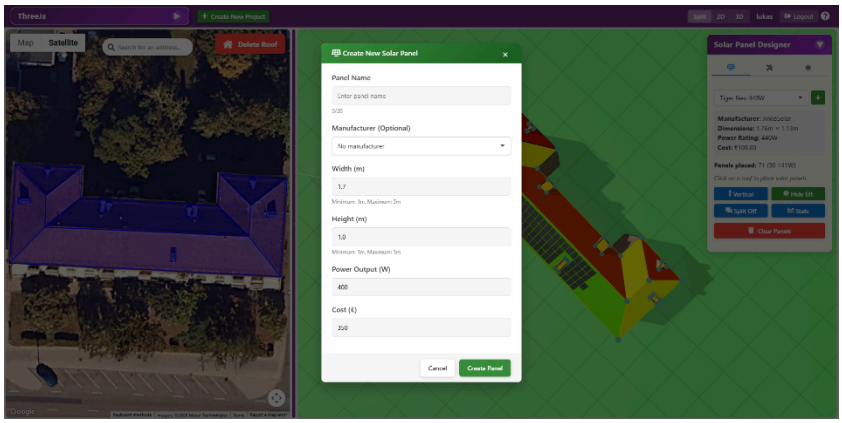
The Solution

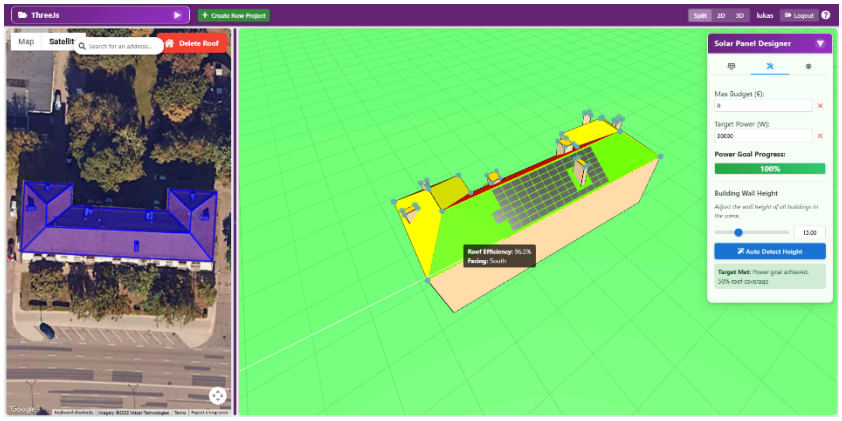
This system serves as a preliminary planning tool that allows users to quickly evaluate whether it is worth starting a solar project on a chosen rooftop avoiding long waiting times.

For independent users, it provides:

- An instant estimate of the project's total cost,
- Predicted plant output capacity,
- Efficiency analysis of each individual roof plane.

In this way, the system helps users make informed decisions before committing to lengthy and costly planning processes.





Novelty of the work

The Uniqueness

Similar web-based CAD solar planning systems do exist for example, SolarEdge Designer but they are not publicly available and can only be used by employees of licensed solar design companies. Simpler solutions such as Google Project Sunroof exist as well, but they are limited to the United States and Puerto Rico and do not provide 3D design capabilities.

Highly professional systems are also available, but their licenses often cost over €700, they are not browser-based, and they require extensive prior technical knowledge of solar power plants and system design.

In contrast, the system under development offers a very simple and intuitive user interface, making solar planning accessible to everyday users while still providing meaningful technical insights.

The benefits and value to the potential users

The Benefits

Users planning to build a solar power plant and connect it to the grid can use the system to see preliminary estimates before sending requests to contractors.

For those intending to install a solar power plant independently (and possibly without grid connection), the system serves as a practical tool for forecasting project costs and potential benefits.

TRL 6 – technology demonstrated in relevant environment (industrially relevant)

SoBotz robotics initiative

Field of science Information technologies
Type of innovation Hardware (e.g. electronic device, robotics, computer hardware, wearable technology and etc.) | Techninės įrangos sprendimai

Head: Tomas Sobutas

Kaunas University of Technology

Description of the work

SoBotz is a robotics initiative dedicated to making hands-on robotics accessible, educational, and engaging.

It brings together high-quality components, educational kits, and tools for categories such as mini sumo, line-following, and antweight robotics.

The initiative focuses on supporting schools, makerspaces, and hobbyists through modular, STEAM-based learning experiences that inspire creativity, build technical skills, and spark curiosity.

Technical or other problems that are solved with the work

The Challenge

Many schools lack accessible, engaging, and practical robotics kits adapted to modern STEAM education. Existing solutions are often too complex, too expensive, or incomplete, leaving teachers and students without effective tools.

The Solution

SoBotz addresses this gap by offering modular, easy-to-understand robotics kits designed specifically for students, enthusiasts, and educators.

Target Market & Potential

The primary market includes schools, STEAM centers, after-school clubs, and parents who want to foster creativity and technical skills in children. With the growing importance of STEAM education, this market shows strong growth potential particularly in the Baltic region and across the EU.

Novelty of the work

The Uniqueness

Unlike LEGO or other mainstream robotics kits, SoBotz is developed by active robotics enthusiasts and educators. This ensures the kits are specialized and focused on building a deeper understanding of how robotic systems work.

In addition, SoBotz integrates online learning platforms and provides open educational resources for teachers, making it easier to implement robotics in classrooms and beyond.

The benefits and value to the potential users

The Benefits

SoBotz offers accessible, easy-to-use kits with materials available in the local language, helping to develop creativity, logical thinking, and technical skills.

Users gain practical knowledge in robotics, programming, and electronics, making learning both engaging and relevant.

TRL 6 – technology demonstrated in relevant environment (industrially relevant)

Universal Hybrid Control System for Underwater Drones

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

Juozas Balčikonis
Paulius Sabanskis
Motiejus Tamonis
Head: Srinath Mallikarjunan

Kaunas University of Technology

Description of the work

This system enables long-distance remote operation of an underwater drone using a standard gaming joystick.

It consists of two main components:

- Onshore operator station – processes input from any gaming joystick and transmits control signals via radio.
- Offshore buoy interface – located about three kilometers from shore, the buoy receives radio signals, relays them through an acoustic modem, and communicates with the drone via acoustic waves.

In effect, the buoy acts as a virtual bridge between the shore-based operator and the underwater vehicle, combining long-range radio with acoustic communication for reliable, extended-distance control.

Technical or other problems that are solved with the work

The Challenge

In the field of underwater drone control, what is currently lacking is a solution that is at once low-cost, flexible, and reliable. Effective operation requires constant communication between the operator and the drone, yet existing methods present fundamental limitations.

- Wired connections provide a stable signal but drastically restrict range and maneuverability. Cables are prone to tangling, snagging, or breaking, especially in complex environments, and transporting long communication ropes is highly impractical.
- Acoustic communication eliminates the cable but comes with very slow data transfer (due to the slow propagation of sound waves in water) and extremely high equipment costs. Modern acoustic modems capable of long-distance operation are prohibitively expensive for smaller research teams or civil applications.

These limitations hinder the wider development and adoption of underwater technologies across civil, scientific, and even military domains. The market urgently needs a balanced, intermediate solution that ensures sufficient connectivity without sacrificing mobility or affordability.

Novelty of the work

The Solution

Several underwater drone control methods exist today, but each comes with significant limitations:

- Acoustic control from shore or a boat enables wireless operation but suffers from slow signal transmission, leading to noticeable control delays.
- Cable-based control ensures fast, reliable data transfer but severely restricts drone mobility and risks entanglement in complex environments.

Our solution introduces a hybrid buoy-based system. Control signals are relayed between buoys via radio waves, with acoustic transmission used only by the buoy directly above the drone.

This approach minimizes control delay while preserving full mobility, offering a balanced, practical alternative to existing methods.

The benefits and value to the potential users

The Uniqueness

Unlike closed, expensive “black box” acoustic modems, our hybrid communication solution is modular, flexible, and easy to assemble from readily available components.

Users can freely change the drone model, joystick, or system location without technical barriers. By simply moving the buoy, they can quickly re-establish control and continue benefiting from the fast, wireless communication of the hybrid system.

In contrast, acoustic-only systems remain slow, and wired drones are constrained by their tether to the shore. Our solution uniquely combines speed, mobility, and adaptability in one accessible system.

Development of a Brain computer interface to control devices

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

Kristina Narutytė
Vlada Prisacari
Head: Gerson David Pinto Chica

Kaunas University of Technology

Description of the work

This system is based on a brain–computer interface (BCI) that maps and interprets neural activity. Using electrodes and advanced electronics, it acquires and conditions brain signals, which are then transmitted to a mobile device or computer. The processed data enables advanced analysis and real-time interpretation of neural signals. With this technology, various devices and appliances can be controlled directly through brain activity, opening new possibilities for scientific research as well as for people with special needs seeking greater independence in daily life.

Technical or other problems that are solved with the work

This product is designed for people with physical disabilities, including those affected by neurodegenerative diseases or strokes, who face challenges interacting with their environment. By interpreting neurological activity, the system enables users to control external devices, offering greater independence and accessibility. With the global brain–computer interface (BCI) market rapidly expanding and advances in machine learning driving innovation, this solution aligns with the growing demand for assistive technologies.

Novelty of the work

Our work combines accessibility, affordability and a friendly user interface. Using low-cost microcontroller and recent cutting-edge technology for signal conditioning. We use our own developed software to reduce operational costs and have wider adoption. Also utilizing

protocol which enables device to be portable and easy to use for researches and ordinary people with special needs.

The benefits and value to the potential users

Our BCI enables users to control external devices, allowing them to operate computers and other assistive technologies directly through neural signals. This provides greater independence, reduces reliance on caregivers, and significantly improves quality of life for people with physical disabilities.

TRL 7 – system prototype demonstration in operational environment

Meal Quest

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

Ignas Eismantas
Matas Palujanskas
Head: Giedrius Tribandis

Kaunas University of Technology

Description of the work

Meal Quest is an educational game that teaches players about the importance of vitamins through engaging, interactive gameplay. Each day, players plan meals by strategically purchasing real-world foods to meet their daily vitamin needs. At night, these nutritional choices translate into combat bonuses, reflecting the real biological functions of each vitamin in the body. By blending strategy, nutrition education, and fun mechanics, Meal Quest helps players build healthier eating habits while enjoying a dynamic gaming experience.

Technical or other problems that are solved with the work

The problem of unbalanced nutrition is becoming increasingly relevant among young people. According to data from the Klaipėda City Health Bureau, the proportion of children with overweight and obesity has grown significantly over the years: in 2016, 9.97% of children aged 7–17 were overweight, while by 2022 this figure had risen to 26.65%. Mortality in Lithuania related to poor nutrition is also worsening: in 2021, 140 people died from digestive system diseases an 8% increase compared to 2020.

Given these alarming trends, it is essential to instill healthy eating habits in children from an early age. Research shows that adolescents aged 12–16 can typically maintain focus for only about 30 minutes and struggle to engage with information or tasks that feel difficult or uninteresting. Presenting knowledge in a game format significantly increases their engagement by turning learning into enjoyable play.

Meal Quest makes knowledge about vitamins more accessible to young people while helping shape healthier nutrition habits. The target audience is 13–23-year-olds, representing a very large potential market. For comparison, similar genre games have achieved strong results: Sworn has sold around 70,000 copies, while Hades reached an impressive 10 million copies.

Novelty of the work

Currently, there are no popular games on the market that educate players by providing knowledge about vitamins and directly linking nutrition to in-game mechanics. In most existing games, food is used merely to restore health points or provide generic bonuses, but these effects are rarely connected to the real properties of vitamins or nutrition.

Meal Quest addresses this gap by standing out as a game that not only entertains but also educates players about the benefits of vitamins. Combat mechanics will be closely tied to nutrition choices—vitamin effects will influence gameplay in ways that reflect their actual roles in the human body.

The game has been benchmarked against market giants such as Minecraft, Hades, Stardew Valley, and Don't Starve. While these games differ in genre and style, they all incorporate combat elements. To remain competitive and appealing, Meal Quest also emphasizes engaging combat mechanics uniquely enriched with vitamin-based effects ensuring both fun gameplay and meaningful learning.

The benefits and value to the potential users

In Meal Quest, players plan their meals during the daytime phase, gradually learning which foods contain specific vitamins. At night, they experience how their nutritional choices influence combat performance, with vitamin-based power-ups reinforcing the real-world benefits of each nutrient.

Each vitamin is consistently associated with a color to aid memory for example, Vitamin C with yellow and Vitamin B1 with red. By frequently seeing the red indicator while using Vitamin B1 power-ups, players can more easily recall that Vitamin B1 provides certain enhancements tied to its real-world role in the body.

This consistent use of color not only strengthens the association between in-game combat effects and their corresponding vitamins, but also helps players recognize vitamin-rich foods. For instance, Vitamin K is represented by green, reminding players that it is abundant in spinach, broccoli, and avocados.

TRL 6 – technology demonstrated in relevant environment (industrially relevant)

"Gija" emotional and physical well-being through habit tracking

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

Rugilė Rankauskaitė
Rugilė Kaluževičiūtė
Erika Mališauskaitė
Gabrielė Šaltmerytė
Head: Liepa Bikulčienė

Kaunas University of Technology

Description of the work

The project focuses on developing a mobile application called "Gija", designed to help teenage girls monitor and improve their emotional and physical well-being through habit tracking. The app uses a gamified approach: users nurture a virtual plant that grows as they complete tasks and achieve their goals.

Developed using the agile SCRUM methodology, the team conducted market research, analyzed competitors, identified the target audience, and designed a user-friendly prototype.

Key features include:

- Personalized goal-setting tailored to each user.
- Visual progress feedback through the growth of the virtual plant.
- Motivational notifications to encourage consistency.

The aim of the project is to promote healthier lifestyle habits in a playful, engaging, and visually appealing way, making self-care more accessible and enjoyable for young users.

Technical or other problems that are solved with the work

Our product, "Gija", addresses the challenge many teenage girls face in maintaining healthy emotional and physical habits due to a lack of motivation, time, and effective tools. Research shows rising levels of stress, anxiety, and poor self-discipline among youth, particularly those

heavily exposed to social media. Existing apps often fail to engage or support consistent progress tracking, leaving a clear gap in the market.

“Gija” fills this gap by offering a gamified, visually engaging experience where users grow a virtual plant that reflects their personal development. Designed for 15–17-year-old girls interested in self-improvement, wellness, and aesthetics, the app transforms habit-building into a rewarding and motivating journey.

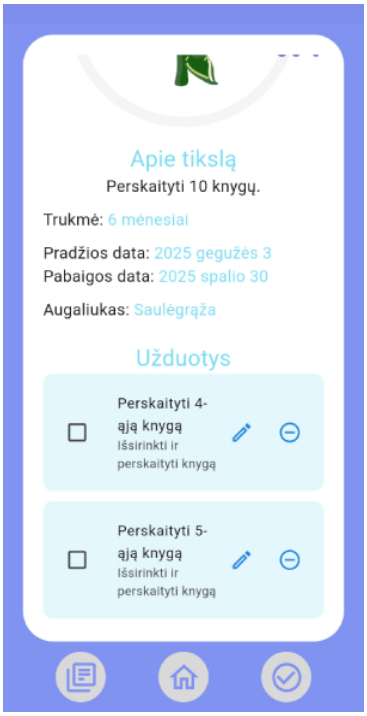
In Lithuania alone, this age group includes over 60,000 girls, and mobile app usage among teens continues to rise. With global trends emphasizing self-awareness and mental well-being, “Gija” has strong potential to grow internationally, providing a simple, motivating, and user-centered solution to support healthier lifestyles.

Novelty of the work

“Gija” stands out by combining habit tracking with a unique gamified concept—a virtual plant that grows as users progress. Unlike competitors that address physical or emotional health separately, “Gija” integrates both into one playful, visually appealing tool designed specifically for teenage girls. With its aesthetic design, personalized features, and daily motivational messages, the app creates an emotionally engaging experience that goes beyond functionality. It turns habit tracking into an interactive and enjoyable journey of self-growth.

The benefits and value to the potential users

“Gija” offers teenage girls a motivating and fun way to track habits while improving both emotional and physical well-being. The virtual plant growth system provides clear, visual feedback that sustains motivation and makes progress tangible. By encouraging goal-setting, responsibility, and self-discipline, the app helps boost self-esteem and confidence. With its customizable features, reminders, and engaging design, “Gija” is not just a tool, but a daily companion for building healthier routines.



TRL 9 – actual system proven in operational environment (competitive manufacturing in the case of key enabling technologies; or in space)

Meal Quest

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

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Mike Hazlewood
Head: Linas Jonika

Kaunas University of Technology

Description of the work

SensePilot is an AI-powered, webcam-based hands-free controller that turns head movements and facial gestures into precise mouse and keyboard inputs on Windows 10/11—without requiring extra hardware. Horizontal and vertical head orientation controls the cursor, while expressions such as smiles or raised eyebrows trigger clicks or shortcuts. Users can switch between customizable profiles for browsing, typing, or gaming, including a dedicated Game Mode with full 360° camera rotation.

Developed primarily for people with limited dexterity, SensePilot lowers costs, removes barriers to digital access, and enhances independence. At the same time, its underlying technology has dual-use potential: the company is also developing VisionHELM, a head- and eye-tracking interface for intuitively steering UAV gimbal-mounted sensors. Together, these solutions represent a versatile platform for both civilian accessibility and defense applications.

Technical or other problems that are solved with the work

Many people with motor impairments—such as spinal cord injuries, cerebral palsy, ALS, arthritis, or post-stroke weakness—struggle to use standard keyboards, mice, or gamepads, which require fine motor control. At the same time, defense operators of UAVs and UGVs face complex, hardware-heavy systems for aiming cameras and turrets in real time. Current solutions in both fields are prohibitively expensive (often thousands of euros per unit), demand specialized hardware, and require steep training.

SensePilot solves the civilian challenge by transforming any standard webcam into a low-cost, plug-and-play control system. Users simply move their head or make facial gestures—such as smiling or raising eyebrows—to navigate the cursor or perform clicks. In parallel, the team is developing VisionHELM, a head- and eye-tracking interface that enables intuitive control of UAV gimbals and UGV turrets, eliminating bulky controllers in defense operations.

The concept was recently validated at the EUDIS-Lithuania Hackathon, where SensePilot earned second place nationally.

Our dual-use platform addresses two rapidly growing markets: the global assistive technologies market (over €20 billion, ~6% CAGR) and the military robotics and sensor market (over €15 billion, ~8% CAGR). By removing the need for specialized hardware and reducing costs, we deliver intuitive, affordable, and scalable control—empowering both civilians and defense professionals.

Novelty of the work

Unlike existing solutions that rely on expensive infrared hardware or specialized sensors, SensePilot uses AI to transform any standard webcam into a high-precision tracking device with minimal calibration. Its machine learning algorithms adapt to each user's facial geometry and lighting conditions, ensuring robust and stable head-tracking—capabilities unmatched by current market offerings.

While SensePilot (PC accessibility and control) and VisionHELM (UAV/UGV sensor aiming) serve different applications, both are powered by the same core technology and unified software platform. This dual-use foundation enables flexible deployment across civilian assistive technology and defense sectors.

Customizable gesture and sensitivity profiles—ranging from cursor navigation to turret targeting—provide versatility unavailable in hardware-bound systems. Continuous over-the-air updates enhance performance and add features without requiring new equipment, ensuring long-term value and adaptability.

The benefits and value to the potential users

SensePilot transforms any webcam into a powerful, low-cost tracking device—eliminating the need for specialized hardware and enabling instant plug-and-play use. For people with limited dexterity, it unlocks independence in communication, education, work, and gaming, enhancing both quality of life and social inclusion. Customizable sensitivity and gesture profiles adapt to individual needs, reducing fatigue and boosting productivity.

In defense, the same platform powers VisionHELM, which streamlines UAV and UGV sensor aiming by removing bulky controllers, cutting training times, and improving real-time accuracy. Built on a unified AI-driven software foundation, both solutions receive continuous feature upgrades through over-the-air updates—delivering long-term value without additional hardware costs.

Interdisciplinary Works

TRL 7 – system prototype demonstration in operational environment

Vandenilinis Slibinomobilis

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

Titas Dobilevičius
Rokas Šalna
Tadas Gabrevičius
Vilius Medika
Gvidas Brilius
Tautvydas Urbutis
Astijus Ivanovas
Dovydas Lukoševičius
Head: Dr. Benas Gabrielis Urbonavičius

Kaunas University of Technology

Description of the work

Slibinomobilis is a student-driven project at Kaunas University of Technology that reimagines a classic Jaguar XJ40 as a hydrogen combustion-powered vehicle. Developed as a hands-on learning platform, it inspires students to engage with physics and engineering while tackling the complex realities of hydrogen as a fuel.

Unlike hydrogen fuel cell vehicles, Slibinomobilis uses direct combustion in an internal combustion engine. This approach allows students to confront the practical challenges of hydrogen mobility inefficiencies, high operating costs, and the lack of refueling infrastructure. By showcasing these issues in a functioning prototype, the project highlights why hydrogen remains controversial as a mainstream transportation solution.

More than just a car, Slibinomobilis is a moving classroom and a platform for critical dialogue about future energy technologies. It challenges assumptions, sparks curiosity, and equips the next generation of engineers and physicists with both technical skills and a deeper understanding of sustainable mobility.

Technical or other problems that are solved with the work

Slibinomobilis addresses a key knowledge gap in how hydrogen is perceived as a transport fuel. While often promoted as a green solution, hydrogen combustion faces major drawbacks low efficiency, high costs, limited infrastructure, and safety risks. By converting a Jaguar XJ40 into a hydrogen-powered prototype, students at Kaunas University of Technology bring these issues to life in a tangible, hands-on way.

The project is aimed at students, educators, and the wider public, making complex energy topics accessible and encouraging critical thinking. It fosters curiosity in physics and engineering while sparking informed discussions about the realities of sustainable transport. As STEM education gains momentum in Lithuania, Slibinomobilis contributes to scientific literacy and inspires the next generation of engineers with a realistic view of future energy challenges.

Novelty of the work

The novelty of Slibinomobilis lies in its unconventional approach: converting a classic Jaguar XJ40 to run on hydrogen combustion not to promote the technology, but to critically examine it. While most hydrogen vehicle projects highlight fuel cells and future potential, this project deliberately exposes the limitations of hydrogen combustion its low efficiency, high costs, and impractical infrastructure.

This reverse approach is rare in student engineering initiatives. By combining a dramatic, retro-styled vehicle with a critical scientific message, Slibinomobilis becomes more than a prototype it is a unique platform for STEM education and public outreach. The project merges automotive heritage with modern energy debates, promoting physics studies while encouraging evidence-based skepticism toward popular but flawed technologies.

The benefits and value to the potential users

Slibinomobilis offers unique educational value by transforming the theoretical debate around hydrogen fuel into a tangible, hands-on learning experience. For students, it builds practical engineering skills, teamwork, and real-world problem-solving. For educators, it serves as a powerful tool to demonstrate energy concepts and foster critical thinking. For the public and

policymakers, it provides an honest look at the limitations of hydrogen in transport, encouraging more informed energy decisions. Beyond the prototype itself, the project inspires curiosity in STEM, attracting young people to physics and engineering while shaping a scientifically literate society capable of evaluating future technologies with realism and evidence.

TRL 7 – system prototype demonstration in operational environment

Hydrogen Car Home Battery Energy Storage

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

Dovydas Lukoševičius
Vytenis Lelešius
Emilija Gasiniauskaitė
Redas Nemira
Head: Dr. Benas Gabrielis Urbonavičius

Kaunas University of Technology

Description of the work

While hydrogen cars were once considered a promising path toward clean mobility, their widespread use has revealed significant shortcomings. One of the key issues lies in the limited lifespan of hydrogen storage tanks, which typically last 15–20 years or a fixed number of refueling cycles. Once expired, these tanks must be replaced. However, replacement costs range from €20,000 to €40,000, which far exceeds the residual value of an aging hydrogen car. As a result, most vehicles are retired, and their components risk ending up in scrap yards.

To address this problem, we propose repurposing components of hydrogen vehicles particularly their storage systems into stationary home energy storage devices. This approach not only prevents valuable technology from becoming waste but also offers a cost-effective and sustainable second life for hydrogen car parts. By transforming expired vehicles into energy storage solutions, we create a system that is both economically viable and environmentally responsible, supporting renewable energy integration and extending the overall lifecycle of hydrogen technologies.

Technical or other problems that are solved with the work

Our product addresses the growing challenge of end-of-life hydrogen vehicle disposal. Hydrogen storage tanks and lithium-ion batteries in these vehicles have a limited lifespan of 15–20 years. Once expired, replacing these components becomes economically unfeasible new hydrogen tanks alone cost between €20,000 and €40,000. As a result, many hydrogen vehicles are discarded prematurely, even though some parts, especially the batteries, remain valuable and reusable.

Our solution is to repurpose lithium-ion batteries from hydrogen vehicles into universal home energy storage units. These systems can be charged at night using cheaper electricity tariffs and discharged during peak daytime hours when prices are highest. This reduces household electricity costs, improves energy efficiency, and minimizes electronic waste.

The target market includes individual consumers working from home, households in regions with unstable electricity supply, and environmentally conscious users seeking sustainable energy solutions.

Novelty of the work

The novelty of this work lies in the innovative approach to repurposing hydrogen vehicle batteries. Instead of disposal, the batteries are adapted for use as household electricity storage units. This not only addresses environmental challenges by reducing electronic waste but also helps consumers lower their electricity bills by leveraging fluctuations in energy prices.

The product stands out by combining secondary use of raw materials with the growing demand for home energy storage solutions, offering higher quality and capacity than conventional portable batteries currently available on the market.

The benefits and value to the potential users

Energy Savings.

Our product offers a sustainable and cost-efficient way to repurpose hydrogen vehicle batteries, which are often discarded before reaching their full potential. These reconstructed batteries can be used as home energy storage units charged when electricity is cheap and discharged when it's expensive, while also powering portable devices.

This enables households to save on electricity costs, reduce dependence on unstable power supply, and contribute to waste reduction. The solution is particularly valuable for remote workers, people living in areas with unreliable electricity, and consumers interested in upcycled, eco-friendly products.

TRL 6 – technology demonstrated in relevant environment (industrially relevant)

„Fizlab“ Interactive workbook. Physics laboratory report workbook for 7th–8th grade students.

Field of science Interdisciplinary works
Type of innovation Software and Education

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Matas Sidekerskis
Rusnė Vaičiulytė
Viktoriia Volyniuk
Viltė Vaicikevičiūtė
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Description of the work

Laboratory work is a vital part of learning, helping students connect theory with practice. Research shows that conducting and observing experiments, as well as analyzing data, strongly increases student motivation. “Fizlab” is an interactive workbook designed for 7th–8th grade students. Each chapter includes QR codes linking to recorded physics experiments. While watching the videos, students complete structured reports: filling in tables, drawing graphs, and answering questions. The workbook also provides tips for carrying out tasks and analyzing results. Every experiment ends with a self-assessment test, allowing students to check their understanding. “Fizlab” can be used both in the classroom and for independent learning.

Technical or other problems that are solved with the work

Today, engaging young students in physics is more important than ever. With rapid technological progress, society needs curious minds in STEM and this passion starts at school. Laboratory work plays a key role in understanding physics, yet many Lithuanian schools lack the equipment needed for experiments. Without hands-on practice, students struggle to grasp concepts, leading to lower motivation and reduced long-term interest in STEM.

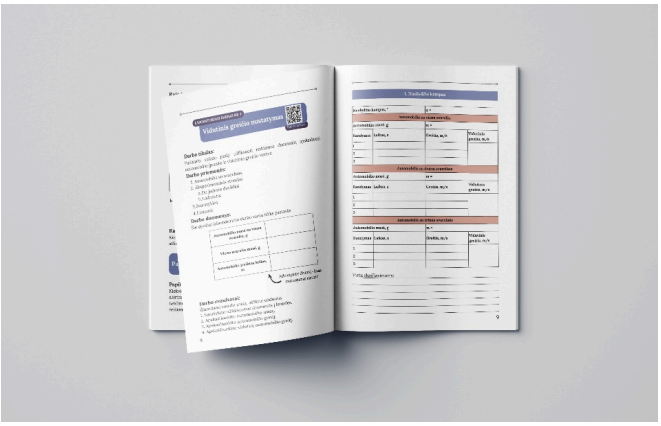
Our solution addresses this gap: filmed laboratory experiments paired with ready-made reports allow students to observe real data and focus on analysis rather than time-consuming preparation. This makes practical work in physics more accessible, efficient, and motivating. The primary audience is 7th–8th grade students and their parents who value education and technology. With around 60,000 students in this group in Lithuania (2024, National Agency for Education), the market potential is strong, especially as technology-driven STEM learning continues to grow.

Novelty of the work

Our product is unlike anything currently available on the market. Most alternatives provide only pre-made laboratory reports, still requiring access to physical equipment. „Fizlab“ goes further by offering filmed laboratory experiments alongside ready-to-use reports. Each experiment also includes a self-assessment test, helping students evaluate their understanding. Versatile by design, the workbook can be used both in the classroom with a teacher and independently at home, making physics more engaging, accessible, and effective.

The benefits and value to the potential users

Our product provides significant value for students and their parents. „Fizlab“ boosts engagement with physics through QR codes that link to laboratory videos and self-assessment tests. It enables more practical work, helping students better understand theory by analyzing and collecting real data. Students can answer guiding questions about each experiment, strengthening comprehension. Most importantly, „Fizlab“ makes laboratory work accessible without the need for additional equipment only a workbook and a mobile device are required. Even in classrooms where phones are restricted, teachers can present the videos to the entire class. By combining accessibility, practice, and interactivity, „Fizlab“ inspires curiosity about physics and STEM.



TRL 7 – system prototype demonstration in operational environment

WORKERA – START YOUR CAREER JOURNEY TODAY

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

Justinas Bliuvas
Aistė Bubelytė
Tomas Petrauskas
Paulius Užtupas
Head: Dr. Jurgita Dabulytė-Bagdonavičienė

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Description of the work

WORKERA is an interactive career platform that empowers users to make informed and confident career choices. It consolidates historical data on the Lithuanian labour market covering employment trends, unemployment dynamics, and salary benchmarks across professions. The platform also features youth-oriented job postings with clearly defined competencies and requirements, making opportunities easier to evaluate. To further guide decision-making, WORKERA includes skill assessment tests that help users discover their strengths and align them with real market needs. By combining labour market insights with practical tools, WORKERA provides a comprehensive resource for students, job seekers, and career changers navigating their professional journey.

Technical or other problems that are solved with the work

The labour market is constantly evolving, with shifting demand for professions making career planning increasingly complex. Many young people struggle to make informed decisions about their future or to identify suitable employment opportunities. To address this gap, we developed a platform tailored to youth aged 15–29 who are actively seeking self-development. At the start of 2025, this segment comprised around 120,000 Lithuanian residents, with recent growth of 1.77% annually, indicating a steady upward trend in the number of potential users.

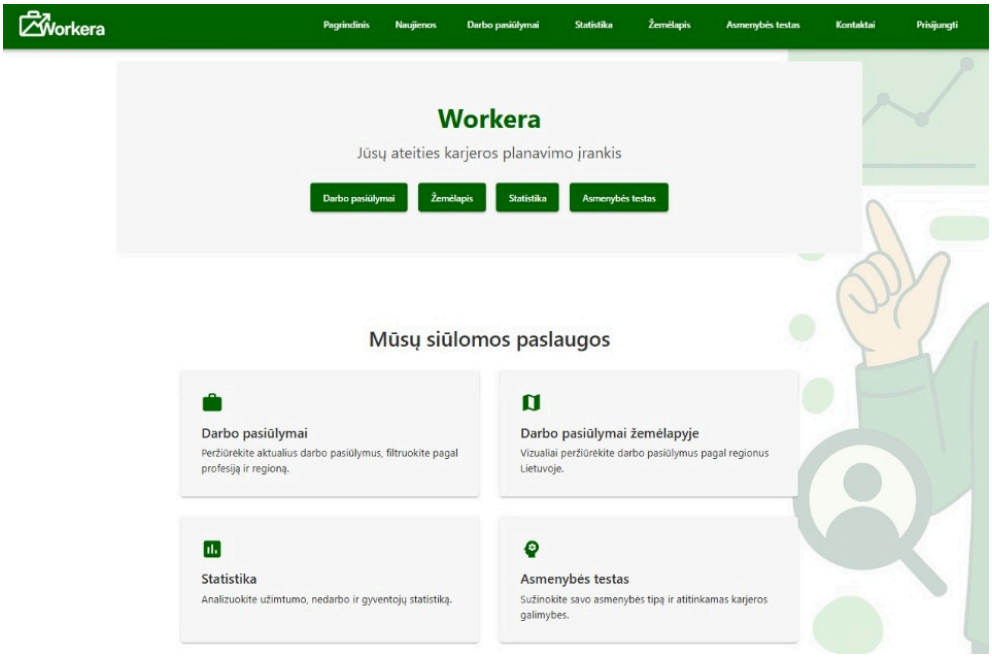
Novelty of the work

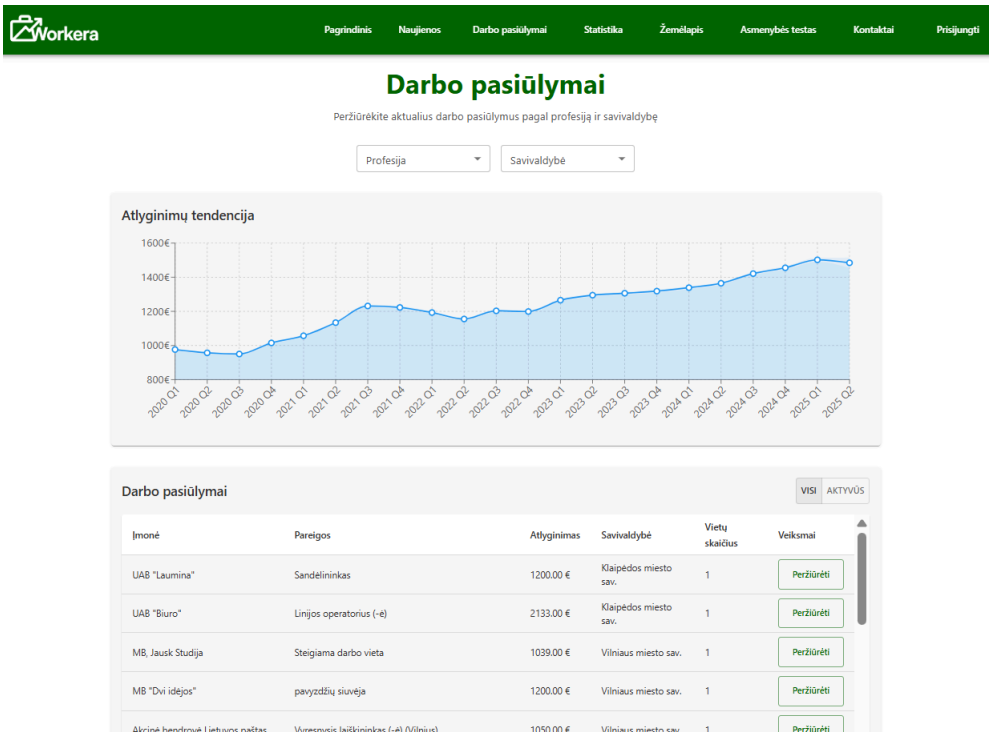
While some websites focus on career tests and consultations, and others provide job listings or publish labour market data, WORKERA combines all of these functions into a single

platform. It unites market insights, skill assessments, and real job opportunities in one place making it a comprehensive, user-friendly tool for informed career planning. Everything in one place!

The benefits and value to the potential users

WORKERA is a comprehensive platform designed to guide individuals through every stage of their career journey. It serves not only those interested in labour market trends, but also young people seeking to choose a career path or find a job. By relying on real, up-to-date data, the platform enables informed career decisions rather than choices based on intuition. With its wide range of functions and detailed insights, WORKERA saves users significant time and effort by consolidating all essential resources into one easy-to-use space.





TRL 5 – technology validated in relevant environment (industrially relevant)

Rizikate - risk management game

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

Gytis Jančaitis
Saulė Vilniūtė
Povilas Sakalauskas
Ramojus Drachneris
Head: Dr. Liepa Bikulčienė

Kaunas University of Technology

Description of the work

We are developing an interactive risk management game in which the player controls a virtual hero tasked with lifting weights of varying sizes. Before each attempt, the player must decide on the caffeine dose for the hero - low, medium, or high. Each choice influences the hero's heart rate: a higher dose and heavier weight increase the risk but also raise the potential reward of successfully lifting more. As heart rate rises, so does the probability of failure, challenging players to balance ambition with caution.

The game's methodology is inspired by the risk-based task model of G. Guttmann and H. Bauer, where military pilots had to control a circle to keep an unpredictably moving green ball inside it. Similar to this model, our game introduces different difficulty levels, linked to risk: as the conditions become more demanding (faster changes, heavier loads), players must manage uncertainty while making calculated decisions.

Technical or other problems that are solved with the work

In today's society, the ability to assess risk and make balanced decisions is becoming increasingly important - both in personal life and in professional activities. Many people face challenges in optimizing risk, whether it involves financial decisions, health-related choices, or everyday situations. Yet the market lacks innovative, interactive, and engaging tools that help develop this skill through gamification.

Our proposed solution is an educational online game that allows users to practically experience the principles of risk management. Through the virtual hero's decisions on caffeine intake and weightlifting, the game simulates real-life risk scenarios, encouraging players to evaluate both the short-term and long-term consequences of their actions. In this way, users learn to manage risk more effectively, strengthening their decision-making skills in everyday life.

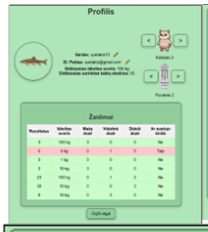
Novelty of the work

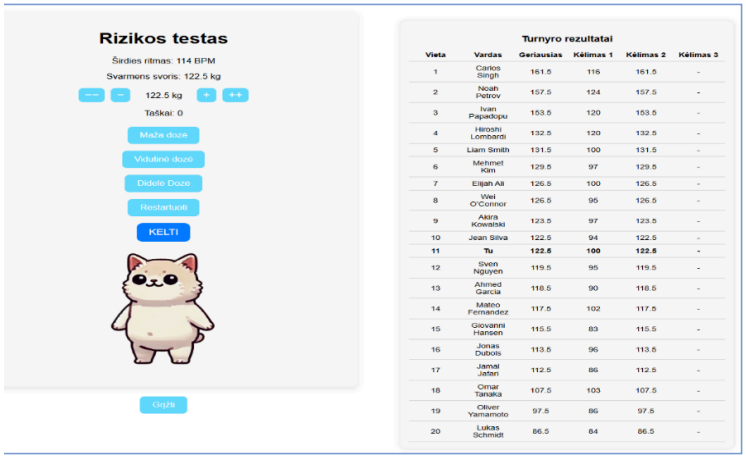
While competitors may have strong advantages, such as advanced data analytics and forecasting capabilities that are difficult to surpass, our product stands out with its unique focus on risk management and athlete development. Identified weaknesses in competing solutions - for example, their strong orientation toward gambling and narrow specialization - create an opportunity for our product to differentiate itself and reach a broader audience.

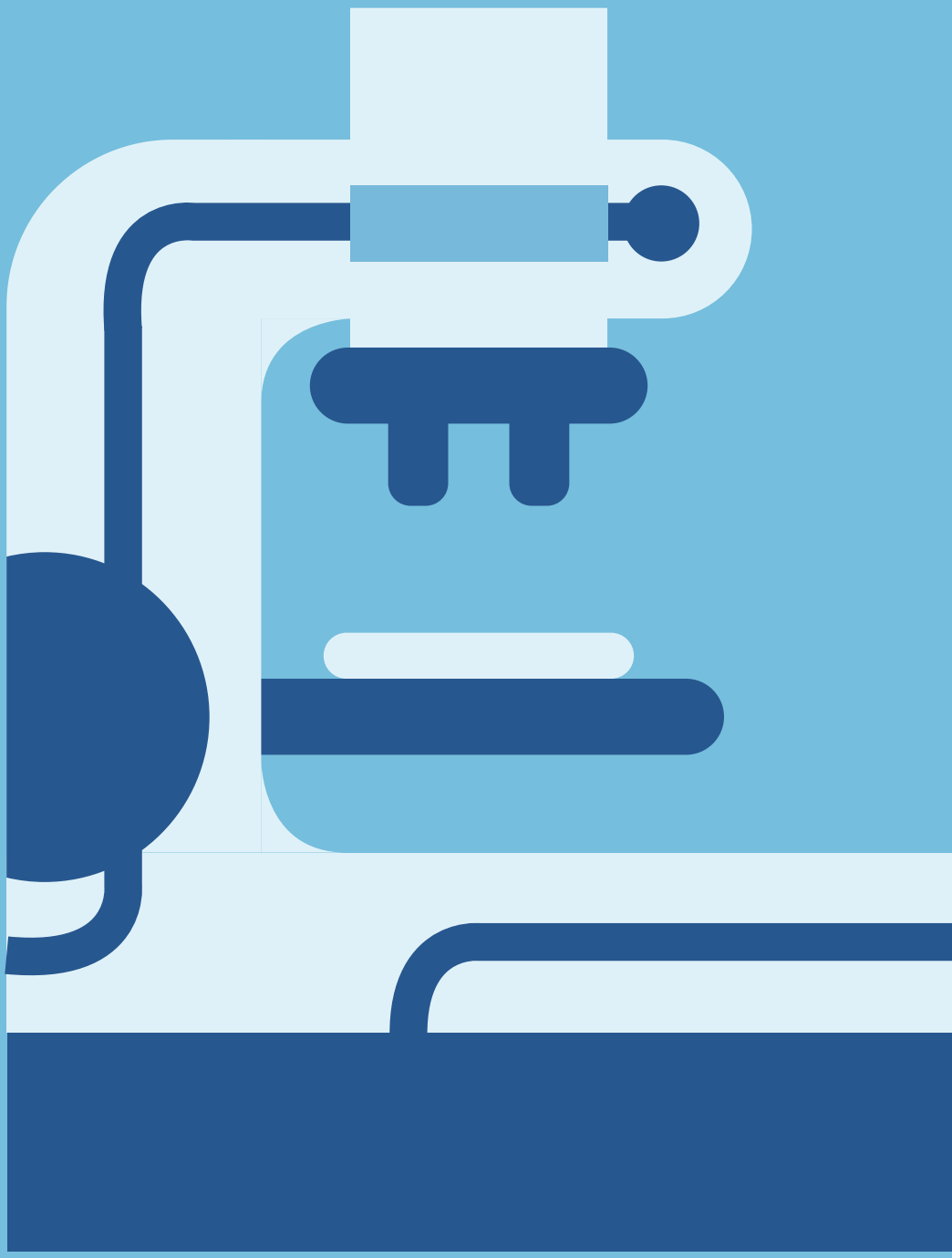
The benefits and value to the potential users

Our team has observed that the market offers very few tools for risk optimization, even though the ability to quickly assess risk and make decisions is crucial for achieving top performance. Currently, these skills are developed mostly through practical training sessions or competitions, which limits accessibility and consistency. This creates a clear need for an easily accessible and interactive solution.

Our product is designed to help athletes consciously manage risk, make thoughtful decisions, and strive for the best results both in training and in competitions.







Natural Sciences and Mathematics

GeoSustain: Sustainable Energy Solutions with Lithuanian Reservoirs

Field of science Natural sciences and mathematics
Type of innovation To mitigate climate change by developing innovative solutions

Abdul Rashid Memon
Head: Dr. Mayur Pal

Kaunas University of Technology

Description of the work

This work focuses on solving subsurface challenges through modern science and advanced computational tools. It supports the energy transition by helping oil, gas, and chemical industries shift toward cleaner solutions such as geothermal energy, carbon capture and storage (CCUS), and underground hydrogen storage (UHS). Key contributions include improving safety and sustainability in energy use, detecting heat-induced cracks, and building AI-driven digital models of the underground. In addition, the research explores novel problem-solving approaches through Quantum Method development, advancing both accuracy and efficiency in subsurface analysis. Overall, this work enables smarter, more reliable technologies for deep underground challenges while driving innovation for a cleaner and more sustainable energy future.

Technical or other problems that are solved with the work

Our product addresses the growing need for accurate and efficient subsurface solutions as the energy sector shifts to clean alternatives. It is designed for hydrocarbon, geothermal, and chemical industries seeking to adopt climate-neutral strategies in line with EU climate goals. In Lithuania, where 45% of electricity is targeted to come from geothermal sources and district heating networks are expanding, the demand for safe underground energy storage and management is rising rapidly.

Our target users include late-life fossil fuel operators facing declining oil and gas production and in need of support transitioning to sustainable operations. By combining AI-powered subsurface digitization, advanced thermal crack detection, and novel quantum methods, our product delivers high-accuracy insights and future-ready tools. With global clean energy

efforts accelerating, the market potential is strong - enabling industries to meet climate targets, strengthen energy security, and advance technological progress.

Novelty of the work

The novelty of our product lies in its integrated, future-focused approach to solving subsurface (underground) challenges - an area where traditional methods fall short. What sets it apart:

- Support for Emerging Energy Systems – Purpose-built for fast-growing applications such as geothermal energy, carbon capture and storage (CCUS), and underground hydrogen storage (UHS).
- Climate-Neutral Design – Aligned with EU initiatives like IMPRESS and national goals such as Lithuania's 45% geothermal energy target, making it both timely and policy-relevant.
- Enabling Energy Transition – Provides late-life fossil fuel operators with advanced technological tools to pivot toward sustainable operations rather than retiring assets prematurely.
- AI-Powered Subsurface Digitization – Creates dynamic, real-time underground digital twins that improve prediction accuracy and accelerate decision-making compared to conventional geological modeling.
- Quantum Method Development – Introduces cutting-edge computational efficiency and precision for analyzing highly complex subsurface data, a rare but transformative approach in this field.

By combining AI, quantum computing, and subsurface development with a strong climate focus, our solution not only enables the clean energy transition but also delivers practical, scalable support for industries navigating today's rapidly evolving energy landscape.

The benefits and value to the potential users

The target market gains significant value by transforming how underground energy operations are managed and transitioned. Companies in oil, gas, geothermal, and chemical sectors benefit from safer, more accurate, and cost-effective solutions for subsurface challenges. With AI-driven subsurface digitization, thermal crack detection, and quantum method development, organizations can reduce risks, improve decision-making, and extend asset life. For late-life fossil fuel operators, the product enables a smooth shift to cleaner energy options, ensuring competitiveness in a rapidly evolving market. Climate-focused

organizations, including those aligned with EU initiatives, can meet environmental goals more effectively, while governments and utilities - such as those in Lithuania - gain confidence in expanding geothermal and district heating networks. In short, the product delivers innovation, sustainability, and high performance, driving both business value and climate impact.

TRL 7 – system prototype demonstration in operational environment

The WiFi blocker

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

Benas Šimkūnas
Arnas Andrulis
Saulius Ogenskas
Danielius Voronovas
Head: Dr. Benas Gabrielis Urbonavičius

Kaunas University of Technology

Description of the work

The WiFi blocker developed for prison facilities is designed to prevent inmates from illegally accessing wireless internet networks. The device works by disrupting or restricting WiFi signals within a defined area, reducing the risk of unauthorized mobile device use. Its primary purpose is to hinder criminal activities, block unsanctioned communication with the outside world, and strengthen institutional security. The blocker can be scaled to different facility sizes, operates with precision without interfering with authorized communications, and complies with legal regulations governing signal control in restricted zones.

Technical or other problems that are solved with the work

Restricts inmate access to Wi-Fi networks, preventing additional criminal activities.

Novelty of the work

There is no directly comparable product on the market.

The benefits and value to the potential users

Illegal activities are prevented, Wi-Fi network access is blocked, and all devices that rely on Wi-Fi can no longer be used.