



VILNIUS
TECH

Vilniaus Gedimino
technikos universitetas

Sapere Aude

MARCH 2025
No. 1, (XXXIV)

Sapere Aude

VILNIUS TECH
university publication
March 2025,
No. 1, (XXXIV)
ISSN 2029-4999



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ear readers,

Among the members of the Vilnius Gediminas Technical University community, certain values are cherished – sustainability, unity, creativity, openness, and innovation. This particular issue of the journal is dedicated to unveiling the value of innovation.

In today's world, innovation is often associated with new ideas, methods, products, and processes that make daily life easier, as well as their creation and implementation. However, it is important to remember that innovation also encompasses technological, social, and organizational changes that drive progress, development, and growth in various fields.

Innovation and its implementation bring additional benefits to both businesses and society – they help strengthen competitiveness, increase efficiency, ensure social well-being, contribute to the creation of new jobs, and encourage the development of scientific research.

This is well demonstrated by the members of our university community, who, by creating innovative solutions, contribute not only to the advancement of our country but also to the progress of the entire world.

The success stories of our colleagues published in the journal are a testimony to what can be achieved through long and consistent work, involvement, and personal growth and should encourage others to try to discover what has not yet been discovered.

I believe that these stories will serve as an inspiring example to take real action and contribute to the creation of innovations, as well as to promotion of our university's name!

Inspiring stories,
Editor-in-Chief, Neda Cerniauskaite



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PRINTING

UAB „Baltijos kopija“
Kareivių g. 13B
09109 Vilnius

Circulation – 600 copies.

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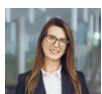
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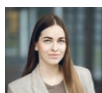
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VILNIUS TECH Rector Prof. Romualdas Kliukas: “Innovation – an inseparable part of our lives”

In today's world, innovation plays a crucial role – it not only shapes societal habits and facilitates daily life but also fosters progress. One of the most important aspects of innovation is that its consistent implementation contributes to rapid economic growth. After all, innovation drives the new product emergence in the market and the development of services. →



Equally important is the fact that innovations in healthcare, transportation, energy, and other sectors help improve people's quality of life. For example, advancements in medicine can extend life expectancy, while innovations in transportation make movement more convenient.

Innovation, especially in information technology, transforms social interaction and communication opportunities. The internet and social networks allow people to communicate without geographical limitations and promote the dissemination of knowledge and information. The implementation of new technologies also helps address environmental issues – the development of sustainable energy production technologies reduces human impact on the environment and helps combat climate change.

Technological progress is also crucial in education as it enables the creation of new teaching methods and tools. Today, remote learning platforms are widely used, increasing access to education and providing opportunities for lifelong learning. Innovation also positively impacts the job market – it drives automation processes and creat-



Today, remote learning platforms are widely used, increasing access to education and providing opportunities for lifelong learning.

Rector Prof. Romualdas Kliukas



es demand for new professions, encouraging individuals to continuously improve their skills.

Vilnius Gediminas Technical University (VILNIUS TECH) and its community members contribute to the advancement of innovation. The university continuously promotes research in various scientific fields and develops new, cutting-edge technological solutions. This benefits both students and researchers in expanding their knowledge.

Equally important is that VILNIUS TECH fosters a favorable environment for innovation – establishing research centers and laboratories dedicated to scientific research and creative activities. These spaces provide university community members with opportunities to experiment and develop new ideas.

Building strong ties with industry also plays a key role in developing and implementing innovative solutions. This collaboration allows both scientists and students to participate in real-world projects, solving practical problems and tackling emerging challenges.

The university maintains close relationships with industrial sectors, enabling students and researchers to work on real projects, apply theoretical knowledge in practice, and create innovative solutions.

It is also important to highlight that VILNIUS TECH scientists contribute to international research projects, collaborating with universities and partners from around the world. This provides a unique opportunity to share knowledge and expertise with academic institutions globally.

At Vilnius Gediminas Technical University, study programs are continuously reviewed and updated to align with market trends. This helps students acquire the necessary competencies and enhances their competitiveness in the modern job market.

I am delighted that by working together, we are moving forward on the path of innovation. We are constantly seeking new technological solutions that contribute to global progress and create added value for society!



The university maintains close relationships with industrial sectors, enabling students and researchers to work on real projects, apply theoretical knowledge in practice, and create innovative solutions.

Rector Prof. Romualdas Kliukas





MULTIMEDIA DESIGN / INTERACTIVE DIGITAL MEDIA AND NETWORKED ARTS

No need to take 1 when you can get 2!

Choose the Double Degree „Multimedia Design“ program at VILNIUS TECH and complete one year of studies in UK at Goldsmiths University of London!

From autumn 2025, students who are interested in applying multimedia technologies within the contemporary arts are invited to consider a double degree option, which will be implemented in a 2+1+1 model. It means, that students will complete their first two years in Lithuania studying in the full-time „Multimedia Design“ programme at VILNIUS TECH, then for one year they will go to the UK to study with colleagues from **Goldsmiths' Digital Arts Computing** programme, and finally return to VILNIUS TECH to complete their fourth year of study in Vilnius.



Prof. Dr. Romualdas Vadluga: “I dedicated my entire life to Vilnius Gediminas Technical University”

On January 13th, the university celebrated the 90th anniversary of Professor **Romualdas Vadluga**. Although Professor R. Vadluga was born in independent Lithuania in 1935, his life was complicated and difficult. Despite the obstacles, he managed to fulfill perhaps his greatest dream – to become a scientist, work at a higher education institution, share his knowledge and experience with students.

Professor R. Vadluga spent his entire career at one place – Vilnius Gediminas Technical University.

In the post-war years, R. Vadluga's parents were repressed by the Soviet authorities and deported to Siberia, where his father died in exile. The professor himself managed

to avoid exile, staying in Lithuania to live with his uncle.

His path to higher education began while serving in the Soviet army, where he was conscripted right



Professor R. Vadluga (on the right) worked his entire life at just one workplace – Vilnius Gediminas Technical University.

FACTS ABOUT PROF. R. VADLUGA’S SCIENTIFIC CAREER:

1962	1964	1967	1970	2002
Graduated from the Kaunas Polytechnic Institute and was assigned to work as an assistant at the Department of Civil Engineering at the Vilnius Branch of the Kaunas Polytechnic Institute.	Entered the postgraduate program, which he successfully completed.	Defended his dissertation for the degree of Candidate of Technical Sciences (Doctor).	Was awarded the academic title of Associate Professor.	Became a Professor.

after finishing school, despite passing all 9 entrance exams for the Agricultural Academy. He was not accepted due to his background.

While serving in the military, R. Vadluga never forgot his main goal – to pursue higher education. Taking advantage of the opportunity to be demobilized early to study at a university, he returned to Lithuania and enrolled at the Faculty of Civil Engineering at the Kaunas Polytechnic Institute. With great determination and effort, working hard and persistently, he overcame all challenges and became a civil engineer, a well-known and respected scientist, and a beloved and respected educator.

The main area of R. Vadluga’s scientific research, for which he is grateful to his mentor, academician A. Kudzia, is the experimental and theoretical research of centrifuged concrete and reinforced concrete: the strength, deformability, resistance to cracking, and reliability analysis of ring cross-section structures. Based on these studies, prac-

tical recommendations for the design of ring cross-section structures would be presented. The professor also worked extensively on the reliability evaluation of reinforced concrete structures and improved practical calculation methods for thin-walled structures and engineering buildings.

The list of Professor R. Vadluga’s scientific works is long – he published more than 100 scientific articles in the proceedings of national and international conferences, seminars, and symposiums, as well as in peer-reviewed journals from abroad and Lithuania. He devoted a great deal of energy and effort to the publication of the scientific works collection *Reinforced Concrete Structures* (17 volumes were published). R. Vadluga was the responsible secretary of the editorial board for these previously published works. For a long time he acted as the head of scientific research related to the reliability of construction structures.

R. Vadluga was distinguished

by his active scientific and practical work at the national level, preparing design standards for structures, technical construction regulations, Lithuanian standards, and performing technical expertise of buildings and projects. He was a member of the Professional Knowledge and Qualification Evaluation Commission for project managers, project execution supervisors, and experts of building projects and buildings of the Republic of Lithuania.

Together with his colleagues, the professor co-authored two textbooks. For the textbook *Reinforced Concrete Structures*, he was awarded the State Prize in 1982, along with three co-authors. He is also the author of five methodological publications.

According to R. Vadluga, working with students was very important to him, so he would always approach this role with great responsibility, as his goal was to prepare well-prepared civil engineers who could succeed in the construction industry.



NEW EXPERIENCES

Prof. Dr. A. Daniunas awarded the Order of the Grand Duke of Lithuania Gediminas

On February 16th, during a solemn ceremony held at the Presidential Palace, Professor Dr. **Alfonsas Daniunas**, the Chairman of the Senate of Vilnius Gediminas Technical University (VILNIUS TECH), Head of the Department of Metal and Composite Structures, and former long-time Rector of the university, was awarded the Order of the Grand Duke of Lithuania Gediminas by the President of Lithuania, Gitanas Nausėda.

A state award is very important to every individual. It is a recognition of one's work and achievements. I am confident that my work

and the projects implemented in the higher education sector contributed to improving and transforming the quality of higher education at the university and throughout Lith-

uania. It is also nice to remember that, while serving as Vice-Rector for Studies, Rector, Chair of the Committee on Studies of the Lithuanian Rectors' Conference, and later as

President of the Conference, along my colleagues from our university and others, we were able to implement several stages of higher education reform and integrate Lithuanian higher education into the global higher education space. The Order of the Grand Duke of Lithuania Gediminas is a wonderful proof that my work has been recognized. Today, I can feel happy that all of this is appreciated at the national level," says Prof. Dr. A. Daniunas.

Professor Dr. A. Daniunas has made significant contributions to the reform of Lithuanian higher education, the development of the university, and the education of the younger generation through his achievements and scientific work.

As a reformer who likes to approach challenges from a different perspective, over decades he has given much to the university and the state:

- ✓ He shaped the rational system of higher education in independent Lithuania;
- ✓ He integrated Lithuanian science into European structures;
- ✓ He ensured the training of high-level engineers in Lithuania, and as an educator, he still dedicates much attention to young colleagues, doctoral students, and master's students;
- ✓ Recognizing the importance of technology and other sciences, he managed, on numerous occasions, to maintain the proper balance of these sciences at the university while also expand-

ing the modern concept of a technology university through the implementation of new study fields;

- ✓ During his leadership, VILNIUS TECH became one of the largest universities in Lithuania. The experience and changes he initiated led to significant results in science and studies;
- ✓ The professor is the head and one of the authors of the first national steel structure design standards Steel Structure Design and the

Lithuanian version of the European standard Steel Structure Design;

- ✓ Since 1985, he has published more than 150 scientific articles and is the author and co-author of 45 books or book chapters;
- ✓ He dedicates much time and effort to promoting higher education, popularizing various fields of study, and, by his personal example, contributes to increasing public trust in engineers.



CAREER DAY

Business

Talent



2025 04 10 11:00–16:00

Vilnius, Saulėtekio al. 11

More information:



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For their innovative idea, VILNIUS TECH scientists receive the Lithuanian Science Award

At the beginning of the year, the Lithuanian Academy of Sciences announced the winners of the 2024 Lithuanian Science Awards. One of the six prizes was awarded to Professor Dr. **Dalius Navakauskas**, Vice-Rector for Science and Innovation at Vilnius Gediminas Technical University (VILNIUS TECH), and his former student, Professor Dr. **Dalius Matuzevicius** from the Department of Electronic Systems.

The award recognized a 15-year research cycle titled "Epigenetic and genetic biomarkers for disease diagnosis and personalized therapy: mechanism research, method development, and applications (2009–2023)", conducted by a team of scientists from VILNIUS TECH and Vilnius University. This groundbreaking research represents a significant scientific breakthrough in disease diagnosis and the development of personalized therapy. The findings open entirely new possibilities for personalized healthcare and will accelerate the treatment of various diseases.

"Receiving the Science Award is particularly meaningful to me because it acknowledges the collective work of our interdisciplinary team. It recognizes our efforts in combining

computational informatics, artificial intelligence, biology, and medicine. This award proves that our work contributes to significant advancements in science and medicine, while the methods we developed help analyze biological data more efficiently. It also serves as an encouragement to continue developing innovative approaches that could have a lasting impact on biomedical research and medical practice," emphasizes Professor Dr. Dalius Matuzevicius from the Department of Electronic Systems.

According to Professor Dr. Matuzevicius, Vice-Rector Professor Dr. Navakauskas contributed to the research cycle by developing and applying computer vision and machine learning methods for the analysis and modeling of biological images.

The developed methods have enabled the automation and optimiza-

tion of experimental data processing, increasing the amount and reliability of extracted information. This is especially crucial when analyzing biological images, epigenetic changes, and molecular processes related to cancer mechanisms and regenerative medicine. These methods have contributed to the more accurate identification of biomarkers and the advancement of personalized therapies.

"What fascinated me about this project was the opportunity to merge informatics and biology to better understand complex cellular processes. Even in school, I was interested in biology and medicine, so working on research that combines image analysis, machine learning, and biomedicine was an incredibly motivating challenge. Additionally, it was exciting to witness how our artificial intelligence algorithms and mathematical models helped discover new biomarkers that could be applied directly in clinical practice. I am grateful for the opportunity to work with Professor Dalius Navakauskas —his experience and mentorship have had a significant impact on the evolution of my research," says Professor Dr. Dalius Matuzevicius.



Professor Dr. Dalius Navakauskas, Vice-Rector for Science and Innovation at Vilnius Gediminas Technical University (VILNIUS TECH).



Professor Dr. Dalius Matuzevicius from the Department of Electronic Systems



VILNIUS TECH's gift to Kherson University: a shelter equipped with modular furniture

It has just been three years since Russia launched its full-scale military invasion of Ukraine. From the very beginning, the Vilnius Gediminas Technical University (VILNIUS TECH) community has shown unwavering support for Ukraine. Before Christmas, they organized a charity initiative for Kherson National Technical University (KNTU), resulting in a 100-square-meter shelter equipped with modular furniture that was designed by VILNIUS TECH researchers and manufactured by the company UAB DUV. The university community, with the support of businesses and alumni, raised approximately 25,000 euros for this initiative.

Before the war, Kherson National Technical University was a center of innovation and high-quality education with its boasting modern laboratories, collaborative spaces, and computer classrooms for learning professional software. The university was also

a hub for student activities. However, after the shelling and occupation, much of it was destroyed.

Some faculty members and administrative staff were relocated to a safer region in Ukraine, about 700 km away in Khmelnytskyi, where they were hosted by another university with similar study programs

and laboratories. Others remained in Kherson. Unfortunately, KNTU, located near the front lines, continues to suffer damage, with broken windows and damaged roofs becoming a regular occurrence.

"When Kherson was liberated in November 2022 and we were able to access the university premises

again, some furniture and equipment were quickly moved to the basement of one of the academic buildings, so that to save it from daily shelling and drone attacks. These basement spaces became makeshift shelters for staff and local residents. More than half of the university's buildings and dormitory windows were shattered by explosions and direct hits," explained Larissa Ponomenko, head of KNTU's Department of Education, Science, and International Relations.

One of the university buildings had no shelter at all. Recognizing this need, VILNIUS TECH researchers collaborated with business partners to design and construct a shelter furnished with unique, easy to assemble modular plywood furniture.

United by a common goal, university staff, students, alumni, and partners began raising funds in November 2024 to support KNTU. Their collective efforts have now provided a hidden space where professors and students can continue with their lectures in a secure environment until the direct threat passes.

The modular furniture, designed specifically for the Kherson facility by Associate Professor Dr. L. Krugelis, head of the Design Department at VILNIUS TECH's Faculty of Architecture, includes chairs, tables, cabinets, and bunk beds, contributing to the increased comfort and functionality of the shelter. The primary goal is to bring students back to a safe and full-fledged learning environment because even in times of war, universities remain symbols of resilience, dedication to education, and hope for recovery.

Vytas Liudzius, director of UAB DUV and the designer of the furniture structures, emphasized that since the war began, VILNIUS TECH researchers and business partners have helped establish over 20 shel-

ters and produced more than 6,000 furniture pieces, valued at over 500,000 euros.

These furniture pieces are now found across Ukraine—from the war zone to Kyiv, from mobile hospitals to military units. However, the current focus is on supporting schools and universities.

"We want students—Ukraine's future—to return to their studies. But for that to happen, they need shelters; otherwise, education is impossible. We are happy that the youth of Kherson now have a safe space to continue their learning," said Liudzius.

However, he urged people not to stop at this one initiative and to continue supporting Ukraine in its fight for freedom.

"We must remember that there is a war in Europe. This is a responsibility we must take seriously. We must continue donating because the situation is both urgent and fragile. By helping the people of Ukraine, we are also protecting our own children and families, ensuring the peace around us," emphasized the UAB DUV director.

A heartfelt thank you to everyone who contributed to making KNTU in Ukraine a safer place!

100 m²

shelter equipped with modular furniture that was designed by VILNIUS TECH researchers and manufactured by the company UAB DUV

25,000

euros were raised for this initiative by the university community and alumni



VILNIUS TECH establishes Smart and climate-neutral manufacturing processes, materials, and technologies competence center to support advanced research

A new Smart and Climate-Neutral Manufacturing Processes, Materials, and Technologies Competence Center has opened its doors at Vilnius Gediminas Technical University (VILNIUS TECH), which will provide access to state-of-the-art scientific equipment. This will enable advanced research, innovation testing, and the development of industry-applicable solutions.

The center stands out because of its significant investments in scientific infrastructure—€17 million was allocated for its development, making it one of the largest infrastructure modernization projects in the university's history. This investment will not only upgrade the research base but also enhance VILNIUS TECH's position as one of the most advanced universities and research centers in the region.

More about the significance and future plans of this center from its director, **Simonas Barsteiga**.

– How did the idea for the Smart and climate-neutral manufacturing processes, materials, and technologies competence center come about?

– Sustainability is a key priority in VILNIUS TECH's strategy as a re-

sponse to the challenges posed by climate change. Alongside sustainability, other core values include creativity, innovation, openness, and connectivity. Connectivity and collaboration have long been the driving forces behind human progress.

Today, with the rapid pace of change, connectivity has become an essential success factor—not only in implementing projects but also in tackling cultural as well as digital challenges.

Lithuania has also highlighted the importance of connectivity through the launch of a Smart and climate-neutral mission projects competition.

The goal is to bring science, business, and society together to strengthen the circular economy and promote the transition to climate-neutral solutions. The Smart and climate-neutral manufacturing

processes, materials, and technologies competence center is a direct response to this initiative.

The center's concept was developed within a mission-driven science and innovation program, which enables the creation of modern infrastructure and the engagement of business partners in research activities.

–What was the most interesting aspect of establishing this competence center?

– For me, the biggest challenge and the most exciting experience has been bringing to life what often seems impossible. One of the center's main missions is to strengthen connections between different university research fields and ensure that every small step contributes to the entire innovation ecosystem.

This is a major challenge, but it is also an invaluable learning and development opportunity. Every day brings new and sometimes complex situations. But over time, you realize that even the smallest steps taken today can become breakthrough moments.

This center is a place where everyone is invited to contribute to such transformative changes.



66

Sustainability is a key priority in VILNIUS TECH's strategy as a response to the challenges posed by climate change. Alongside sustainability, other core values include creativity, innovation, openness, and connectivity.

S. Barsteiga

99

– What makes this center unique?

– The infrastructure of the Smart and Climate-Neutral Manufacturing Processes, Materials, and Technologies Competence Center creates opportunities to participate in ambitious international projects and attract top researchers and industry partners. These collaborations will help us develop new solutions aligned with the European Horizon Program and the EU Green Deal.

However, the center's uniqueness is not just in its technology or investments. More importantly, this infrastructure is meant to be an innovation platform that anyone can contribute to. The goal is to foster an environment of knowl-

edge-sharing and close collaboration between scientists, students, industry, and society.

Only by reaching this level of openness and connectivity can we truly transform the future of VILNIUS TECH.

– What is the significance of this center for the university, Lithuania, and the world?

– In the future, more projects will require detailed analysis of their impact on climate neutrality. The financial cost of greenhouse gas (GHG) emissions will need to be included in cost-benefit analyses. Projects will have to align with Lithuania's National Energy and Climate

Plan (2021–2030) and the GHG reduction targets for 2030 and 2050.

As we execute projects, we will need to assess climate-related risks, develop adaptation plans, and evaluate monitoring and follow-up actions. While we don't yet know all the answers, this center brings Lithuania closer to achieving its strategic goals—addressing societal challenges through innovation and interdisciplinary collaboration.

Modern infrastructure will help develop essential technologies and environmentally friendly products, directly contributing to GHG emission reductions.

By acquiring new knowledge and competencies, we will be able to

catalyze climate-neutral solutions not only in Lithuania but—if we collaborate effectively—even worldwide.

– How will the center operate?

– The Competence Center is a university-level unit covering multiple scientific disciplines. Its goal is to support the university’s strategy by integrating interdisciplinary research and experimental development (R&D) projects.

Its operational model is based on openness and collaboration. Officially, the center has only one full-time employee, but the entire VILNIUS TECH community is involved. Researchers, faculty members, students, and administrative staff from various departments and institutes participate in the center’s activities.

Rather than a traditional hierarchical team, the center operates as a dynamic, decentralized structure—anyone contributing to its activities becomes part of the team and together aim to achieve strategic university goals. This model ensures that the center functions as a bridge between different sectors and enables the practical implementation of scientific ideas.

To support this decentralized model, a new approach to collaboration, information sharing, and management is required. Our goal is to achieve a high level of openness and connectivity to generate real added value for the university, society, and beyond.

– What are the center’s future plans and upcoming projects?

– By the end of this year, the center will be fully equipped with modern laboratory facilities to stimulate innovation and enhance collaboration.

All research projects at VILNIUS TECH involve experimental planning, testing, mathematical model-

ing, statistical analysis, and theoretical research, applied at the material, technology, and process levels.

In the future, VILNIUS TECH aims to further integrate into the international academic and research landscape by strengthening interdisciplinary cooperation with EU universities, research centers, and industry leaders.

To remain competitive internationally, we will focus on climate-neutral solutions and participate in climate change mitigation programs. Our goal is to connect as many VILNIUS TECH activities as possible to secure partici-

pation in Horizon Europe and other EU-funded projects, which support Lithuania’s and Europe’s mission to become a climate-neutral continent by 2050.

The center has no boundaries—we invite everyone who shares our vision to help create sustainable, smart, and climate-neutral solutions that will inspire the world beyond Lithuania.

This mission requires us to constantly rethink how we operate, collaborate, and share knowledge so that to improve efficiency, drive progress, and create value for society, the country, and the planet.

**CURRENTLY, FIVE KEY R&D PROJECTS THAT
FOCUS ON DEVELOPING INNOVATIVE BUILDING
MATERIAL PROTOTYPES ARE UNDERWAY:**

- Artificial lightweight aggregate made from recycled plastic for concrete mixtures
- Recycled plastic void-forming inserts for concrete and reinforced concrete structures
- Cement-free lightweight concrete mixture for structures and structural elements
- Multi-functional mat made from recycled tire textile fiber waste

OTHER PLANNED SOLUTIONS INCLUDE:

- Noise-reducing barriers
- Hydrogen supply systems for conventional internal combustion engine vehicles
- Climate-neutral, low-rolling-resistance asphalt mixtures
- Efficient wastewater sludge treatment solutions



International conference

NORDTEK 2025

June 11-13, 2025

VILNIUS TECH, Saulėtekio al. 11, Vilnius



Organizers:



Vilnius Tech scientists take a step towards innovation: appointed as members of the LMA Young Academy

At the General Assembly of the Lithuanian Academy of Sciences (LMA), new members were elected to the Young Academy (LMAJA), which included Vilnius Tech scientists Dr. **Judita Skultecke** and Associate Professor Dr. **Sarunas Skuodis**.

According to Dr. J. Skultecke, a senior researcher at the Vilnius Tech Road Research Institute, one of the key factors contributing to her selection as a member of the LMA Young Academy could be her active scientific work and consistent involvement in the development of technological sciences. Together with top-level researchers from the Road Research Institute, she has successfully implemented numerous studies addressing national and international road infrastructure challenges. She has also introduced more than 30 innovative materials and structures with unique properties applicable in road construction and maintenance.

Beyond research, Dr. Skultecke



"Being a member of the LMA Young Academy is both a great responsibility and an opportunity—not only to collaborate with other talented young Lithuanian scientists and initiate interdisciplinary or inter-institutional projects but also to contribute to shaping science policy! I firmly believe that by working together towards common goals, we can build a stronger and more innovative Lithuania," emphasizes Dr. Skultecke.

actively participates in international scientific organizations and conferences, contributes to the improvement of European standards and Lithuanian technical regulations governing road construction materials as well as processes, and promotes young scientists' engagement in research. She also plays a role in popularizing science in Lithuania to help society better understand the value scientific research brings to everyday life.

„In recent years, my research has focused on developing new or alternative road construction materials and structural solutions, which with their unique properties enhance road sustainability and reduce greenhouse gas (GHG) emissions. Currently, as part of the research and development (R&D) project *Climate-Neutral Road and Urban Pavements*, we are working on creating an asphalt mixture with lower rolling resistance for use in top pavement layers. Once implemented, this mixture will bring tangible benefits to everyone—reducing fuel consumption and CO2 emissions while significantly contributing to the ambitious goals of the European Green Deal and enhancing the sustainability of road infrastructure,” explains Dr. Skultecke.

She highlights that her motivation to apply for membership in the



I firmly believe that by working together towards common goals, we can build a stronger and more innovative Lithuania

J. Skultecke



LMA Young Academy was driven by a desire to strengthen the young scientists' community. According to her, talented and ambitious young scientists are the driving force behind innovation, progress, and the future of the country. However, to fully realize their potential, they need a supportive academic environment that fosters collaboration, knowledge exchange, and international integration. The LMA Young Academy provides a solid foundation for creating such an environment for young researchers.

„Being a member of the LMA Young Academy is both a great responsibility and an opportunity—not only to collaborate with other talented young Lithuanian scientists and initiate interdisciplinary or inter-institutional projects but also to contribute to shaping science

policy, help enhance the prestige of science, mentor young researchers, and expand international networks. I firmly believe that by working together towards common goals, we can build a stronger and more innovative Lithuania,” emphasizes Dr. Skultecke.

She has already started her first assignments as an academy member, joining groups focused on science policy and expert evaluations. She is also one of the experts assessing research papers submitted for the LMA Higher Education Student Research Competition. This experience allows her to contribute to scientific achievements and better understand the quality standards of scientific work across different research and educational institutions, all the while assessing the potential of young researchers.

„Being a member of the LMA Young Academy is a unique opportunity to contribute to the future of Lithuanian science, represent the interests of young researchers, and drive change in both academic and public spheres. For those considering applying but hesitant to do so—I encourage you to go for it! If you have ideas and feel that you can contribute, it's worth pursuing LMA membership. It's a rare chance to share knowledge, learn from others, launch new initia-



For those considering applying to the LMA Young Academy, I strongly encourage you to try—even just to gain insight into the selection process.

S. Skuodis





"In recent years, I have focused heavily on researching Gediminas Hill and the remnants of the Upper and Lower Castles, leading to the development and continuous refinement of a three-dimensional numerical finite element model of Gediminas Hill," says Associate Professor Dr. Š. Skuodis about his scientific activities.

tives, and enhance the visibility of young scientists in the academic world. Every change starts with a small step—submitting an application," says Dr. Skultecke.

Meanwhile, Vilnius Tech associate professor from the Department of Reinforced Concrete Structures and Geotechnics, Dr. Sarunas Skuodis, points out that the evaluation of new LMA Young Academy members was multifaceted. It considered the number and prestige of published articles, conference participation, citation levels, the significance and scope of past and ongoing projects, and social engagement (such as participation in associations).

"In recent years, I have focused heavily on researching Gediminas Hill and the remnants of the Upper and Lower Castles, leading to the development and continuous refinement of a three-dimensional

numerical finite element model of Gediminas Hill. This model enables crucial calculations and encourages further research. This site is of great importance to me, both professionally and as a Lithuanian citizen.

I am also involved in the *Civil Engineering Research Center* project, which is unique in scale and the number of people involved. While it presents certain challenges, it also offers valuable experiences. Additionally, I participate in *InoProgress*, *InoStart*, and *Green Experiment* projects aimed at businesses, where companies acquire scientific expertise from the university. In these cases, we must rapidly analyze scientific challenges and help companies achieve high technology readiness levels (TRL 8–9)," explains Dr. Skuodis.

He emphasizes that being a member of the LMA Young Aca-

demy is a significant recognition that encourages continuous self-improvement and motivates him to pursue his research goals with even greater determination. His first major task as an academy member is contributing to a collective monograph on Gediminas Hill.

"For those considering applying to the LMA Young Academy, I strongly encourage you to try—even just to gain insight into the selection process.

The number of available spots is limited, and the competition is strong. You may think you are performing well within your department, but stepping onto a larger stage allows for a broader comparison and provides valuable experience. After the selection process, my first thought was that participating alone was worthwhile—and being elected was an even greater honor," shares Dr. Skuodis.

VILNIUS TECH PhD researchers contribute to everyday life simplification: from filling concrete cracks to innovative solutions in social care

PhD researchers at Vilnius Gediminas Technical University (VILNIUS TECH) bring recognition to the university beyond Lithuania. By publishing their research results and preparing doctoral dissertations, they advance the field of technology sciences and address specific, socially relevant issues. Equally important is the fact that the defended dissertations often lead to the development of new products, processes, or technologies that can enhance the country's international competitiveness and stimulate economic growth.

DR. AUGUSTA IVASKE,
Lecturer at the Department
of Chemistry and
Bioengineering

**Dissertation: "The Effect of
bacillus bacteria viability on
crack closure in concrete"**

The research focuses on biological concrete mixtures containing alkaliphilic, spore-forming *Bacillus* bacteria embedded in carriers. Biological concrete is defined as concrete containing bacterial spores that, upon germination and metabolic activity, precipitate calcium carbonate, sealing emerging cracks.

Supervisor:

Prof. Dr. Jaunius Urbonavicius

Crack formation in concrete is an inevitable process. However, one way to fill these cracks is by using

bacteria, which is an environmentally friendly and long-term method. Alkaliphilic, spore-forming *Bacillus* bacteria are used for this purpose.

Since the high pH and metal oxides in cement limit the viability of bacterial spores, they are embedded in carriers such as expanded clay or calcium alginate microcapsules, which are then added to the concrete mixture.

When cracks form in the concrete structure, oxygen and water penetrate, triggering the bacterial spores to transform into vegetative cells. These cells use nutrients and carbon dioxide to produce calcium carbonate, which precipitates and seals the cracks.

One of the biggest challenges in developing biological concrete with embedded bacterial spores is ensuring their long-term via-



bility. This research identified a concrete composition that maintains the viability of immobilized bacterial spores in carriers and promotes crack self-healing. Additionally, environmental factors affecting bac-

terial viability (freeze-thaw cycles, rain, etc.) were determined.

The use of bacteria in concrete could reduce maintenance costs for structures.

"To all my fellow PhD students,

I would encourage resilience and perseverance. This is a fascinating and valuable experience that requires significant effort and patience."

DR. KAROLIS SENVAITIS

Dissertation: "Biomechanical modeling of patient transfer movements and ergonomic risk assessment"

The research focuses on the kinematic movements of individuals working in the healthcare and social care sectors and the parameters defining these movements.

Supervisor:

Prof. Dr. Kristina Daunoravičienė

"With this research, I aimed to make science more accessible by introducing a new mathematical model that enables more precise and simplified kinematic and dynamic calculations of human motion."

I integrated the model into a new software environment to demonstrate a broader range of tools available for implementing mathematical models parametrically. One of the essential concepts in this dissertation is the proposed total moment methodology. I present and recom-

mend its broader use, as it provides a primary comparison metric even between different biomechanical studies. The total moment is expressed as the sum of the force moments experienced by a body segment during movement, calculated at a frequency of 5 Hz.

In the final dissertation, I introduced a multi-criteria risk model for muscle and skeletal injuries, which evaluates not only basic statistical values but also individual parameters of the subject, such as height, weight, and movement technique.

Such a model enables the prediction of chronic injuries over a longer period. This could help address the issue in healthcare and social care sectors, where a significant number of individuals are still manually transferred without assistive equipment. Over time, this negatively impacts the staff performing these tasks.



DR. MINDAUGAS ZAKARKA,
Researcher at the Civil
Engineering Research
Center

Dissertation: “Investigation of the mechanical properties of geogrid-reinforced soil and its evaluation model”

Supervisor:

Assoc. Prof. Dr. Sarunas Skuodis

“Before starting my PhD studies, a four-year period seemed very long, but after facing real research work and requirements, I realized that the doctoral journey is quite intensive. Throughout my studies, I was surrounded by people who were always ready to advise and assist me. I traveled extensively, attended conferences and seminars. This experience helped me understand that the most important thing is to know how to present yourself and your research.”

VILNIUS TECH can take pride in having such modern equipment in its Geotechnics Laboratory.


The triaxial compression apparatus used in my dissertation research is one

of the most complex devices in the field of geotechnics.

Although a PhD is mainly research-focused project, I encourage future PhD students to use this time for comprehensive growth—

learning to navigate bureaucracy, advancing in their research field, developing scientific writing and presentation skills, traveling, and most importantly, building strong connections with colleagues.



A portrait of Gintare Norkunaite, a woman with long brown hair, wearing a dark teal dress with a bow at the waist. She is standing against a light blue background.

VILNIUS TECH Alumna Gintare Norkunaite: “The charm of urbanism lies in its dynamism”

ALUMNI VOICE

Urbanism is an essential part of daily life, shaping not only the physical environment but also influencing culture, society, and our health. Well-designed buildings and public spaces improve people's quality of life, strengthen social connections, and ensure safety. This is something that Vilnius Gediminas Technical University (VILNIUS TECH) alumna **Gintare Norkunaite** can attest to. She is currently working at the urban planning company *PosadMaxwan* in the Netherlands, holding the position of project manager and lead urban planner.

I have been working at *PosadMaxwan* for over eight years now. During this time, I have been involved in various types of projects—from national and regional development visions, city spatial plans, and district development masterplans to public space design projects. Over time, I realized that I enjoy working on masterplans the most. These projects provide a concrete spatial expression to a city's ambitions and various urban systems—transportation, ecology, water, soil, underground networks, land use programs, public space structures, and social networks. My experience in public space design helps to refine these masterplans and preemptively address challenges that often arise in later project stages,” shares the VILNIUS TECH alumna.

In her projects, G. Norkunaite places great emphasis on creating a healthy environment—a city with clean air, water, and food, where even on a hot summer day it is a pleasant experience and where everything is accessible within a 15-minute travel distance. A city that is a suitable place to live for both young and old. Designing such a city requires a strong focus on green urban structures and public spaces, where sustainable design begins with an understanding of land and water systems.

“I am happy that my job is dynamic—every day is different. Together

with colleagues, we participate in design sessions where we develop urban concepts and plans. Every team member, even the youngest, is encouraged to contribute and propose innovative ideas. I also frequently attend meetings with clients and partners and organize various workshops”, says Norkunaite about her work.



The development of station areas plays a crucial role in shaping a sustainable and vibrant urban environment.

G. Norkunaite



As a project manager at *PosadMaxwan*, G. Norkunaite is delighted as she can continue collaborating with VILNIUS TECH even after completing her studies. She shares that, together with representatives from the Faculty of Architecture's Department of Urbanism, she helped organize a module that allowed students to gain inter-

national experience through the project focused on railway station districts in the Netherlands—specifically, the Groningen and Sloterdijk stations. Due to increasing urban density and growing passenger flows, station districts are experiencing a renaissance.

“The development of station areas plays a crucial role in shaping a sustainable and vibrant urban environment. Cities face various challenges, such as housing shortages, the need for sustainable living environments, reducing environmental impact, strengthening biodiversity, and ensuring a healthy city for all. Station districts are ideal locations for urban densification. Their pedestrian accessibility enables greater use of public transport, reducing car traffic and emissions. Introducing new functions into station areas also helps enhance their safety and accessibility for different social groups. Revitalizing station areas presents an opportunity to improve the station hub's infrastructure, seamlessly integrating train, bus, bicycle, and pedestrian traffic while eliminating barriers created by transport infrastructure,” explains Norkunaite regarding her collaboration with VILNIUS TECH.

An equally important part of the module was a study trip to the Netherlands, where students visited project sites, met with municipal representatives, and explored exemplary projects.

VILNIUS TECH digital badge system gains more interest: recognizing the most active students

In January, Vilnius Gediminas Technical University (VILNIUS TECH) held an awards ceremony for students who had collected the most digital badges and achieved the highest UBER level. During the event, the most active students were recognized—not only for their personal growth at the university but also for their ability to inspire others with their positive energy.

Students from various faculties shared their experiences and insights about participating in the VILNIUS TECH digital badge system. Among them were Monika Linkevic, a master's student in the Business Management program at the Faculty of Business Management (VVF); Agna Petkeviciute, an integrated Architecture program student at the Faculty of Architecture (AF); Saulius Paukste, a bachelor's student in Computer Engineering at the Faculty of Electronics (EF); Martynas Simkus, a bachelor's student in Business Management at VVF; and Srinidhi Gopalraj, a bachelor's student in Information and Communication Technologies at EF.

– What motivates you to collect digital badges?

M. Linkevic: Initially, I started collecting digital badges because I wanted to compete with my classmates—I wanted to collect the most. But later, after reviewing my earned badges, I realized which areas I ex-

celled in and where my greatest potential for growth and development lay.

A. Petkeviciute: Since I enjoy engaging in various art and culture-related activities, I also find it important to represent students. Digital badges serve as an additional motivation—a certificate that can be an extra asset alongside a CV, providing employers with verified information about completed activities.

S. Paukste: It's great to see that extracurricular activities can be recognized through an objective measure—like these badges. The digital badge system helps structure personal development, set new goals, and has already helped me discover new opportunities and activities for the future.

M. Simkus: I collect digital badges out of an inner desire to improve myself. For me, they feel like a game, where I not only solve different situations but also receive recognition for my achievements. This helps me develop systematically, track my informal skills, and make time at the university more enjoyable.

S. Gopalraj: I see digital badges as a way to acknowledge skills and achievements beyond traditional grades. They recognize efforts that coursework may not always reflect,



I believe every badge has its own charm and represents the activities I've been involved in

A. Petkeviciute



In January 2025, at an international expert seminar in Rotterdam (Netherlands), VILNIUS TECH received the „Quality Label for Badge Recognition“ certificate.



Badges helps to recognize student engagement, leadership, and essential 21st-century skills.



By early 2025, VILNIUS TECH had issued over **10,000** digital badges.



Currently, more than **3,500** students are participating in the system.

such as intercultural experiences, mentoring, and leadership. Earning them also motivates me to step out of my comfort zone and engage in enriching activities.

– Which digital badge are you most proud of?

M. Linkevicius: Besides the UBER badge, the META badge “Student Guide” is especially meaningful to me. Throughout my university years, I’ve gained valuable experience, and I feel a responsibility to share it. I enjoy motivating and communicating with young people, especially high school students who might find university intimidating. When

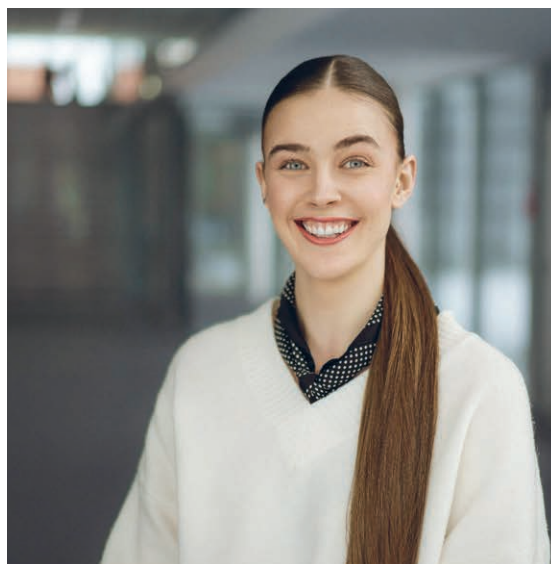
I was choosing my studies, having someone to answer my questions and point out available opportunities would have been invaluable. Now, I can be that person for others, which is inspiring.

A. Petkeviciute: I believe every badge has its own charm and represents the activities I’ve been involved in. However, if I had to highlight one, it would be the badge I earned by participating in the international art fair “Art Compensa.” There, I represented VILNIUS TECH with my work “Between Life and Death.”

S. Paukste: I am proud of the „Sports Competition Prize Winner”

badge. I have won multiple awards in wrestling competitions at city, national, and international levels. To earn this badge, I submitted proof of my latest achievement—a third-place finish at an international tournament. In just six months, I transitioned between two weight categories (from 64 kg to 79 kg) and secured third place among 18 participants. That period of my life was particularly challenging, so I take great pride in my ability to achieve positive results so quickly.

M. Simkus: I currently have a collection of 29 digital badges. The one I am most proud of is the UBER badge, which I earned while repre-



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After reviewing my earned badges, I realized which areas I excelled in and where my greatest potential for growth and development lay.

M. Linkevic

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senting students. However, to receive it, I had to collect an entire set of badges to prove that I truly deserved the highest recognition.

S. Gopalraj: I won the UBER award in the “International Expert” category, which I am most proud of. However, my favorite is the META badge “Supporter of Social Integration.” I believe that efforts toward social integration are the most sustainable investment in long-term migration, and I am proud to be recognized for promoting social inclusion through university events.

– What have you learned from collecting digital badges?

M. Linkevic: I’ve learned to speak publicly with confidence, which has become an incredibly useful skill. Now, I lead school tours on my own—even for large groups. I can see how this helps me not only communicate information clearly but also connect with people, capture their interest, and create a welcoming atmosphere. Public speaking has become something I genuinely enjoy.

A. Petkeviciute: The most valuable lessons come from doing what I love—a combination of soft skills and hard skills. Soft skills alone or technical skills alone don’t work, but when time management and communication are combined with painting skills or document analysis, great things can be accomplished.

S. Paukste: The experience gained at university goes beyond just what you hear from others. There are countless activities to engage in. The badge system helped me discover new opportunities for growth and directed me toward various useful information sources.

M. Simkus: Collecting badges has primarily strengthened my sense of responsibility and improved my teamwork, critical thinking, and leadership skills. These soft skills will stay with me for life and help me navigate future challenges.

S. Gopalraj: Collecting digital badges taught me the importance of continuous learning. Whether by participating in or organizing events, earning badges serves as both recognition and a reminder



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I see digital badges as a way to acknowledge skills and achievements beyond traditional grades.

S. Gopalraj

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of the knowledge and experiences gained.

– How can students be encouraged to engage more in this project?

M. Linkevic: Engagement happens naturally through activities students enjoy. Some discover digital badges through research, while others get involved in student representation. However, it ultimately depends on the individual. To encourage more students to participate, it's important to highlight the meaning and benefits of this initiative—how badges help identify strengths, track personal progress, and even enhance CVs. More competitions, engaging activities, and events where students can earn badges—such as for participating in projects, volunteering, or demonstrating leadership—could also help.

A. Petkeviciute: Instead of just encouraging participation, we should emphasize that badges help systematically archive and structure one's activities. They can also serve as a motivation tool for

self-improvement. In the job market, and in life in general, this is always relevant.

S. Paukste: As a member of the Student Representation, I believe it would be beneficial to consider awarding one-time scholarships in November and May based on collected badges. Not all activities that earn badges are currently recognized under the Scholarships and Financial Aid Regulations.

M. Simkus: Every student enters university with their own goals. My goal is to take full advantage of all available opportunities during my studies. The best way to encourage students is to communicate the added value of digital badges, as this can inspire them to set new goals and enrich their academic journey.

S. Gopalraj: To engage more students, the focus should be on promoting digital badges not just as awards but as career-building tools. Collaborating with companies that recognize these achievements could also add significant value.



The digital badge system helps structure personal development, set new goals, and has already helped me discover new opportunities.

S. Paukste



Collecting badges has primarily strengthened my sense of responsibility and improved my teamwork, critical thinking, and leadership skills.

M. Simkus



VILNIUS TECH students participate in the prestigious “Bloomberg Global Trading Challenge”



The prestigious Bloomberg Global Trading Challenge, which attracts more and more of the brightest students each year, saw a record number of participants this year. More than 2,400 teams from 46 countries worldwide tested their skills in the investment arena. Among them was a team from Vilnius Gediminas Technical University (VILNIUS TECH), Faculty of Business Management (VVF), Finance Engineering study program, which in a short time managed to achieve outstanding results.

First-year students of the Finance Engineering program – Normantas Ivaskovas, Justas Augustas Susinskas, and Titas Budrys, with the guidance of Assoc. Prof. Dr. Nijole Maknickiene, achieved a 7.18% portfolio return in just five weeks. Selecting investments from more than 100,000 stocks and combining various strategies, they ranked 424th in the world (out of 2,453 teams) and 118th in Europe (out of 590 teams).

Here's what the students had to say about their preparation, the unique experience they gained, and the lessons they learnt while participating in the competition.

– Why did you decide to participate in the “Bloomberg Global Trading Challenge”?

N. Ivaskovas: I first learnt about this project in the first week of September during the introduction of various opportunities at the university. The competition stroke me as very interesting, so my classmates and I asked for more information. Assoc. Prof. Dr. Nijole Maknickiene agreed to help us, so we decided to test our skills and formed a team.

J. A. Susinskas: I already had investment experience and knowledge before coming to university. I am very passionate about investing and actively participate in the investment process. When I found out about the Bloomberg Global Trading Challenge, I immediately decided to take part.

– How did you prepare for the competition?

N. Ivaskovas: We had to come up with a clear strategy. Since the competition was short, we knew we had to take significant risks to maximize returns. Before the competition started, we closely monitored the market to identify the most relevant trends and companies with strong potential.

J. A. Susinskas: The preparation was quite straightforward – each team member had to find five stocks, and then we met to select the ones we believed would generate the highest profits and help us achieve great results.

T. Budrys: Before joining the competition, I studied the Bloomberg Terminal platform and various investment strategies.

– What was the most interesting part of participating in the competition?

N. Ivaskovas: The most exciting part was using the Bloomberg Terminal, which is not open for everyone. I am grateful for the access the university provided us with.

J. A. Susinskas: I enjoyed using the Bloomberg Terminal, competing against other participants, selecting stocks, analyzing profit indicators, and strategizing based on data.

T. Budrys: Since I am interested in investing, the most exciting part was making real-time investment decisions and observing how

they performed in the market. I also learnt a lot from my teammates.

– What did you learn from this project?

N. Ivaskovas: I learnt how to analyze companies, track market news, and work in a team. I also gained some experience using the Bloomberg Terminal, but there is still room for improvement. Additionally, my teammates and I realized how dynamic and fast-changing the stock market really is.

J. A. Susinskas: I learnt how to collaborate with my teammates, use the Bloomberg Terminal, and select risky stocks.

T. Budrys: During the project, I improved my ability to analyze financial data.

According to Assoc. Prof. Dr. **Nijole Maknickiene**, a lecturer at VILNIUS TECH VVF and an expert in the Finance Engineering study program, the participating students were first-year students, meaning they had not yet been influenced by rigid theoretical applications.

“They are curious, independent, and able to develop their own investment strategies. Participation in the competition will shape their future in finance as they combined different perspectives and learnt from their mistakes. Managing a virtual portfolio of one million euros and seeing the real-time outcomes of their decisions not only improved their investment skills and market intuition but also deepened their self-awareness. It's always better to try something once than to hear about it ten times. Moving forward, they will be able to critically evaluate their studies based on their hands-on experience in this dynamic competition,” says the Associate Professor of the Finance Engineering Department.