FEA

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republic day

As we celebrate the proclamation of our Republic, we commemorate Gazi Mustafa Kemal Atatürk and his heroic comrades-in-arms with respect.

Long Live the Republic!

Faculty of Engineering and Architecture

NEWS FROM THE FACULTY

Powering the Future with Technology

ARTIFICIAL INTELLIGENCE

INNOVATION

SCIENCE

TECHNOLOGY

“AUTOMATIC CONTROL SYSTEMS IN INDUSTRY” EVENT HELD WITHIN THE SCOPE OF COFFEE TALKS

As part of the Coffee Talks events organized by the Department of Electrical and Electronics Engineering at Istanbul Gelisim University Faculty of Engineering and Architecture, an event titled “Automatic Control Systems in Industry” was held.

The event took place on Wednesday, September 30, 2026, from 13:30 to 14:30 on the 17th floor of Gelisim Tower and was conducted by Assist. Prof. Dr. Ercan Aykut. During the event, the fundamental principles and industrial applications of automatic control systems were discussed, with particular emphasis on their importance in modern industrial processes. The role of control systems in improving the efficiency, stability, and performance of industrial processes was also addressed.

The event provided students with an opportunity to connect their academic knowledge with practical industrial applications and gain insights into current approaches in the field of automatic control systems. The session contributed to students’ academic and professional development while providing an interactive environment for exchanging knowledge and experiences related to engineering applications

“MOBILITY VISION IN TÜRKIYE AND THE WORLD” TECH TALKS EVENT HELD AT THE DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

The second event in the Tech Talks series, organized by the Department of Electrical and Electronics Engineering at Istanbul Gelişim University, Faculty of Engineering and Architecture, was held on October 20, 2026. Tahir Karabulut, CEO of Lumicle, participated as the guest speaker and delivered a talk titled “Mobility Vision in Türkiye and the World.”

Held at the Mehmet Akif Ersoy Conference Hall, the event featured discussions on developments in the field of mobility and the future of mobility in Türkiye and around the world. The event provided students with an opportunity to gain insights into industry experience and learn more about current technological developments, creating a productive environment for knowledge sharing and discussion.

The Department of Electrical and Electronics Engineering continues to support students’ professional development through events that bring them together with representatives from academia and industry.

CERTIFICATE OF ACHIEVEMENT PRESENTED TO ASST. PROF. MERT YILDIRIM WITHIN THE SCOPE OF TÜRKPATENT ISIF'26

A certificate presentation ceremony was held at Istanbul Gelisim University (IGU) to honor inventors whose outstanding inventions were showcased at the 11th International Invention Fair (TÜRKPATENT ISIF'26), held as part of TEKNOFEST 2026, the world's largest aviation, space, and technology festival, organized in line with Türkiye's National Technology Initiative vision.

During the ceremony held at the IGU Rectorate, Asst. Prof. Mert Yildirim, a faculty member of the Department of Industrial Engineering at Istanbul Gelisim University, was presented with his certificate by Prof. Dr. Şükran Güzin Ilıcak Aydınalp, Acting Rector of IGU.

We congratulate our faculty member on his achievements and wish him continued success.

INFORMATIONAL MEETING HELD FOR THE END401 INDUSTRIAL ENGINEERING PROJECT COURSE

Istanbul Gelişim University (IGU), Faculty of Engineering and Architecture, Department of Industrial Engineering, held an information session for fourth-year students enrolled in the "END401 Industrial Engineering Project" course.

The meeting, which took place on October 7, 2026, was conducted by Dr. Didem Yılmaz, a faculty member in the Department of Industrial Engineering. During the session, students were provided with detailed information regarding the objectives of the project course, the process to be followed throughout the semester, the determination of project topics and scope, the advisory process, submission schedules, and evaluation criteria.

The session also covered the academic and technical requirements that must be observed during the project process to ensure that students can carry out their work in a systematic and planned manner. Furthermore, students had the opportunity to ask questions and receive clarifications on topics such as selecting project subjects, collaborating with their advisors, and the deliverables expected throughout the semester.

The meeting concluded after addressing the students' questions regarding the project process and facilitating an exchange of ideas concerning the work to be undertaken during the term.





VISIT TO OUR INDUSTRIAL ENGINEERING DEPARTMENT BY THE CHAMBER OF MECHANICAL ENGINEERS

Representatives from the Chamber of Mechanical Engineers visited the Department of Industrial Engineering at Istanbul Gelişim University on October 5, 2026. During the meeting, various topics aimed at enhancing cooperation between the university and the professional chamber were discussed, with a focus on joint initiatives that could contribute to the academic and professional development of students.

The visit included an exchange of ideas regarding potential protocols and institutional collaborations between the Department of Industrial Engineering at Istanbul Gelişim University and the Chamber of Mechanical Engineers. In this context, the parties evaluated initiatives designed to help students build stronger ties with the industry, improve their professional competencies, and become better prepared for their post-graduation careers.

A key agenda item was the development of training sessions, seminars, and professional development programs for students. Discussions covered not only training led by subject-matter experts but also industry-focused talks, career meetups, and experience-sharing events that would bring students together with industry representatives.

This visit is intended to serve as the foundation for new collaborations that will strengthen the interaction between Industrial Engineering students and the industry, support their academic knowledge through practical application, and contribute to their professional growth.



“ARTIFICIAL INTELLIGENCE, SOCIETY, AND A SUSTAINABLE FUTURE” DISCUSSED AT THE INDUSTRIAL ENGINEERING COFFEE TALKS EVENT

On October 21, 2026, the Department of Industrial Engineering at the Istanbul Gelişim University Faculty of Engineering and Architecture hosted a "Coffee Talks" event. Led by Prof. Dr. Cemalettin Kubat, the session explored the theme, "Artificial Intelligence, Society, and a Sustainable Future."

During the event, held between 13:40 and 14:30, the impacts of artificial intelligence (AI) on individuals, society, and sustainable development were examined. The discussion covered the applications of AI technologies across various sectors—including education, healthcare, industry, the environment, employment, and decision-support systems—highlighting both the opportunities they present and the challenges they entail.

Furthermore, the session addressed critical topics such as the ethical use of AI, data security, algorithmic bias, digital inequality, and approaches to responsible AI. The importance of aligning technological advancements with principles of social benefit and sustainability was underscored.

The "Coffee Talks" event contributed to raising awareness regarding the role of artificial intelligence in contemporary society and its potential future impact.

FIRST-YEAR INDUSTRIAL ENGINEERING STUDENTS MET WITH THEIR ACADEMIC ADVISOR, PROF. CEMALETTIN KUBAT

An academic advising meeting for first-year students, organized by the Department of Industrial Engineering at the Istanbul Gelişim University Faculty of Engineering and Architecture, was held on October 21, 2026, on the 17th floor of the university building.

The meeting, led by Prof. Dr. Cemalettin KUBAT—the academic advisor for first-year students—covered topics such as the students' academic processes, their adjustment to university life, and their expectations regarding their educational journey. Furthermore, the discussion focused on various aspects aimed at supporting the students' academic success and contributing to their personal development.

During the session, students were provided with information about the Double Major Program (DAP) and the Erasmus+ student exchange program offered by the university, along with insights into how these programs can enhance their academic and professional growth.

The meeting concluded with an exchange of ideas, during which the students’ opinions, suggestions, and questions were addressed. This advising session was intended to support students in their transition to university life, increase their awareness of academic opportunities, and strengthen the communication between advisors and students.





ASSOC. PROF. ANIL NİŞ RANKED AMONG THE WORLD'S TOP 2% SCIENTISTS

Assoc. Prof. Anıl NİŞ, a faculty member of the Civil Engineering Department at Istanbul Gelisim University, has achieved significant international academic recognition by being included in the “World's Top 2% Scientists List (2026),” prepared by Stanford University and Elsevier.

The list evaluates researchers based on various bibliometric indicators, including scientific publications, citation impact, and academic productivity. Within the field of Civil Engineering and Construction, Assoc. Prof. Anıl NİŞ ranked 979th among 56,454 researchers worldwide, securing a place among the world's top 2% most influential scientists.

This significant achievement, which highlights the international impact of academic research, also represents a source of pride for the Civil Engineering Department. Assoc. Prof. Anıl NİŞ's ranking demonstrates the international visibility and scientific impact of high-quality research conducted in the field of civil engineering.

Commenting on this achievement, Assoc. Prof. Anıl NİŞ emphasized that he considers this recognition not merely an individual accomplishment but also a reflection of collaborative scientific efforts:

“Seeing our academic efforts and collaborative research recognized in such an important international evaluation has become a significant source of motivation for our future studies. I regard this result not merely as a personal achievement but as a reflection of our commitment to high-quality, sustainable scientific research with international impact.”

Assoc. Prof. Anıl NİŞ also expressed his gratitude to his family, colleagues, research collaborators, students, and the Istanbul Gelisim University community for their continuous support throughout his academic journey.

The Civil Engineering Department congratulates Assoc. Prof. Anıl NİŞ on this outstanding international academic achievement and wishes him continued success in his scientific research and academic endeavors.



INTERNATIONAL SUCCESS FROM OUR CIVIL ENGINEERING DEPARTMENT ACADEMICS

Faculty members of the Civil Engineering Department at Istanbul Gelişim University have achieved remarkable success in the research impact evaluations published by the international academic indexing platform ScholarlyIndex. Four of our esteemed academics successfully made it to the "Top 1000 Scholar" lists in different scientific categories covering their fields of expertise.

Based on the research impact window data for the period between 2021 and 2025, our academics have demonstrated outstanding success in both global and national rankings in diverse disciplines such as Concrete and Cement Materials, Vibration and Dynamic Analysis, Transportation Safety, and Topology Optimization, making our university proud in the international arena

The ranking and percentile details of our faculty members who ranked among the "Top 1000 Scholars" in their respective categories are as follows:

In the Concrete and Cement Materials Research category, our faculty member Assoc. Prof. Dr. Anıl NİŞ ranked 665th in the World and 22nd in Türkiye with an impact score of 95.57, entering the top 2.8% percentile in his field.

In the Vibration and Dynamic Analysis category, our Head of Department Assoc. Prof. Dr. Ahmad Reshad NOORI ranked 634th in the World and 8th in Türkiye with an impact score of 84.46, entering the top 8.8% percentile in his field.

In the Transportation Safety and Impact Analysis category, our faculty member Assist. Prof. Dr. Mustafa Yurdabal APAK ranked 110th in the World and 4th in Türkiye with an impact score of 77.36, entering the top 11.8% percentile in his field.

In the Topology Optimization in Engineering category, our faculty member Assoc. Prof. Dr. Aylin Ece KAYABEKİR ranked 806th in the World and 22nd in Türkiye with an impact score of 64.22, entering the top 25.2% percentile in her field.

As the Civil Engineering Department, we congratulate our esteemed faculty members who have proven the research diversity and quality of our university through their scientific studies in various disciplines, and we wish them continued success.



CIVIL ENGINEERING FACULTY MEMBER ASST. PROF. İBRAHIM RASIN DÜZCEER ATTENDED THE EFFC MEETING IN EDINBURGH

Asst. Prof. İbrahim Rasin DÜZCEER, a faculty member of the Civil Engineering Department at Istanbul Gelisim University, attended the European Federation of Foundation Contractors (EFFC) meeting held on October 4–5, 2026, in Edinburgh, Scotland.

The meeting brought together representatives of the geotechnical and deep foundation sectors from various European countries. Association presidents and working group representatives from Türkiye, the United Kingdom, Germany, France, Italy, Spain, Poland, Denmark, the Czech Republic, Austria, Belgium and the Netherlands participated in discussions on industry developments and opportunities for international cooperation.

During the meeting, information was shared regarding the activities and ongoing projects of the Turkish Foundation Contractors Association (TMD). Discussions also addressed the 19th European Conference on Soil Mechanics and Geotechnical Engineering (XIX ECSMGE), scheduled to take place in Istanbul on August 21–25, 2028.

The current activities and future objectives of the EFFC's Technical, Sustainability, Artificial Intelligence and Health and Safety working groups were also discussed. Particular emphasis was placed on promoting sustainable practices in geotechnical engineering, integrating artificial intelligence into engineering processes and strengthening occupational health and safety standards through international cooperation.

The participation of Asst. Prof. İbrahim Rasin DÜZCEER provided an opportunity to contribute to international professional exchanges, follow developments in European geotechnical engineering and strengthen cooperation between Türkiye and other European countries.

The Civil Engineering Department extends its appreciation to Asst. Prof. İbrahim Rasin DÜZCEER for his contributions to international professional collaboration and developments in geotechnical engineering and wishes him continued success in his academic and professional endeavors.



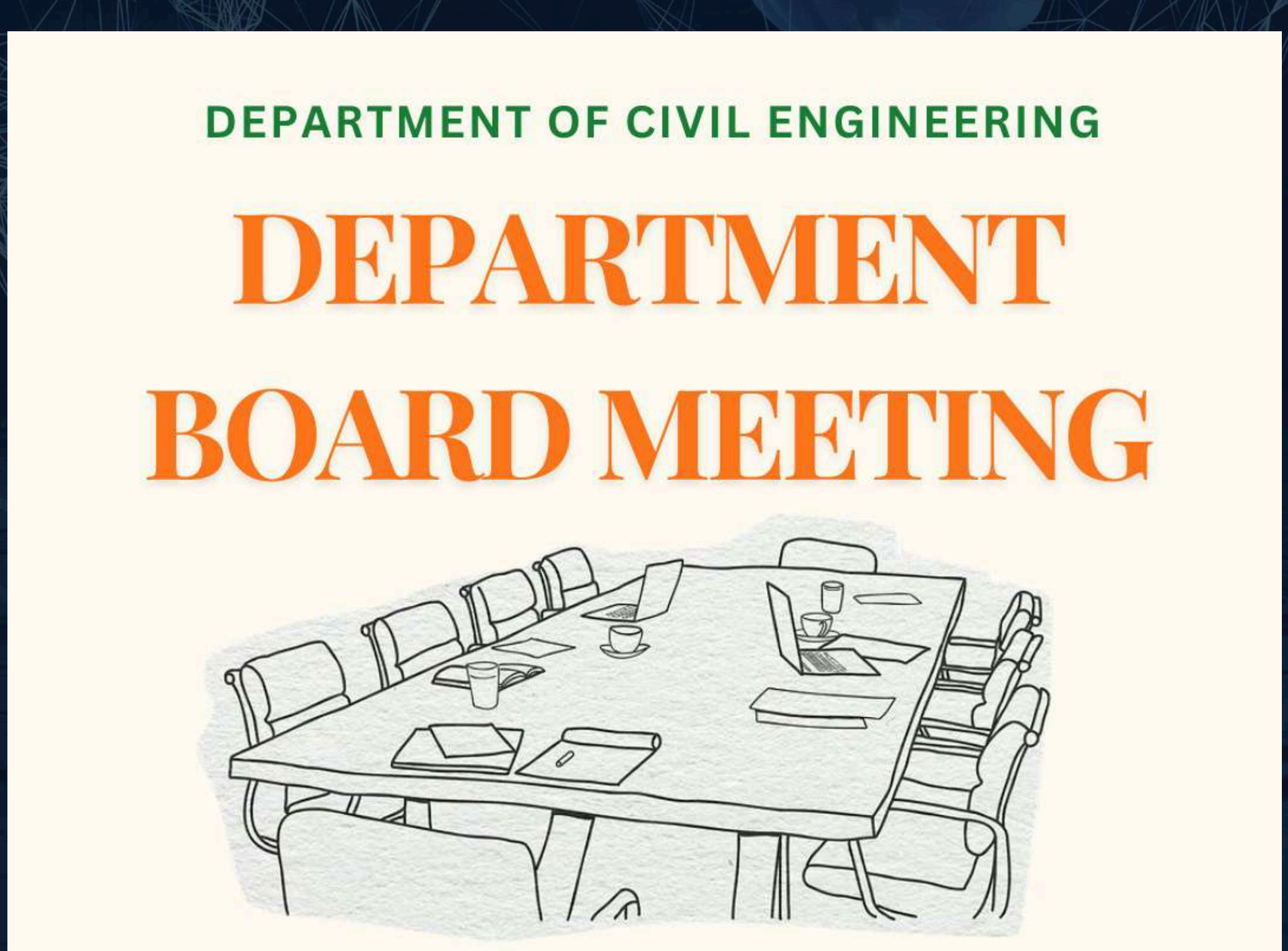
CIVIL ENGINEERING DEPARTMENT BOARD MEETING HELD

The Civil Engineering Department at Istanbul Gelisim University held a Department Board Meeting on September 29, 2026, chaired by Assoc. Prof. Ahmad Reshad NOORI, Chair of the Civil Engineering Department.

During the meeting, attended by the department's academic staff, matters related to the effective management of academic and administrative processes for the 2026–2027 Academic Year were discussed. In this context, the establishment of departmental committees and the assignment of academic staff to these committees were evaluated.

The meeting also addressed the determination of student consultation hours to facilitate regular communication between students and academic staff regarding academic and advisory matters. Arrangements were discussed to ensure that students could meet with faculty members during designated days and hours.

The meeting concluded with decisions aimed at ensuring the coordinated operation of departmental committees and organizing student consultation hours.



IGU CIVIL ENGINEERING CLUB WELCOMED STUDENTS DURING CLUB PROMOTION WEEK

Istanbul Gelisim University organized Club Promotion Week on October 12–13, 2026, bringing together student clubs and university students through promotional stands. The IGU Civil Engineering Club, representing the Civil Engineering Department, also participated in the event and welcomed newly enrolled students.

Throughout the two-day event, new students had the opportunity to learn about student clubs, explore their activities and interact with students from different departments. At its stand, the IGU Civil Engineering Club introduced its activities and shared information about opportunities that could contribute to students' social and professional development.

Club Promotion Week provided an opportunity for newly enrolled students to adapt to campus life, build friendships and become involved in the university's social and academic communities. The participation of the Civil Engineering Club also contributed to strengthening communication among students and promoting social interaction within the department.

The Civil Engineering Department extends its appreciation to the members of the IGU Civil Engineering Club for their active participation in Club Promotion Week and wishes them success in their activities throughout the new academic year.



CIVIL ENGINEERING FACULTY MEMBER ASST. PROF. YASIN PAŞA DELIVERED A SEMINAR AT COFFEE TALKS

As part of the “Coffee Talks” event organized by the Faculty of Engineering and Architecture at Istanbul Gelisim University, Asst. Prof. Yasin PAŞA, a faculty member of the Civil Engineering Department, delivered a seminar titled “Rainwater Harvesting in Sustainable Urbanization and Disaster Management: A Case Study of Beylikdüzü Yaşam Vadisi for Landscape Irrigation and Emergency Water Storage.”

The seminar addressed the importance of rainwater harvesting as a sustainable urban infrastructure solution in response to increasing urbanization pressures and the growing risks of drought and flooding associated with climate change. Particular emphasis was placed on the role of effective rainwater management in conserving water resources and enhancing urban resilience against disasters.

Using Beylikdüzü Yaşam Vadisi as a case study, the seminar examined the potential use of collected rainwater for landscape irrigation and emergency water storage during disasters from both technical and planning perspectives. Engineering approaches related to rainwater collection areas, storage capacity and reducing dependence on conventional water supply networks were also discussed.

The seminar highlighted the importance of integrating sustainable water management practices into urban planning and disaster management, emphasizing the potential of rainwater harvesting in developing more resilient cities.

The Civil Engineering Department extends its appreciation to Asst. Prof. Yasin PAŞA for sharing his knowledge and expertise in sustainable urbanization and disaster management and wishes him continued success in his academic endeavors.



TECHNICAL VISIT TO THE EÜAŞ AMBARLI FACILITY WITHIN THE THERMODYNAMICS COURSE

The Department of Mechatronics Engineering at Istanbul Gelisim University organized a technical visit to the Ambarlı facility of the EÜAŞ Istanbul Natural Gas Power Plants Operation Directorate as part of the Thermodynamics course taught by Assoc. Prof. Dr. Haydar Kepekçi. During the visit, students from the department observed energy conversion processes and the fundamental operating principles of the power generation facility firsthand. Guided by explanations from the EÜAŞ technical team, the visit helped students connect the theoretical knowledge acquired in class with industrial applications.

TECHNICAL VISIT TO DAIKIN FUHA WITHIN THE THERMODYNAMICS COURSE

A technical visit to Daikin Fuha was organized by the Department of Mechatronics Engineering at Istanbul Gelisim University as part of the Thermodynamics course conducted by Assoc. Prof. Dr. Haydar Kepekci. During the visit, students had the opportunity to observe air-conditioning systems, heating and cooling technologies, and the fundamental operating principles of these systems. Accompanied by informative presentations from the Daikin technical team, the visit contributed to students' understanding of how the theoretical concepts of thermodynamics and energy conversion covered in the course are applied in industrial practice.





ASST. PROF. CANSU NOBERI MODERATED A PANEL AT TURKCOMPOSITE 2026

Asst. Prof. Cansu NOBERİ, a faculty member in the Department of Mechatronics Engineering at Istanbul Gelişim University, moderated the panel titled “Composite Materials in the Future of Robotics, Digitalization, and Sustainable Industry,” held as part of the TURKCOMPOSITE 2026 International Composites Expo.

Held on October 23, 2026, with the support of the Mechatronics Engineers Association, the panel featured Assoc. Prof. Aylin ALTINBAY, a faculty member in the Department of Metallurgy and Materials Engineering at Yıldız Technical University; Funda ÇORAKÇI BİLSEL, Business Unit Manager at ABB Robotics; and Özlem URAL, Founding Partner of Literatür Kimya, as speakers.

During the panel, the relationship between composite materials and robotics, digitalization, and sustainable industry was discussed from the perspectives of various fields of expertise. The session, which brought together representatives from academia and the industry, served as a platform for sharing knowledge and experiences regarding the role of composite materials in the future of the industry.

Moderated by Asst. Prof. Cansu NOBERİ, the panel contributed to the evaluation of topics at the intersection of materials technology and mechatronics engineering and fostered interdisciplinary knowledge sharing.



ASSOC. PROF. ENGIN ERBAYRAK CONDUCTED A TECHNICAL SEMINAR TITLED “FUNDAMENTALS AND MODELING OF COMPOSITE MATERIALS”

Assoc. Prof. Engin ERBAYRAK, a faculty member in the Department of Mechatronics Engineering at Istanbul Gelişim University, shared his knowledge and experience with participants at a technical seminar titled “Fundamentals and Modeling of Composite Materials,” held on October 17, 2026, at the Istanbul Office of the Chamber of Metallurgical and Materials Engineers (TMMOB).

The event, attended by chamber members, engineers, and engineering students, evaluated the fundamental properties of composite materials and their importance from an engineering perspective. The applications of these materials were discussed, focusing on their use in the aerospace, automotive, energy, and space technology sectors.

The seminar focused on the effects of matrix and reinforcing components on the structure and mechanical properties of composites. Information was provided on hand-layup, spraying, filament winding, vacuum-assisted resin transfer molding (VARTM), prepreg, and hot pressing methods. These production methods were evaluated in terms of their advantages, limitations, and suitability for various applications.

In the modeling segment of the event, the behavior of composites under load and the analysis processes were discussed, with a focus on analyses conducted using ANSYS ACP software. Assoc. Prof. Engin ERBAYRAK’s presentation contributed to the comprehensive evaluation of processes ranging from the production to the modeling of composite materials and fostered the exchange of professional knowledge.



ORIENTATION AND INFORMATION EVENT FOR FIRST-YEAR ARCHITECTURE STUDENTS

An orientation and information event was held for first-year Architecture (English) students. During the event, students were provided with information regarding the department's academic and administrative structure, educational processes, course content, departmental facilities, and university life. The event, organized to help students adapt to the university and departmental environment, as well as to provide them with information on topics of interest and raise awareness about academic processes, concluded with a Q&A session.

ARCHITECTURAL DESIGN I – YEŞILKÖY NEIGHBORHOOD HUB SITE VISIT

On September 30, 2026, a site visit to Yeşilköy was organized as part of the Architectural Design I course, under the supervision of Asst. Prof. Dr. Hilay Atalay and Asst. Prof. Dr. Oluwagbemiga Paul Agboola.

During the site visit, conducted within the scope of the semester project titled “Yeşilköy Neighborhood Hub,” students examined the area's urban and architectural fabric, physical environmental conditions, and use of public spaces. The project aims to design a multi-storey neighborhood hub that establishes strong connections with the neighborhood and the city, integrates open, semi-open, and enclosed spaces, and embraces ecological and sustainable design principles. The site visit contributed to students' understanding of the local context and helped them develop spatial observations to inform their architectural design processes.





AWARD FOR OUR ACADEMICIAN AT THE INTERNATIONAL WORKSHOP WITHIN THE SCOPE OF THE COST PROBONO ACTION

Assist. Prof. Dr. Ayşe Karaoğlu, a faculty member at the Faculty of Engineering and Architecture of our university, was awarded the Best Poster Presentation Award at IWPROBONO (International Workshop on Proton-Boron Fusion), which brought together scientists working in the field of proton-boron fusion.

A total of 85 researchers from 23 different countries attended the workshop, held on October 5–8 as part of the European Union-supported COST CA21128 PROBONO Action. During the organization, where scientific developments, technological challenges, and future applications in proton-boron fusion were evaluated, the study prepared by Assist. Prof. Dr. Ayşe Karaoğlu was selected as the most successful poster presentation following the evaluation by the Scientific Committee.

Considered among the potential energy technologies of the future, this international award in the field of proton-boron fusion has made a valuable contribution to the scientific studies of both our country and our university in this domain.

We congratulate our esteemed academician and wish her continued success in her research.





CURRENT TOPICS IN ENGINEERING AND ARCHITECTURE

COMPUTER ENGINEERING

Res. Asst. Hasan YILDIRIM

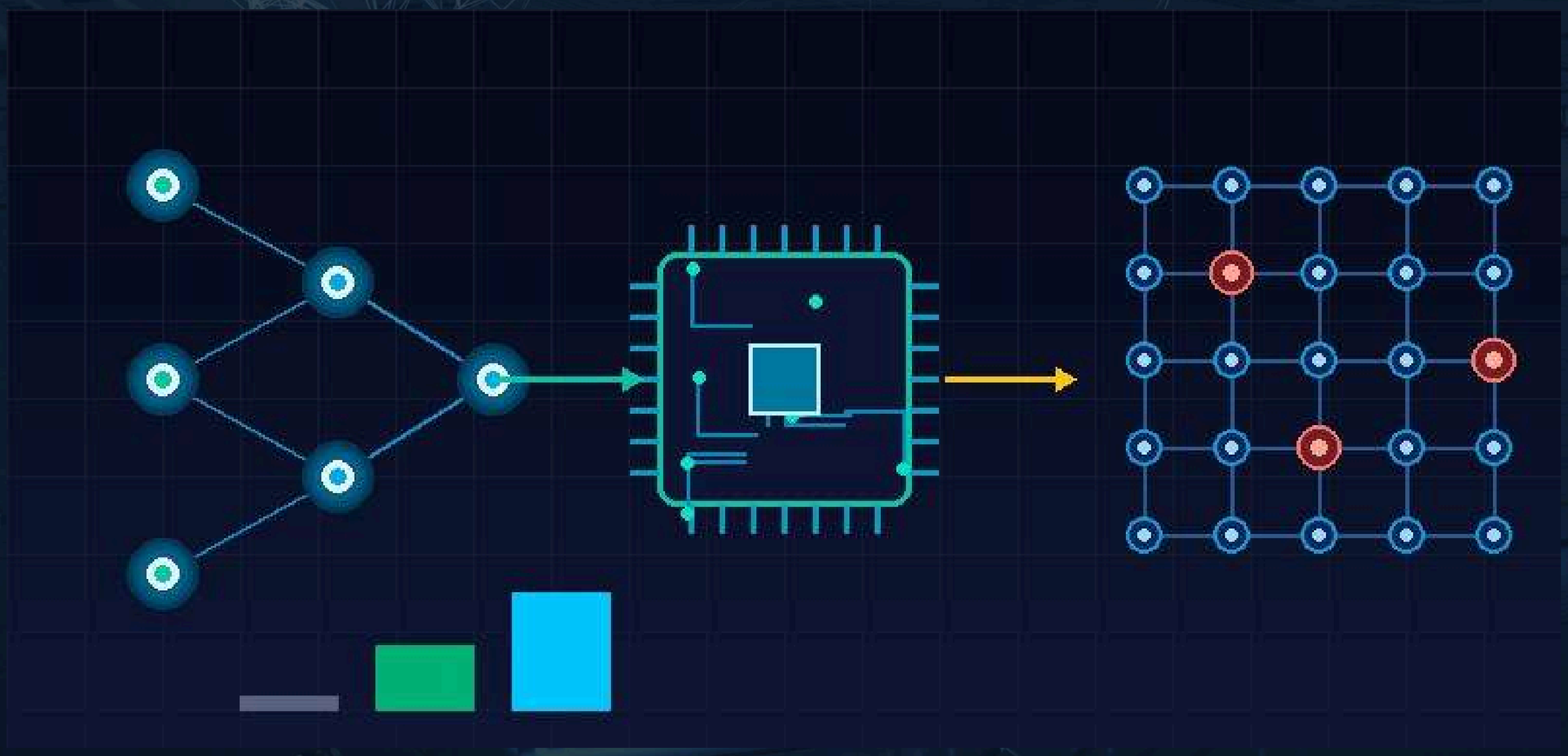
AI AGENTS NOW DESIGN QUANTUM ERROR-CORRECTION HARDWARE: THE COST BARRIER IN CHIP ENGINEERING IS FALLING

One of the greatest engineering obstacles to scaling quantum computers is detecting and correcting errors in qubits in real time. Designing the specialized decoder hardware that performs this task has traditionally demanded long, expert-led efforts. A recently published study shows that general-purpose AI agents can carry out much of this process on their own. The agents did more than write code; they took part directly in the exploration of the design space of the chip itself.

In the study, the high-level synthesis implementation of a decoding algorithm developed for a quantum error-correction code served as the starting point. A multi-agent structure tested one hundred hypotheses per configuration and put the design through dozens of verified rewrites. Agents powered by open-weight models reduced the estimated latency by 52 times at an inference cost of roughly 26 dollars. The configuration using proprietary models reached a 204-fold speedup, but its cost rose to approximately 299 dollars. The cost gap between the two configurations is about 11.5 times, and the open-model configuration also produced the design with the smallest hardware area.

The limitations of these findings should also be taken into account. The reported speedups are high-level synthesis estimates rather than measurements from fabricated hardware; the stated cost excludes synthesis and verification expenses, and each configuration was tested in a single search run. Nevertheless, in the reported verification, the agent-generated hardware description processed the test data in the same number of cycles as the hand-written reference design, with similar logical error rates. This picture suggests that the approach is maturing into a repeatable and auditable engineering method.

For computer engineering, this development shows that artificial intelligence is becoming an engineering partner in hardware design, not only in software. As the generation of design alternatives accelerates, the engineer's principal contribution will be to define objectives correctly, verify the solutions proposed by agents, and critically evaluate synthesis results. Accordingly, competencies in hardware-software co-design, verification, and system architecture will remain at the center of computer engineering education in the years ahead.



Multi-agent design search, a decoder hardware chip, and a qubit lattice with flagged errors

ELECTRICAL AND ELECTRONICS ENGINEERING

Res. Asst. Elif ÖZTÜRK

THE ENERGY INFRASTRUCTURE OF ARTIFICIAL INTELLIGENCE: NEXT-GENERATION POWER ELECTRONICS

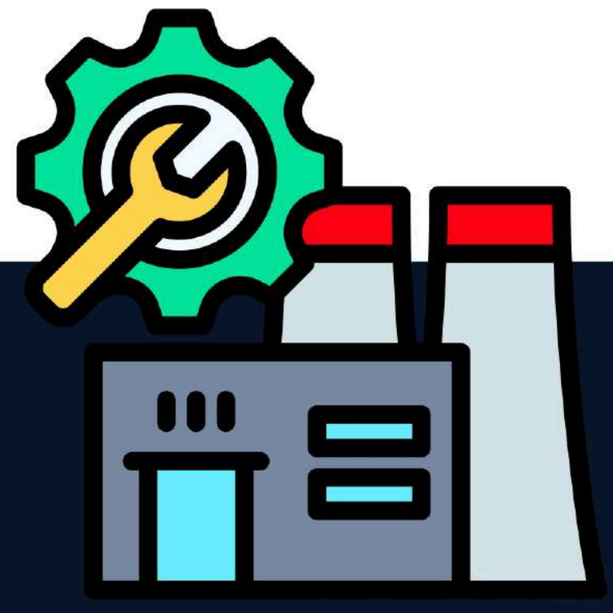
The development of artificial intelligence is transforming not only processor performance but also the electronic infrastructure that supplies these systems with electricity. High-performance processors used in large-scale data centres create substantial power demands that can change rapidly with computational workloads. This increases the need for advanced power electronics capable of converting, distributing and controlling electrical energy with greater efficiency. Developments attracting industry attention in October 2026 include 800 V direct-current (DC) power distribution architectures, high-efficiency power converters and advanced semiconductor technologies. In particular, gallium nitride (GaN) and silicon carbide (SiC) power switches are gaining attention because their operating characteristics can support high switching frequencies and reduce power-conversion losses. These technologies have the potential to enable more compact power systems and improve the efficiency with which data centres meet their growing electricity requirements.

From an Electrical and Electronics Engineering perspective, this transformation requires power electronics to be integrated with control engineering, circuit design, semiconductor technologies and thermal management. Safe switching, fault protection, electromagnetic compatibility and effective heat dissipation are essential considerations in high-voltage DC systems. Furthermore, real-time monitoring and digital control algorithms can help power converters respond more rapidly to changing processor workloads. However, wider adoption of these architectures also depends on addressing challenges related to cost, reliability, standardisation and compatibility with existing infrastructure. As the energy requirements of artificial intelligence continue to grow, power electronics is becoming more than a technology for converting electricity. It is emerging as a strategic engineering field that directly influences the performance, reliability and sustainability of the digital infrastructure supporting modern society.



INDUSTRIAL ENGINEERING

Res. Asst. Duygu TÜYLÜ



FIVE MILLION ROBOTS IN FACTORIES: PROCESS DESIGN THAT DETERMINES PRODUCTIVITY

The proliferation of robots in manufacturing facilities is reshaping how businesses make decisions regarding capacity and work organization. According to the World Robotics Report published by the International Federation of Robotics on September 24, 2026, the number of industrial robots operating in factories worldwide reached five million in 2025. That same year, new robot installations increased by 11 percent, surpassing 600,000 units. This development highlights the need for a holistic evaluation of automation investments from the perspective of industrial engineering.

Adding a robot to a production line does not guarantee a proportional increase in total output. For instance, if an assembly operation is accelerated, the capacity of the subsequent quality control station may prove insufficient. In such a scenario, products accumulate ahead of that station, wait times increase, and work-in-process inventory rises. Consequently, the success of an investment depends not only on the operating speed of the robot but also on the overall flow of the production system.

In this transformation, industrial engineers can utilize methods such as work study, line balancing, capacity planning, and simulation. Various layout configurations and task distributions can be compared in a computer-based environment before any physical investment is made. This allows for the assessment of which processes are suitable for automation, where potential bottlenecks might shift, and the specific conditions under which expected gains can be realized.



MECHATRONICS ENGINEERING

Res. Asst. Ufuk ATEŞOĞLU



BATTERY-FREE SENSORS: CAN DEVICES GENERATE THEIR OWN POWER?

Sensors are used in a wide range of areas, from factories to smart homes, and from agricultural fields to medical devices. However, the energy requirements of these devices, whose numbers are steadily increasing, pose a significant challenge. In particular, regularly replacing the batteries of sensors located in hard-to-reach areas is both costly and labor-intensive. For this reason, technologies are being developed that enable sensors to obtain the energy they need directly from their surroundings.

This approach, known as "energy harvesting," relies on converting small energy sources found in the environment—such as light, motion, vibration, temperature differences, and radio waves—into electrical energy. Although the energy produced may not be sufficient to power large machines, it can power low-power sensors.

Sunlight is one of the best-known energy sources used for this purpose. However, vibrations generated by machines during operation, human movements, vibrations caused by vehicles, and even raindrops striking a surface can also be harnessed to generate electricity. Similarly, it is possible to take advantage of the temperature difference between a machine's hot surface and the surrounding air.

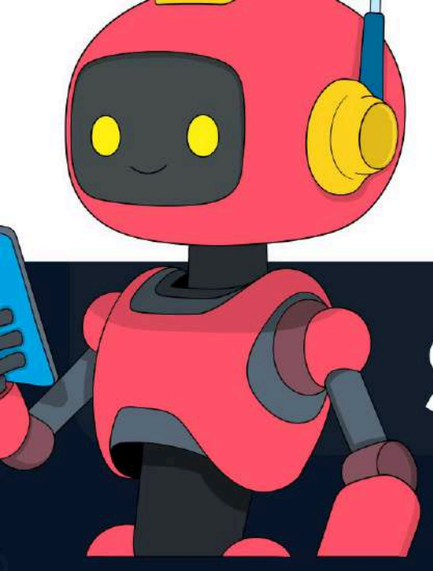
Since energy harvested from the environment is not always available, these sensors typically operate at specific intervals. When the device has accumulated enough energy, it takes a measurement, transmits the data wirelessly, and then enters a low-power standby mode. The term "battery-free" here does not necessarily mean that the system contains no energy storage components. In some designs, small rechargeable capacitors are used instead of conventional batteries.

These technologies can be used in areas such as monitoring machinery in factories, measuring soil moisture in agricultural fields, and tracking the structural condition of bridges and buildings. Research is also being conducted on wearable health devices that generate energy from body movements or temperature differences.

Although energy harvesting offers significant advantages, the amount of energy obtained from the environment is generally low and variable. For this reason, the sensors and electronic circuits used must consume as little energy as possible. The system's cost, durability, and performance under various environmental conditions must also be taken into account.

In conclusion, battery-free sensors do not generate energy out of thin air; rather, they harness small energy sources found in our environment that would otherwise be wasted. As technology advances, sensors capable of operating for many years without requiring battery replacement could become an important part of the smart factories, cities, and healthcare systems of the future.





SOFTWARE ENGINEERING

Res. Asst. Enis ÖZBEK

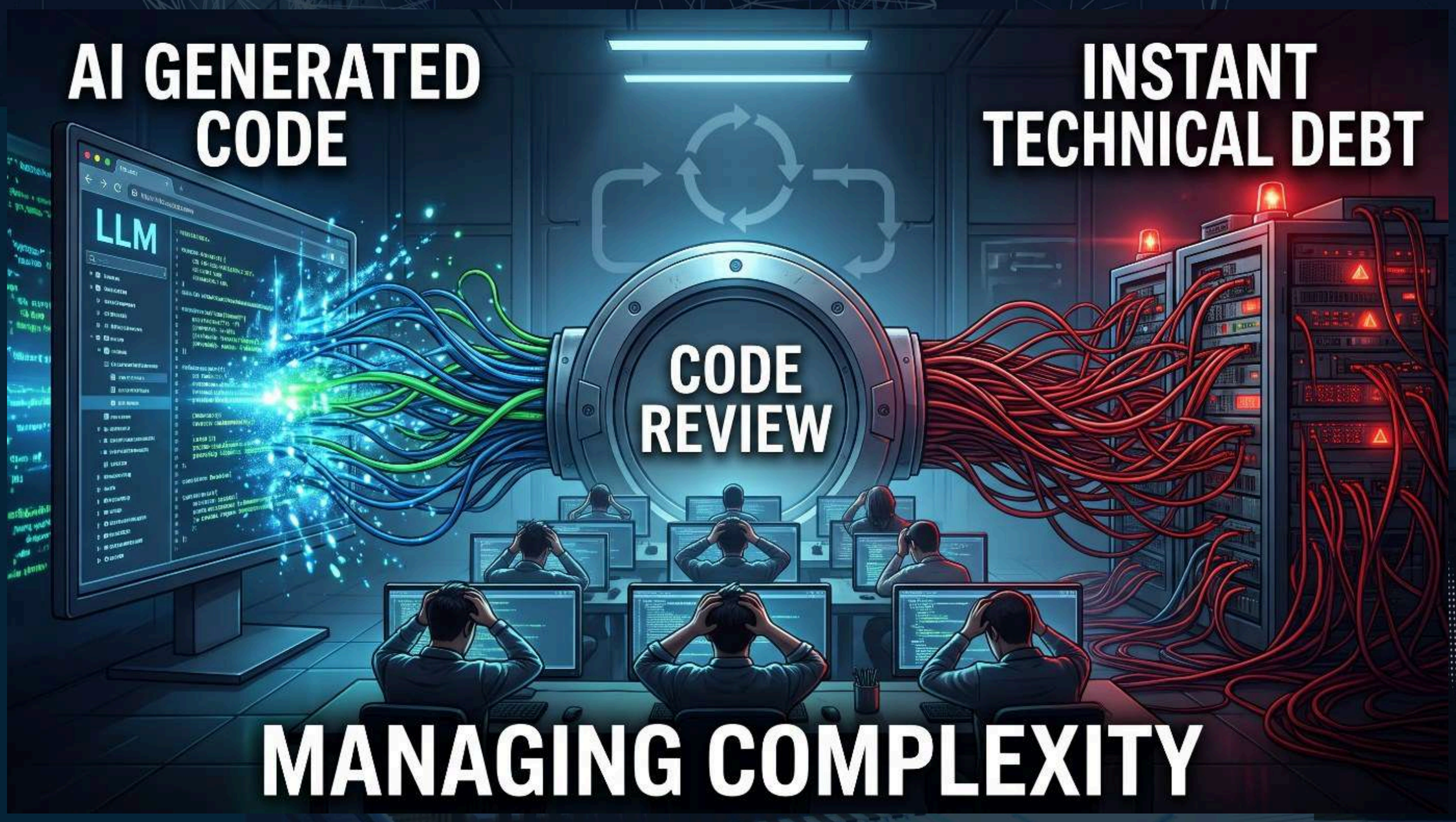


AI-ASSISTED DEVELOPMENT: THE "INSTANT TECHNICAL DEBT" AND CODE REVIEW DILEMMA

In 2026, the focus of software engineering has shifted from LLM-assisted code generation to the sustainability of the massive codebases these models create. Although AI tools have accelerated prototyping and boilerplate coding by 80%, allowing developers to focus on their primary task of system design; the modern SDLC now demands strict 'Cognitive Control' boundaries, requiring every generated line to be fully understood by humans.

However, this tremendous production speed comes with a heavy toll on sustainability. Instantly integrating massive blocks of code that "no one fully understands from start to finish" into projects creates instant technical debt in code repositories. Attempting to push thousands of lines of code, generated in mere seconds, through Code Review processes creates a severe bottleneck for human reviewers. The risk of losing architectural control and paralyzing the project's long-term maintenance while producing code at a superhuman pace is the biggest headache for teams today.

This is exactly where the role of senior software engineers is transforming. Their job description is no longer just writing systems from scratch; it is managing machine-generated complexity and building trust in the codebase without slowing down production speed. The new generation of engineers must align massive AI outputs with existing system architectures and build a seamless bridge for human-machine code ownership. Today's successful development culture lies in leveraging the delivery speed offered by AI without compromising on code transparency and comprehensibility.



ACADEMIC AND SCIENTIFIC ACTIVITIES

ELECTRICAL AND ELECTRONICS ENGINEERING

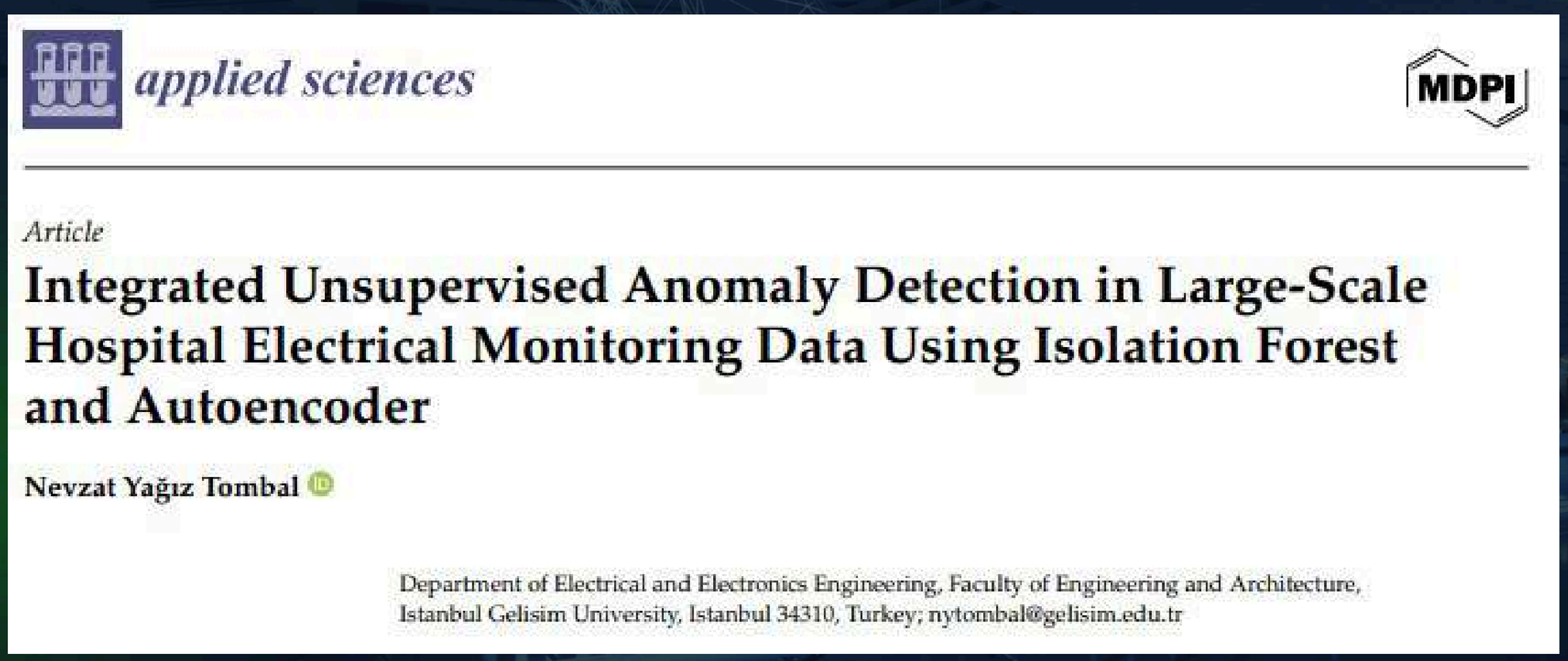
Asst. Prof. Nevzat Yağız TOMBAL's Article Published in the Q2-Ranked Journal Applied Sciences

Dr. Nevzat Yağız Tombal, a faculty member of the Department of Electrical and Electronics Engineering at Istanbul Gelisim University's Faculty of Engineering and Architecture, has published an article entitled "Integrated Unsupervised Anomaly Detection in Large-Scale Hospital Electrical Monitoring Data Using Isolation Forest and Autoencoder" in the journal *Applied Sciences*.

The study employs artificial intelligence and machine learning techniques to identify unusual operating patterns in large-scale electrical monitoring data collected from hospitals. The research examines a dataset containing more than 3.4 million observations and 103 electrical variables, integrating data-quality assessment, statistical analysis, and two unsupervised learning methods: Isolation Forest and Autoencoder. This approach enables a comprehensive investigation of unusual variations in electrical parameters, including active power, current, voltage, power factor, and harmonic distortion.

The results show that the two methods can identify different sets of unusual observations, while some detected variations form temporally consistent electrical patterns. The analysis also indicates that, for a substantial proportion of the evaluated events, electrical measurements move closer to their previous operating levels afterward. As verified fault labels were unavailable, the detected events were not treated as confirmed electrical faults, but rather as unusual operating behaviors worthy of further engineering investigation. The study presents an integrated approach with potential applications in large-scale electrical monitoring data analysis and intelligent energy management.

We congratulate Dr. Nevzat Yağız Tombal on this valuable academic contribution and wish him continued success.



applied sciences

MDPI

Article

Integrated Unsupervised Anomaly Detection in Large-Scale Hospital Electrical Monitoring Data Using Isolation Forest and Autoencoder

Nevzat Yağız Tombal

Department of Electrical and Electronics Engineering, Faculty of Engineering and Architecture, Istanbul Gelisim University, Istanbul 34310, Turkey; nytombal@gelisim.edu.tr

ELECTRICAL AND ELECTRONICS ENGINEERING

Prof. Bayram ÜNAL's Article Published in the Q2-Ranked Journal Physical Chemistry Chemical Physics

Prof. Bayram Ünal, a faculty member of the Department of Electrical and Electronics Engineering at Istanbul Gelisim University's Faculty of Engineering and Architecture, has co-authored a research article entitled "The Effect of Samarium Substitution on the Structure, Conduction Mechanism, and Dielectric Relaxation of MnNi-Nanospinel Ferrites." The article was published in *Physical Chemistry Chemical Physics (PCCP)* on 14 October 2026.

The study investigates the effects of samarium (Sm) substitution on the structural properties, electrical conduction mechanisms, and dielectric behavior of manganese–nickel (Mn–Ni) nanospinel ferrites. The nanomaterials were synthesized using the sol–gel method, and their structure and morphology were characterized through techniques including X-ray diffraction (XRD), scanning electron microscopy (SEM), and transmission electron microscopy (TEM). Electrical conductivity measurements, dielectric spectroscopy, and complex impedance analyses were also used to evaluate the materials' behavior under different temperature and frequency conditions.

The findings demonstrate that the samarium substitution ratio significantly influences the electrical and dielectric properties of these materials. In particular, substitution ratios between 0.050 and 0.075 were associated with lower activation energies and enhanced hopping conduction. In contrast, higher substitution levels could adversely affect electrical performance due to defect clustering. By clarifying the role of rare-earth-element substitution in modifying the electrical behavior of nanospinel ferrites, the study provides valuable scientific insights into the development and optimization of these materials.

We congratulate Prof. Bayram Ünal and all the co-authors on this valuable academic contribution and wish them continued success.



PCCP

ROYAL SOCIETY OF CHEMISTRY

PAPER

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Cite this: DOI: 10.1039/d6cp03090d

The effect of samarium substitution on the structure, conduction mechanism, and dielectric relaxation of MnNi-nanospinel ferrites

B. Ünal, [a] A. Baykal, [*b] M. A. Almessiere [cd] and E. Mojtahedi [e]

INDUSTRIAL ENGINEERING

Paper by Asst. Prof. Didem YILMAZ, Res. Asst. Duygu TÜYLÜ & Bahar YILDIZ

Presented at ISPR 2026

A paper titled “Risk Assessment in a Production Process: Classical and Fuzzy Failure Mode and Effects Analysis and Application,” prepared by Dr. Didem Yılmaz and Research Assistant Duygu Tüylü—faculty members in the Department of Industrial Engineering at Istanbul Gelişim University (IGU) Faculty of Engineering and Architecture—along with student Bahar Yıldız, was presented at the 26th International Symposium for Production Research (ISPR 2026), held from October 15–17, 2026.

The study provides a comparative analysis of the Classical Failure Mode and Effects Analysis (FMEA) and the Fuzzy FMEA methods for evaluating potential errors and risks encountered in production processes. By examining the impact of uncertainties within production processes on risk assessment outcomes, the study assesses the contributions that a fuzzy logic approach can offer to decision-making processes.

The participation of our department’s faculty members and student in an international scientific event further underscores the importance our Department of Industrial Engineering places on scientific research activities and academic work involving student participation.

ISPR 2026 International Symposium for Production Research 2026

CIVIL ENGINEERING

Assoc. Prof. Ahmad Reshad NOORI & Asst. Prof. Mustafa NURİ's Article Published in the Q1-Ranked Journal Mechanics Based Design of Structures and Machines

The article titled “A Unified Approach for Free Vibration Response of Shear Deformable Pipes Conveying Fluid,” co-authored by Assoc. Prof. Ahmad Reshad NOORI and Asst. Prof. Mustafa NURİ, faculty members of the Civil Engineering Department at Istanbul Gelisim University, has been published in the Q1-indexed journal *Mechanics Based Design of Structures and Machines*.

The study, investigates the free vibration behavior of shear-deformable pipes conveying fluid. The research aims to accurately evaluate the dynamic characteristics of these systems by considering the interaction between the pipe structure and the internal fluid flow.

The governing equations were derived using energy principles and formulated in the Laplace transform domain. The Complementary Functions Method (CFM) was employed to obtain accurate and stable solutions, allowing the natural frequencies and vibration characteristics of the system to be evaluated under various boundary conditions. Numerical results were compared with existing methods in the literature to demonstrate the accuracy and computational efficiency of the proposed approach.

The findings provide an effective computational framework for the dynamic analysis of fluid-conveying pipes, offering potential contributions to pipeline systems, industrial facilities and engineering applications involving fluid-structure interaction.

The Civil Engineering Department congratulates Assoc. Prof. Ahmad Reshad NOORI and Asst. Prof. Mustafa NURİ on their valuable scientific contribution and wishes them continued success in their academic studies.



MECHANICS BASED DESIGN OF STRUCTURES AND MACHINES
2026, VOL. 54, NO. 1, 2739535
https://doi.org/10.1080/15397734.2026.2739535

Taylor & Francis
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A unified approach for free vibration response of shear deformable pipes conveying fluid

Sara Adjir, Ahmad Reshad Noori, and Mustafa Nuri Balov

CIVIL ENGINEERING

Assoc. Prof. Ahmad Reshad NOORI & Assoc. Prof. Aylin Ece KAYABEKİR's Article Published in the Q4-Ranked Journal ICE – Engineering and Computational Mechanics

The article titled “Failure-Guided Optimisation of Castellated Steel Beams with Circular and Hexagonal Openings,” co-authored by Assoc. Prof. Ahmad Reshad NOORI and Assoc. Prof. Aylin Ece KAYABEKİR, faculty members of the Civil Engineering Department at Istanbul Gelisim University, has been published in the Q4-indexed journal *Proceedings of the Institution of Civil Engineers – Engineering and Computational Mechanics*.

The study, investigates the optimization of structural performance and cost efficiency of castellated steel beams with circular and hexagonal web openings. The research aims to minimize construction costs while satisfying strength and serviceability requirements for steel beams with different spans.

Five metaheuristic optimization algorithms were employed to evaluate castellated beams across six different spans ranging from 300 to 800 cm. The cross-sectional geometries, potential failure mechanisms and structural responses of beams with circular and hexagonal openings were investigated to determine optimal design parameters. Sensitivity analyses, progressive failure analyses and finite element analyses of selected critical configurations were also conducted to support the findings.

The study highlights the importance of considering structural safety and potential failure mechanisms alongside economic optimization in the design of castellated steel beams. The proposed framework is expected to contribute to more efficient material utilization, reduced construction costs and the development of safe and economical steel structural systems.

The Civil Engineering Department congratulates Assoc. Prof. Ahmad Reshad NOORI and Assoc. Prof. Aylin Ece KAYABEKİR on their valuable scientific contribution and wishes them continued success in their academic studies.


RESEARCH ARTICLE

OCTOBER 08 2026

Failure-guided optimisation of castellated steel beams with circular and hexagonal openings

Maarwan Abdulkareem Shakir Albayati

Ahmad Reshad Noori; Aydın Ece Kayabekir

CIVIL ENGINEERING

Assoc. Prof. Ahmad Reshad NOORI's Article Published in the Q1-Ranked Journal Mechanics Based Design of Structures and Machines

The article titled “Comprehensive Dynamic Analysis of Pasternak-Supported FGM Beams in the Laplace Domain via the Complementary Functions Method,” co-authored by Assoc. Prof. Ahmad Reshad NOORI, a faculty member of the Civil Engineering Department at Istanbul Gelisim University, has been published in *Mechanics Based Design of Structures and Machines*, a Q1-ranked journal according to Scopus CiteScore rankings.

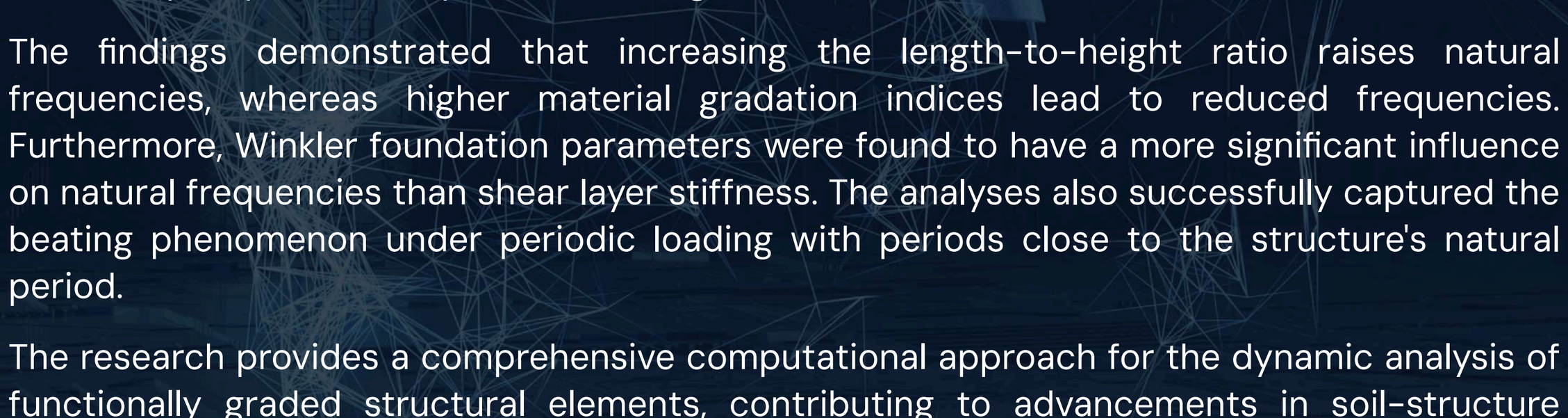
The study, authored by Ahmad Reshad NOORI, Timuçin Alp ASLAN, Asena Pınar ÖZER and Beytullah TEMEL, presents a comprehensive investigation of the dynamic behavior of functionally graded material (FGM) beams resting on Pasternak-type elastic foundations. The research aims to evaluate the free and forced vibration responses of beams with varying material properties and foundation conditions using advanced mathematical and numerical methods.

The governing differential canonical equations were derived for the first time based on the minimum total energy principle within Timoshenko beam theory. The Complementary Functions Method (CFM) and Laplace transformation were employed to investigate undamped and damped transient dynamic responses. The Kelvin damping model was also incorporated for viscoelastic cases, while the dynamic behavior of beams was evaluated under step, impulsive and periodic loading conditions.

The findings demonstrated that increasing the length-to-height ratio raises natural frequencies, whereas higher material gradation indices lead to reduced frequencies. Furthermore, Winkler foundation parameters were found to have a more significant influence on natural frequencies than shear layer stiffness. The analyses also successfully captured the beating phenomenon under periodic loading with periods close to the structure's natural period.

The research provides a comprehensive computational approach for the dynamic analysis of functionally graded structural elements, contributing to advancements in soil-structure interaction, vibration analysis and structural engineering applications.

The Civil Engineering Department congratulates Assoc. Prof. Ahmad Reshad NOORI on this valuable scientific contribution and wishes him continued success in his academic studies.



MECHANICS BASED DESIGN OF STRUCTURES AND MACHINES
2026, VOL. 54, NO. 1, 2741920
https://doi.org/10.1080/15397734.2026.2741920

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Comprehensive dynamic analysis of Pasternak-supported FGM beams in the Laplace domain via the complementary functions method

Ahmad Reshad Noori[a], Timurçin Alp Aslan[b], Asena Pınar Özer[c], and Beytullah Temel[b]

CIVIL ENGINEERING

Assoc. Prof. Ahmad Reshad NOORI's Article Published in the Q2-Ranked Journal Sādhanā

The article titled "Optimising Natural Frequencies of Functionally Graded Beams via CPA and TWO Metaheuristic Algorithms," co-authored by Assoc. Prof. Ahmad Reshad NOORI, a faculty member of the Civil Engineering Department at Istanbul Gelisim University, has been published in *Sādhanā*, a Q2-ranked journal according to Scopus/SCImago.

The study, investigates the optimization of natural frequencies of functionally graded beams using advanced metaheuristic algorithms. The research evaluates how variations in material properties across the beam thickness influence structural vibration behavior, aiming to support the development of high-performance engineering components.

The dynamic behavior of functionally graded beams was analyzed based on Euler–Bernoulli beam theory, while the Cyclical Parthenogenesis Algorithm (CPA) and Tug of War Optimization (TWO) algorithm were employed to optimize their natural frequencies. The performance of these algorithms was evaluated under different boundary conditions.

The findings demonstrated that the CPA algorithm provides high-quality solutions with rapid convergence, making it suitable for time-sensitive optimization problems. Meanwhile, the TWO algorithm achieved improvements of up to 25% in natural frequency, although it required longer computational time. The study highlights the potential of nature-inspired optimization algorithms in advanced structural engineering and material design.

The research is expected to contribute to future studies on high-performance composite beams, vibration control and the optimization of advanced structural components, including those manufactured using 3D printing technologies.

The Civil Engineering Department congratulates Assoc. Prof. Ahmad Reshad NOORI on this valuable scientific contribution and wishes him continued success in his academic studies.

Sādhanā (2026) 51:377
https://doi.org/10.1007/s12046-026-03330-2

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Optimising natural frequencies of functionally graded beams via CPA and TWO metaheuristic algorithms

MAJED KANOUA[1,*], AHMAD RESHAD NOORI[1] and MARWAN ABDULKAREEM SHAKIR ALBAYATI[2]

CIVIL ENGINEERING

Asst. Prof. Yasin PAŞA's Paper Published in the 6th National Water Engineering Symposium

The research paper titled “Modeling of the Darlık Dam-Break Flood Using HEC-RAS and Assessment of Downstream Flood Risks,” authored by Asst. Prof. Yasin PAŞA, a faculty member of the Civil Engineering Department at Istanbul Gelisim University, was published at the 6th National Water Engineering Symposium, held on October 19–23, 2026, in İznik, Bursa.

The study focuses on modeling potential flooding resulting from possible dam-break scenarios at Darlık Dam using the HEC-RAS hydraulic modeling software and assessing the associated flood risks in downstream areas.

The research addresses an important topic in water resources engineering and disaster management by examining the modeling and potential consequences of dam-break floods. It highlights the role of numerical modeling methods in dam safety assessments, flood risk identification and the planning of preventive measures for downstream areas.

The study is expected to contribute to future research on dam-related flood risk assessment and the development of safer and more resilient infrastructure systems against natural disasters.

The Civil Engineering Department congratulates Asst. Prof. Yasin PAŞA on this valuable scientific contribution and wishes him continued success in his academic studies.



CIVIL ENGINEERING

Res. Asst. Oğuzhan Murat HALAT's Paper Published in the 13th National Hydrology Congress

The research paper titled “Performance Evaluation Of The Mhm Hydrological Model Using Streamflow Observations And Glofas-Based Data In The Eastern Black Sea Region” authored by Res. Asst. Oğuzhan Murat HALAT from the Civil Engineering Department at Istanbul Gelisim University, was published at the 13th National Hydrology Congress, held on October 14–17, 2026.

The study investigates hydrological modeling performance in Türkiye's Eastern Black Sea Region, which is characterized by high precipitation, complex topography and significant flood risks. The research aims to evaluate how different precipitation datasets and streamflow reference sources affect hydrological model performance and the reliability of hydrological assessments.

The study provides valuable insights into flood risk assessment, water resources management and the improvement of hydrological predictions in the Eastern Black Sea Region. By comparing different datasets and modeling approaches, the research is expected to contribute to more reliable regional hydrological analyses.

The Civil Engineering Department congratulates Res. Asst. Oğuzhan Murat HALAT on this valuable scientific contribution and wishes him continued success in his academic studies.



MECHATRONICS ENGINEERING

Assoc. Prof. Haydar KEPEKÇİ's Paper Presented at ISEMAS'26

The full-text paper entitled "Theoretical Analysis of a Three-Stage Gas Refrigeration System Onboard Ships" by Assoc. Prof. Haydar Kepekçi, a faculty member in the Department of Mechatronics Engineering, was accepted and presented at ISEMAS'26 (International Symposium on Energy Management and Sustainability), held on 7–9 October 2026, with proceedings to be published by Springer and indexed in Scopus.

The study conducted a thermodynamic analysis of a three-stage compressed gas refrigeration system using air as the working fluid for ship air conditioning. Increasing the pressure ratio was found to increase the cooling capacity and net work input while reducing the coefficient of performance (COP). Since it requires no synthetic refrigerants, the system was evaluated as an environmentally friendly alternative for marine air-conditioning applications.



MECHATRONICS ENGINEERING

Assoc. Prof. Haydar KEPEKÇİ's Article Published in the TR Dizin-Indexed Çukurova University Journal of the Faculty of Engineering

The article entitled “CFD Investigation of the Effect of Jet–Surface Distance on Thermal Performance in Inclined Jet Impingement Cooling” by Assoc. Prof. Dr. Haydar Kepekçi, a faculty member in the Department of Mechatronics Engineering, has been published in the TR Dizin–indexed *Çukurova University Journal of the Faculty of Engineering*. The study numerically investigated how the distance and angle of an air jet directed at a hot surface affect cooling performance. The results showed that selecting these two parameters appropriately can enhance heat transfer, providing insights for the design of more effective cooling systems.



Çukurova Üniversitesi
Mühendislik Fakültesi Dergisi
Çukurova University
Journal of the Faculty of Engineering

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CFD Investigation of the Effect of Jet-Surface Distance on Thermal Performance in Inclined Jet Impingement Cooling

Haydar KEPEKÇİ [1,a]

MECHATRONICS ENGINEERING

Three Papers by the Dept. of Mechatronics Engineering Presented at the 23rd International Metallurgy and Materials Congress

The Department of Mechatronics Engineering at Istanbul Gelişim University presented three scientific papers at the 23rd International Congress on Metallurgy and Materials, held at the Istanbul Expo Center from October 22–24, 2026.

At the Nanomaterials Symposium held as part of the conference, the paper titled “Synthesis and Structural Comparison of Boron-Doped and Silver-Doped Hydroxyapatite via the Sol–Gel Method” by Asst. Prof. Cansu NOBERİ, Res. Asst. Ufuk ATEŞOĞLU, and student Serap Nur AKPINAR was presented by Ufuk ATEŞOĞLU.

At the same symposium, a paper titled “Fabrication of Hybrid Reinforced Aluminum Matrix Composites with SiC and Al O Nanoparticles Synthesized via the Sol-Gel Method”—prepared in collaboration between Istanbul Gelişim University and Yıldız Technical University—was also presented by Res. Asst. Ufuk ATEŞOĞLU. The authors of the study included Asst. Prof. Cansu NOBERİ, Ufuk ATEŞOĞLU, Prof. Alptekin KISASÖZ, Lecturer Dr. Yahya BAYRAK, and students Feyza YİĞİTER and İrem GÖRÜNÜLÜ.

At the Symposium on Composite and Polymer Materials, the paper titled “Fabrication and Characterization of Thermoplastic Matrix Composites Reinforced with Boron-Doped Titanium Dioxide Nanoparticles” by Assoc. Prof. Engin ERBAYRAK, Asst. Prof. Cansu NOBERİ, Res. Asst. Ufuk ATEŞOĞLU, and student Ahmet Melih ALBAYRAK was presented by Ahmet Melih ALBAYRAK.

The Department of Mechatronics Engineering shared its research in the fields of nanomaterials and composite materials with the scientific community through these studies, which were prepared with the contributions of its faculty and students.





MECHATRONICS ENGINEERING

Master's Student Mehmet Emin AĞCA Successfully Defended His Thesis

Mehmet Emin Ağca, a master's student supervised by Assoc. Prof. Haydar KEPEKÇİ, a faculty member in the Department of Mechatronics Engineering, has successfully defended his thesis entitled "CFD Investigation of Heat Transfer and Flow Behavior in Solar Chimney Systems" and completed his master's degree. The study numerically investigated the heat transfer and flow characteristics of solar chimney systems using Computational Fluid Dynamics (CFD). In addition to his supervisor, Assoc. Prof. Haydar KEPEKÇİ, the thesis defense committee included Prof. Hamdi Alper ÖZYİĞİT, Head of the Department of Mechatronics Engineering at Istanbul Gelisim University, and Asst. Prof. Cengiz ÖZBEK, a faculty member in the Department of Mechanical Engineering at Istanbul Beykent University.



BASIC SCIENCES

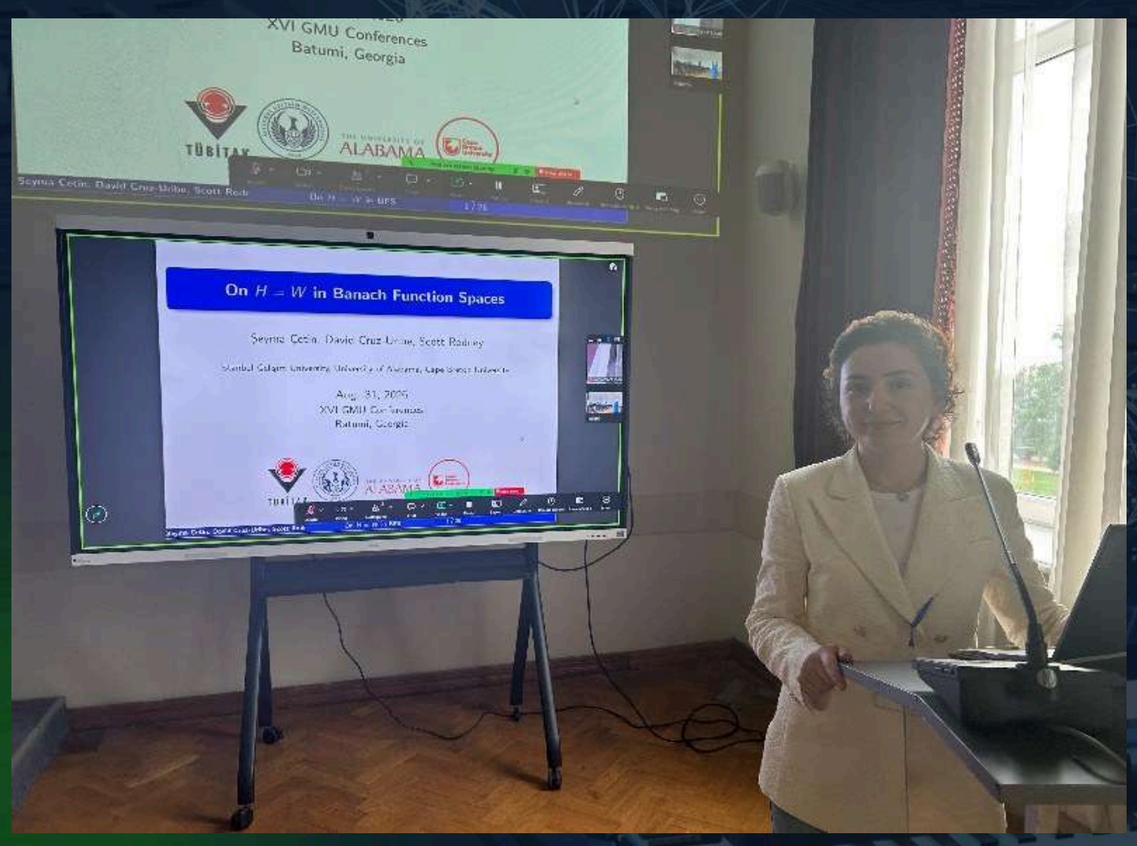
Şeyma ÇETİN's Paper Presented at the Annual International Conference of the Georgian Mathematical Union

Şeyma Çetin, a faculty member of the Department of Basic Sciences at the Faculty of Engineering and Architecture of Istanbul Gelisim University, presented her paper entitled “On H = W in Banach Function Spaces” at the XVI Annual International Conference of the Georgian Mathematical Union, held in Batumi, Georgia, from August 31 to September 5, 2026.

Co-authored with David Cruz-Uribe OFS and Scott Rodney, the study examines the conditions under which the equality H = W holds in the setting of Banach function spaces. The research investigates general conditions ensuring that the Sobolev-type space consisting of functions whose distributional derivatives belong to the corresponding Banach function space coincides with the space defined as the appropriate closure of Lipschitz functions.

The study evaluates the role of properties such as the Fatou property, absolute continuity of the norm, and the strong Muckenhoupt condition in establishing this equality. Focusing on function spaces and Sobolev spaces, the research contributes to theoretical studies in mathematical analysis.

We congratulate Şeyma Çetin on representing our university through her scientific research at a conference bringing together the international mathematical community and wish her continued success in her academic endeavors.





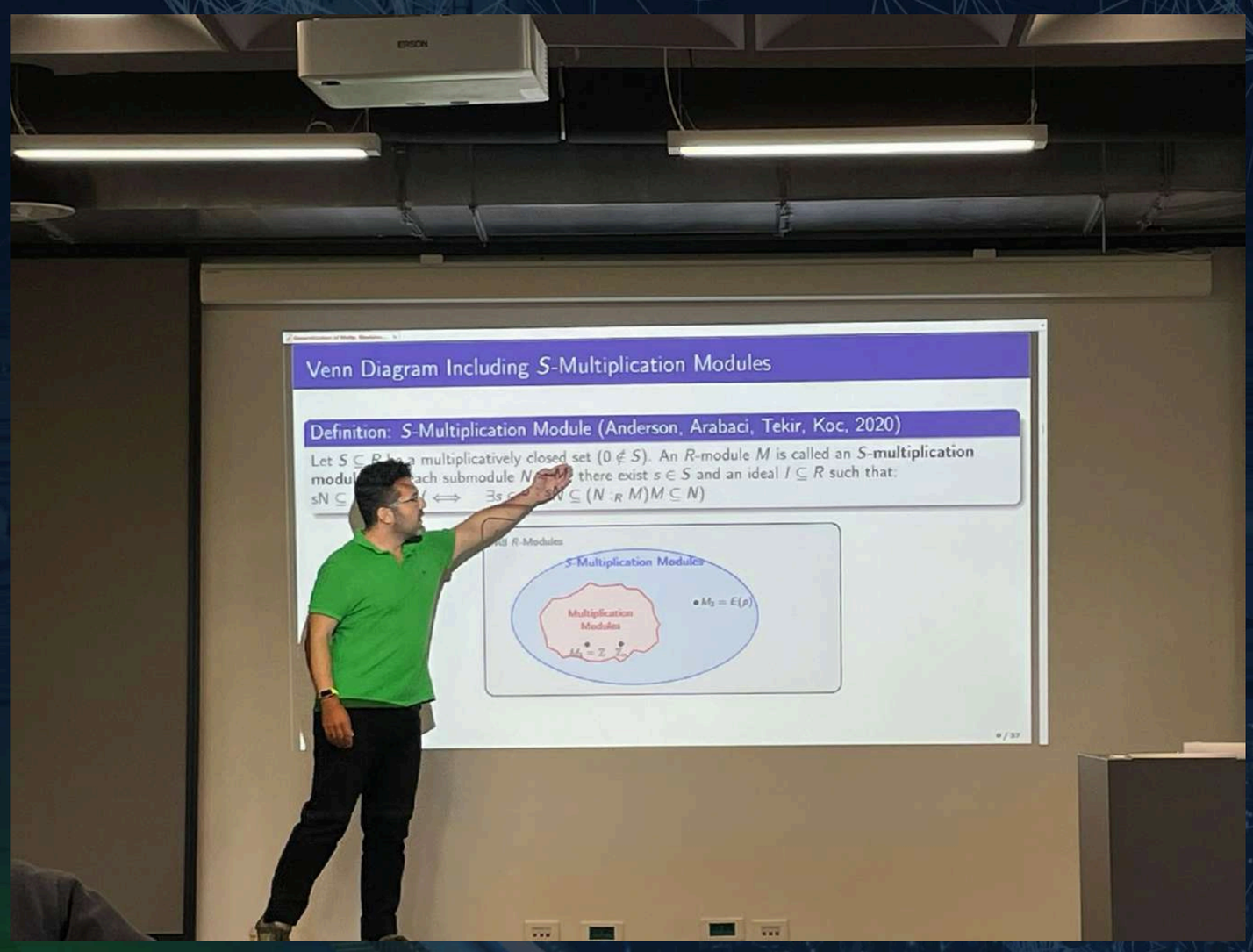
BASIC SCIENCES

Asst. Prof. Tarık ARABACI's Paper Presented at ICADA 2026

Asst. Prof. Dr. Tarık Arabacı, a faculty member of our Faculty of Engineering and Architecture, attended the *International Conference on Algebra Developments and Applications (ICADA 2026)*, hosted by the University of Montenegro in Podgorica on 22–25 September 2026.

Dr. Arabacı presented the paper "*Generalization of Multiplication Modules via Multiplicatively Closed Sets*," co-authored with Ünsal Tekir and Suat Koç of Marmara University's Department of Mathematics. The study introduces S-multiplication modules, a generalization of multiplication modules defined through multiplicatively closed subsets of the base ring. It establishes their basic properties, extends classical results such as the prime avoidance lemma to this broader class, and examines S-prime submodules.

Following the presentation, Dr. Arabacı received a certificate of presentation from the conference organizers. We congratulate him and wish him continued success in his academic work.





SHAPE THE FUTURE

IGU FEA



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