FACULTY OF ENGINEERING AND ARCHITECTURE

BULLETIN

JULY 2025

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FACULTY OF ENGINEERING AND ARCHITECTURE

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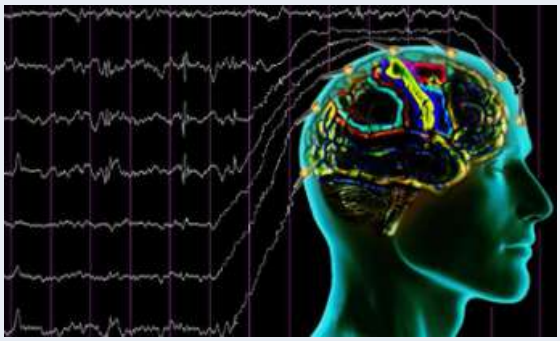
MONTHLY BULLETIN

JULY 2025

NEWS FROM THE FACULTY

● COMPUTER ENGINEERING ●

GROUNDBREAKING RESEARCH IN DRIVER DROWSINESS DETECTION WITH PAFWF-EEGC NET



A research assistant from our faculty, Muhammed Mustafa Yurdakul, in collaboration with Associate Professor Dr. Ali H. Abdulwahhab and Dr. Işıl Myderrizi, has contributed to a revolutionary study in driver drowsiness detection. Published in the journal Signal, Image and Video Processing, the article titled “PAFWF-EEGC Net: Parallel Adaptive Feature Weight Fusion Based on EEG-Dynamic Characteristics Using Channels Neural Network for Driver Drowsiness Detection” introduces an innovative electroencephalography (EEG)-based neural network model, making a substantial contribution to traffic safety. The article presents the PAFWF-EEGC Net, an original methodology aimed at mitigating traffic accidents caused by driver fatigue. This model analyzes the dynamic characteristics of EEG signals to classify drivers' states of alertness, fatigue, and drowsiness with high accuracy, employing a parallel adaptive feature weight fusion approach. Compared to traditional methods, this model processes data from EEG channels more efficiently, utilizing a neural network-based system for real-time detection of driver drowsiness. This innovation provides a critical foundation for autonomous driving systems and intelligent transportation technologies. The study incorporates a channels neural network specifically designed to address the complex and variable nature of EEG signals, integrating temporal and spatial features to achieve high sensitivity in fatigue detection.

Experimental results in the article demonstrate that the proposed method offers lower computational complexity and higher accuracy than existing deep learning models, facilitating integration into portable devices and providing a practical solution for real-world applications. The research team's work underscores the importance of interdisciplinary approaches in computer engineering, combining artificial intelligence and signal processing techniques to enhance driver safety. This study reflects our faculty's innovative research capabilities. The success of Muhammed Mustafa Yurdakul and his team serves as an inspiration for our students and academics, while exemplifying ongoing projects in quantum computing and artificial intelligence. Such endeavors enhance our faculty's international recognition, supporting our mission to shape future technologies.

ASSIT. PROF. DIDEM YILMAZ AND RES. ASST. DUYGU TÜYLÜ FROM THE IGU INDUSTRIAL ENGINEERING DEPARTMENT ATTENDED YAEM 2025.

The paper titled “Application of the Fine-Kinney Method for Risk Analysis in the Chemical Industry,” written by Assit. Prof. Didem Yılmaz, Res. Asst. Duygu Tüylü, and Industrial Engineering student Sude Yalınız from the Department of Industrial Engineering at Istanbul Gelişim University, was presented at the 44th National Congress of Operations Research and Industrial Engineering (YAEM) held at Gazi University, Ankara, on June 25-27

İGU 2024-2025 GRADUATION CEREMONY HELD

Istanbul Gelişim University (IGU) proudly bid farewell to its new graduates from the Department of Industrial Engineering.

Our 2024-2025 academic year graduation ceremony was held with great enthusiasm and excitement at the Yahya Kemal Beyatlı Performance Center on Wednesday, July 23, 2025. Our students, along with their families, reveled in the pride of this special moment, and our young engineers celebrated by tossing their caps into the air after receiving their diplomas.

We wholeheartedly congratulate all our students and wish our young engineers a future filled with success, happiness, and hope.

ONUR ZÜBARİOĞLU SUCCESSFULLY DEFENDED HIS MASTER'S THESIS

Onur ZÜBARİOĞLU, a graduate student in the Department of Civil Engineering at Istanbul Gelisim University, has successfully defended his master's thesis titled "The Effects of Traditional and Base-Isolated Reinforced Concrete Structures on Structural Performance and Material Use." The thesis was supervised by Asst. Prof. Ahmad Reshad NOORI, Chair of the Civil Engineering Department.

In this study, two versions of the same reinforced concrete structure — one with seismic base isolators and one without — were analyzed and compared. Key performance parameters such as displacement, inter-story drift ratios, and base shear forces were examined, as well as structural material quantities like concrete and reinforcement usage. Modeling and analysis were conducted using licensed versions of ideCAD Statik v11 and ETABS 20 software.

The results showed that seismic isolation significantly improves earthquake performance and reduces upper structure demands. Although the initial cost of base-isolated systems is higher, reductions in material usage provide long-term economic benefits. As a real-world case study, the thesis offers valuable technical and economic insights for similar engineering projects and investment planning.

We sincerely congratulate Onur ZÜBARİOĞLU on this academic achievement and wish him continued success in his career.

TRAINING SESSION ON A TURKEY-SPECIFIC HYDRAULIC MODEL DELIVERED TO DSİ STAFF

Res. Asst. Oğuzhan Murat HALAT, a faculty member of the Department of Civil Engineering at Istanbul Gelisim University, conducted a technical training session for personnel of the State Hydraulic Works (DSİ). The training focused on a locally developed hydraulic model specifically tailored to Turkey's hydrological and geographical conditions.

Held on July 11, 2025, the session provided in-depth insights into the structure, functionality, and application areas of the hydraulic model. Special emphasis was placed on its integration with local topography, climate patterns, and river systems. The model's potential to contribute to flood management, water resources planning, and infrastructure development in Türkiye was thoroughly discussed.

Participants were introduced to both the theoretical framework and practical implementation of the model, gaining valuable knowledge applicable to real-world scenarios.

Such training initiatives play a vital role in strengthening institutional capacity and promoting the use of locally developed engineering solutions. We sincerely thank Res. Asst. Oğuzhan Murat HALAT for his contribution and wish him continued success in his academic and professional pursuits.

MARWAN AL-BAYATI SUCCESSFULLY COMPLETES PHD STUDIES

Marwan AL-BAYATI, a PhD student in the Department of Civil Engineering, has successfully completed his doctoral studies under the supervision of Asst. Prof. Dr. Ahmad Reshad NOORI, who also serves as the Chair of the Department.

This significant academic milestone is the result of a rigorous research process, a strong work ethic, and meaningful contributions to the scientific literature. Throughout his doctoral journey, AL-BAYATI demonstrated the ability to integrate theoretical knowledge with practical solutions and adopted a comprehensive approach in line with internationally conducted scientific research. His advisor, Asst. Prof. Dr. Ahmad Reshad NOORI, expressed his satisfaction with the student's progress and stated his confidence in AL-BAYATI's future contributions to the academic community.

As the Department of Civil Engineering at Istanbul Gelisim University, we sincerely congratulate Marwan AL-BAYATI on this important achievement and wish him continued success in his academic and professional endeavors.

● CIVIL ENGINEERING ●

GRADUATION CELEBRATION OF ISTANBUL GELISIM UNIVERSITY CIVIL ENGINEERING DEPARTMENT

The Civil Engineering Department at Istanbul Gelisim University proudly celebrated the graduation of its students on July 23, 2025, at the Yahya Kemal Beyatlı Performance Hall. The event was filled with great excitement and joy, bringing together students, their families, and faculty members in a vibrant academic celebration.

The ceremony began with a moment of silence and the national anthem, followed by opening speeches. University administrators and faculty members addressed the graduates with heartfelt congratulations, recognizing their perseverance, discipline, and achievements throughout their academic journey. During the ceremony, diplomas were presented, and top-performing students were honored with plaques and awards.

One of the most memorable parts of the event was the students taking the stage in their academic gowns and caps to recite the graduation oath. The cap-tossing ceremony added a symbolic and emotional highlight, marking the official transition into professional life. Families shared proud and emotional moments, while faculty members looked on with pride

With this ceremony, graduates of the Civil Engineering Department are now stepping into their professional careers, ready to serve in various regions of Türkiye and around the world. The speeches emphasized that Istanbul Gelisim University graduates are expected to continue their paths as ethical, responsible, and innovative engineers in their future endeavors.

As the Civil Engineering Department, we extend our heartfelt congratulations to all our graduates. We wish them continued success and hope they make meaningful contributions to our country and to humanity through their future work.

JOINT EXHIBITION OF ARC330 ACCESSIBILITY AND MIM330 ERIŞILEBILIRLIK COURSES

The course Accessibility, offered in both the Turkish and English Architecture programs, is an elective that introduces and discusses the principles of the concept of architecture for all. Within the scope of this course, conducted by Assoc. Prof. İlke CİRİTCİ, students prepared two different assignments. The first assignment consisted of individual evaluations based on analyses of the accessibility of their immediate environment. The second assignment involved group-based analyses and evaluations of designated areas. This semester, the student groups were specifically directed toward the underground bazaars in Istanbul. Throughout the course, students analyzed and discussed the accessibility and emergency evacuation scenarios of locations such as the Aksaray Underground Bazaar, Karaköy Underground Bazaar, and Bakırköy Underground Bazaar. They had the opportunity to present their findings in an exhibition. The exhibition was opened on May 30th in the entrance hall of Tower Block, 3rd floor, and attracted considerable attention

ASSISTANT PROF.DR. N. ÖMER SAATCIOĞLU FROM THE DEPARTMENT OF ARCHITECTURE PARTICIPATES AS GUEST JURY MEMBER AT YAŞAR UNIVERSITY'S ARCHITECTURAL DESIGN STUDIO II

Assist.Prof. Dr. N. Ömer Saatcıoğlu, faculty member at Istanbul Gelişim University, Faculty of Engineering and Architecture, Department of Architecture, participated as a guest jury member in the final jury of the Architectural Design II studio held at Yaşar University, Faculty of Architecture, on June 30, 2025.

As part of the semester-long project conducted under the coordination of Assist. Prof. Dr. Matthieu Pedergnana, second-year students focused on the design of a kindergarten with five classrooms located in the Çamdibi neighborhood of Bornova, İzmir. Since the selected site also included a public park and playground actively used by local residents, the project aimed not only to design a new educational facility but also to redefine the urban block by integrating new functions while preserving existing public uses.

Throughout the semester, students conducted comprehensive research and site analysis, focusing on three main design themes:

- Designing within the context of a dense, low-income neighborhood,
- Creating a learning environment that integrates both interior and exterior spaces,
- Using the building envelope as a multifunctional element.

During the full-day final jury, jury members engaged with each student individually, evaluating their architectural drawings and models, providing feedback, and grading the projects.

FACULTY OF ENGINEERING AND ARCHITECTURE

ACTUEL TOPICS IN ENGINEERING AND ARCHITECTURE

MONTHLY BULLETIN

JULY 2025

REVOLUTION IN QUANTUM COMPUTING: MAGIC STATE DISTILLATION FOR FAULT-TOLERANT COMPUTATION – RES. ASSIST.HASAN YILDIRIM

In July 2025, a significant milestone was achieved in the field of computer engineering. Researchers successfully implemented the magic state distillation process—previously confined to theoretical frameworks for approximately two decades—on logical qubits. This innovation enhances the fault tolerance of quantum computers, accelerating their integration into real-world applications and offering innovative career opportunities for computer engineering students. Magic state distillation is a process that purifies high-quality magic states, which enable complex operations in quantum algorithms; these states serve as pre-prepared quantum resources to harness the parallel computational power of quantum computers. Prior implementations on physical qubits were limited by high error rates; however, recent work utilizing logical qubits—groups of physical qubits configured for error detection and correction—has overcome this challenge. The research team employed a neutral atom-based quantum computer to transform five imperfect magic states into a single magic state with higher fidelity; this was accomplished on distance-3 and distance-5 logical qubits, where the "distance" term denotes error correction capacity (for instance, distance-3 corrects single errors, while distance-5 corrects two errors). The resulting magic state's fidelity exceeded that of the inputs, demonstrating the practical functionality of the distillation process. This technology circumvents the limitations of quantum computers restricted to Clifford gates, which can be simulated by classical supercomputers, by enabling non-Clifford gates that provide a quantum advantage—operations inefficiently simulable on classical systems.

Quantum computers exhibit substantially higher error rates compared to classical bits (approximately 1/1000 for qubits versus 1/trillion for classical bits); thus, fault tolerance is critical for executing lengthy and complex computations without interruption. Magic state distillation, analogous to refining crude oil into jet fuel, refines low-quality magic states to render them suitable for high-performance quantum programs. This advancement holds application potential in areas such as encryption, materials simulation, drug discovery, and optimization problems, with the capacity to revolutionize artificial intelligence and big data analytics.

ACTUEL TOPICS IN ENGINEERING AND ARCHITECTURE

● ELECTRICAL AND ELECTRONICS ENGINEERING ●

BEYOND SILICON: QUANTUM MATERIALS PROMISE 1000× FASTER ELECTRONICS– RES. ASST. ELİF ÖZTÜRK

A recent study published in Nature Physics has revealed a breakthrough that could revolutionize the future of electronics. Researchers have demonstrated that a quantum material called 1T-TaS_2 could enable up to 1000 times faster processing speeds compared to conventional silicon-based electronics. This material exhibits a unique ability to switch between insulating and conducting states depending on temperature. In other words, it can control the flow of electric current similarly to a transistor — but on a much smaller and faster scale.

Experts suggest this advancement could lead to significantly higher processor speeds and improved energy efficiency. Such materials could pave the way for next-generation electronics, especially in high-demand areas like artificial intelligence, real-time data processing, and low-power computing.

Innovations like these are not only exciting for global tech industries but also inspire students and researchers in electrical and electronics engineering. As quantum materials and alternative semiconductors gain momentum, they are expected to play a growing role in both academic curricula and university-led R&D projects.

ACTUEL TOPICS IN ENGINEERING AND ARCHITECTURE

● INDUSTRIAL ENGINEERING ●

INDUSTRIAL ENGINEERING: THE STRATEGIC PROFESSION OF THE FUTURE – RES. ASSIST.DUYGU TÜYLÜ

Industrial Engineering is one of the disciplines that plays a key role in the sustainable success of businesses, both today and in the future. Industrial Engineers, who ensure the efficient, flexible, and innovative management of systems in a wide range of fields, from manufacturing to service, logistics to healthcare management, develop solutions focused on technology, efficiency, and sustainability.

Developing digital technologies, Industry 4.0, and the upcoming vision of Industry 5.0 are making the Industrial Engineering profession more valuable than ever. Data analytics, artificial intelligence-supported decision-making, smart production systems, and green supply chains are among today's prominent topics. In this context, graduates of the Industrial Engineering department have a wide range of job opportunities not only in manufacturing but also in diverse sectors such as finance, energy, healthcare, logistics, IT, and consulting.

Candidates who choose the Industrial Engineering department can expect a rich learning experience supported by both academic and practical training:

- Applied Training and Projects: Our students gain practical experience through project-based courses and internships to solve real-world problems encountered in the manufacturing and service sectors.
- Versatile Curriculum: A wide range of courses are offered, covering mathematics, statistics, data science, optimization, production planning, logistics, artificial intelligence, and decision support systems.
- Career Opportunities: Our graduates can pursue careers in areas such as manufacturing, quality, planning, supply chain management, data analytics, and process improvement, and have the opportunity to rapidly advance in national and international companies.
- Future Preparation: With our education focused on Industry 5.0 and digital transformation, we prepare our students not only for today's engineering world but also for tomorrow's.
- International Accreditation: Our department is accredited by ABET, providing our students with globally recognized diplomas and easy access to global job opportunities.

MECHATRONICS ENGINEERING AND HIGH-TECH WEAPON SYSTEMS: TAYFUN, GAZAP, AND BEYOND – RES. ASSIST.MUHAMMED LÜTFI TİRABZON

Mechatronics engineering plays a critical role at defence insdustry, serving as a cornerstone of modern weapon systems through essential elements such as precision guidance, control systems, electromechanical integration, and AI-based decision support mechanisms. In this article, we explore the mechatronic aspects of two strategic systems that symbolize Turkey's defense strength — the Tayfun Ballistic Missile and the Gazap Thermobaric Bomb.

Tayfun Ballistic Missile

Developed by Roketsan, Tayfun is a short-range ballistic missile system with a range approaching 1000 km — making it the longest-range domestically produced missile in Turkey. Mechatronics engineering plays a multi-layered role in this advanced system:

Guidance and Navigation Systems: Inertial measurement units (IMUs), GPS-supported navigation algorithms, and an integrated flight control computer allow the missile to maintain precise trajectory control even at hypersonic speeds. This is made possible by mechatronics through accurate control loops, sensor fusion, and real-time decision-making capabilities.

Autopilot Integration: Autopilot systems that ensure stable flight performance despite dynamic atmospheric conditions work in tandem with electromechanical actuators. This integrated structure clearly demonstrates mechatronics' success in motion control and feedback loop implementation.

Gazap Thermobaric Bomb

Precision Triggering and Timing: Thermobaric weapons must detonate with microsecond precision after reaching the target area. Gazap utilizes electronic timers and shock-detecting integrated circuits to ensure maximum impact at the heart of the target zone.

Dispersal Dynamics and Sensor-Based Adjustment: To achieve optimal dispersal of the fuel-air mixture, real-time data is gathered from internal pressure and temperature sensors. This information is used to control microvalves precisely, reflecting one of the clearest examples of mechanical-electronic synergy in mechatronics.

TRANSFORMING ROLES AND NEW SPECIALIZATIONS IN SOFTWARE ENGINEERING – RES. ASSIST. AYŞE ÇOBAN

The discipline of software engineering is undergoing a multi-dimensional transformation that extends beyond just programming skills. As of 2025, new professional roles intersecting with areas such as artificial intelligence, data science, product management, and user interaction are significantly emerging alongside traditional developer profiles in the software industry. One of the foremost of these new-generation roles is the Prompt Engineer. These specialists design prompts that can interact with large language models (LLMs) to produce accurate and fefective results. The demand for this role is rapidly increasing, especially as generative AI systems are actively being used for tasks like software production, test scenario generation, or converting natural language to code. Another prominent position is the AI Product Manager. These are multidisciplinary experts who combine technical knowledge with a strategic vision in the design, user delivery, and legal and ethical management of AI-based systems. This role encompasses engineering, business development, and ethical responsibility dimensions.

MLOps (Machine Learning Operations), on the other hand, is an adaptation of classic DevOps approaches to machine learning systems. It ensures the sustainable institutional scaling of model training, versioning, deployment, monitoring, and retraining cycles. Experts in this field possess the ability to operationalize both software development infrastructure and AI models.

The skills required for these new-generation roles are not limited to knowledge of algorithms and data structures alone. Multifaceted competencies such as ethical decision-making, user-centric thinking, system-level design, and the ability to interpret AI models are gaining prominence.

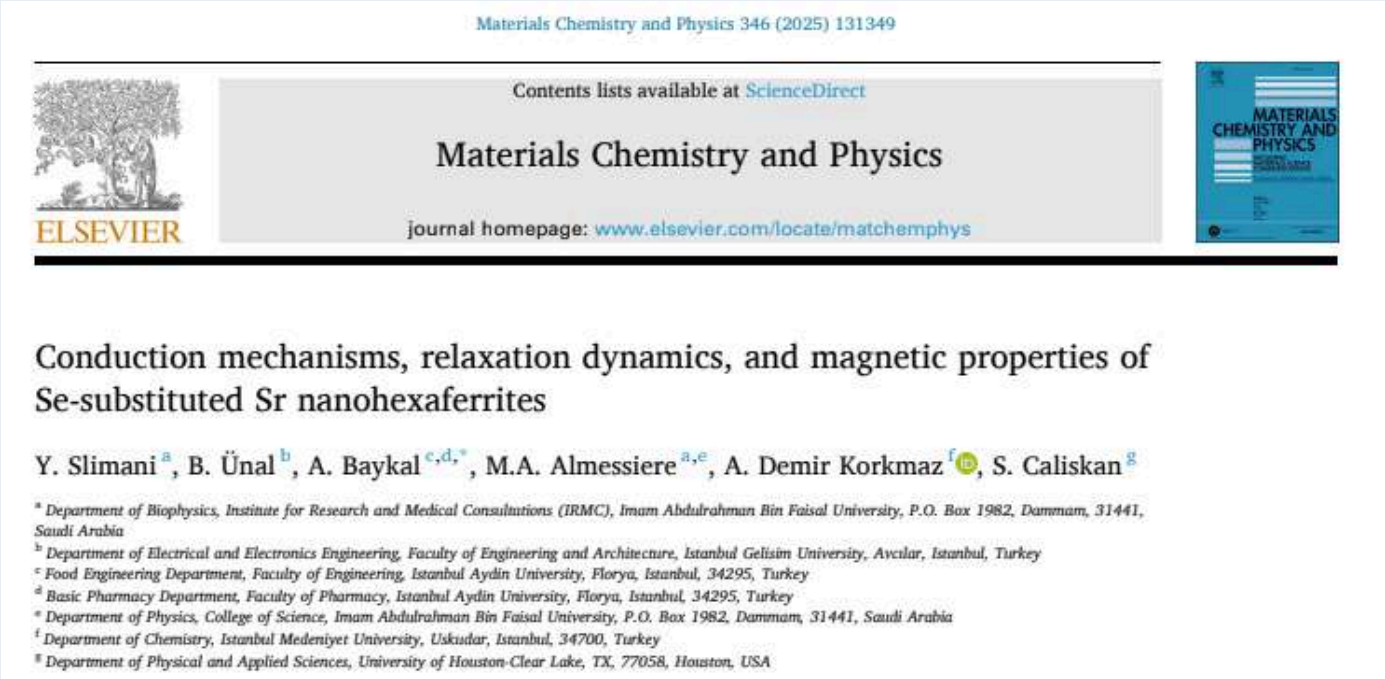
FACULTY OF ENGINEERING AND ARCHITECTURE

ACADEMIC AND SCIENTIFIC ACTIVITIES

MONTHLY BULLETIN

JULY 2025

A SCIENTIFIC ARTICLE BY PROF. DR. BAYRAM ÜNAL HAS BEEN PUBLISHED



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Conduction mechanisms, relaxation dynamics, and magnetic properties of Se-substituted Sr nanohexaferrites

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Prof. Dr. Bayram ÜNAL, a faculty member of the Department of Electrical and Electronics Engineering at Istanbul Gelisim University, has been listed as an author in the scientific study titled "Conduction Mechanisms, Relaxation Dynamics, and Magnetic Properties of Se-Substituted Sr Nanohexaferrites."

This study presents a comprehensive analysis of the electrical conduction mechanisms, dielectric relaxation dynamics, and magnetic properties of selenium-substituted strontium nanohexaferrites. The investigations reveal that selenium substitution induces significant changes in both the microstructural features and the electro-mechanical response functions of the material. Complex impedance spectroscopy and modulus analyses indicate that the material exhibits non-Debye type relaxation behavior, which is associated with interactions between grains and grain boundaries. Furthermore, it has been emphasized that selenium incorporation causes noticeable variations in magnetic parameters such as saturation magnetization and coercivity, highlighting the potential of these materials for ferrimagnetic applications. These findings enhance the usability of Se-modified Sr-hexaferrites in the design of multifunctional ceramic materials.

ACADEMIC AND SCIENTIFIC ACTIVITIES

● INDUSTRIAL ENGINEERING ●

ASSIT. PROF. NURDAN TÜYSÜZ, WHO WORKS IN THE DEPARTMENT OF INDUSTRIAL ENGINEERING, ATTENDED THE INTERNATIONAL CONFERENCE ON INTELLIGENT AND FUZZY SYSTEMS (INFUS2025).

Assit. Prof. Nurdan Tüysüz who works Department of Industrial Engineering, presented her work titled "Novel Decomposed Fermatean Fuzzy Sets and an Application to TOPSIS method" at the International Conference on Intelligent and Fuzzy Systems (INFUS2025) on July 30, 2025, and the full text of the work was published in the conference proceedings book by Springer.

RES. ASSISTANT DUYGU TÜYLÜ, WHO WORKS IN THE DEPARTMENT OF INDUSTRIAL ENGINEERING, ATTENDED THE INTERNATIONAL CONFERENCE ON INTELLIGENT AND FUZZY SYSTEMS (INFUS2025).

İTÜ INTELLIGENT AND FUZZY SYSTEMS

Res. Assit. Duygu Tüylü, who works in the Department of Industrial Engineering, presented her study titled "The Role of Machine Learning and Fuzzy Logic in Sustainability Research: A Bibliometric Analysis" at the International Conference on Intelligent and Fuzzy Systems (INFUS2025) on July 29, 2025, and the full text of the study was published in the conference proceedings book by Springer.

ACADEMIC AND SCIENTIFIC ACTIVITIES

● CIVIL ENGINEERING ●

SCIENTIFIC ARTICLE BY ASST. PROF. DR. AHMAD RESHAD NOORI HAS BEEN PUBLISHED

Asst. Prof. Ahmad Reshad NOORI, Chair of the Department of Civil Engineering at Istanbul Gelisim University, has co-authored a scientific article titled “Free Vibration Analysis of the Main Body Part of a Hexacopter Drone Using the Three-Dimensional Finite Element Method.”

The study focuses on the structural performance of hexacopter drones, widely used in sectors such as agriculture, logistics, mapping, defense, and photography. Using the finite element method, the research examines how different cavity geometries (circular, square, rectangular, and hexagonal) and materials (steel, PLA, and carbon fiber) influence the free vibration characteristics of the drone’s main fuselage structure.

The analysis employed three-dimensional, 10-node tetrahedral elements to determine the displacement amplitudes and natural frequencies of the first seven vibration modes. The findings indicate that both the cavity geometry and material type significantly affect the natural frequencies and dynamic response of the structure.

We congratulate Asst. Prof. Ahmad Reshad NOORI on this valuable contribution to drone structural design and wish him continued success in his academic endeavors.

NEW Q1 ARTICLE PUBLISHED BY OUR FACULTY MEMBERS

A joint research article by Asst. Prof. Mustafa NURİ and Res. Asst. Oğuzhan Murat HALAT from the Department of Civil Engineering at Istanbul Gelisim University has been published in the Water Resources Management journal, ranked in the Q1 category.

The study, titled “Effects of Model Spatial Structure and Basin Characteristics on the Performance of Three Hydrologic Models,” presents a comparative evaluation of the streamflow prediction performance of three hydrologic models (GR4J, TUW, and mHM) in different subbasins. By analyzing model performance in the Dandalas and karstic Çakıtsuyu subbasins, the research highlights how spatial structure and basin characteristics significantly influence model accuracy. The mHM model demonstrated superior performance, particularly in karstic terrains, due to its advanced multi-parameter regionalization and detailed representation of hydrological features.

We congratulate our faculty members for this outstanding academic achievement and wish them continued success.

ACADEMIC AND SCIENTIFIC ACTIVITIES

● CIVIL ENGINEERING ●

RES. ASST. OĞUZHAN MURAT HALAT SUCCESSFULLY COMPLETED HIS 2ND THESIS MONITORING COMMITTEE (TMC) PRESENTATION

Oğuzhan Murat HALAT, a Research Assistant in the Department of Civil Engineering at Istanbul Gelisim University, has successfully completed his Second Thesis Monitoring Committee (TMC) presentation as part of his ongoing doctoral studies.

This significant academic milestone evaluates the student's research progress, methodological rigor, and scientific competence. The successful completion of this stage demonstrates that Res. Asst. HALAT's doctoral research is advancing in a planned and determined manner.

We sincerely congratulate Res. Asst. Oğuzhan Murat HALAT on this academic achievement and wish him continued success throughout the remainder of his doctoral journey.

RES. ASST. BILGE SULTAN DEMİRTAŞ SUCCESSFULLY COMPLETED HER PHD THESIS PROPOSAL PRESENTATION

Bilge Sultan DEMİRTAŞ, a Research Assistant in the Department of Civil Engineering at Istanbul Gelisim University, has successfully completed her PhD thesis proposal presentation, marking a key milestone in her doctoral studies.

The thesis proposal presentation serves as a formal evaluation of the student's research topic, methodological approach, and command of the relevant literature. Res. Asst. DEMİRTAŞ's successful defense reflects a well-prepared and methodologically sound foundation for her upcoming research process.

We sincerely congratulate Res. Asst. Bilge Sultan DEMİRTAŞ on this important academic achievement and wish her continued success throughout her doctoral journey.

ACADEMIC AND SCIENTIFIC ACTIVITIES

● ARCHITECTURE ●

Dr. Hilay Atalay presented her paper titled “A Model for Measuring and Assessing Social Sustainability: Ankara Dikmen Valley Case Study” (Paper No: 425) at the 37th AESOP 2025 Conference hosted by Yıldız Technical University between July 7 and July 11, 2025

-Byan Jetto graduated from the Non-Thesis Master’s Program in Architecture at the Graduate School of Istanbul Gelişim University. As part of the term project required for graduation, she co-authored an article with her academic advisor. The article, titled “Revitalizing a Vernacular Architectural Element Through Sustainability: Contemporary Applications of Mashrabiya,” was written by Byan Jetto and Assist. Prof. Semih G. Yıldırım (PhD) from the Department of Architecture and was published in the June 2025 issue of “ART/icle: Journal of Art and Design”.

-The article titled “Rethinking Structural Design Education Through Boundary Conditions and Design Flexibility in PBL” co-authored by Assist. Prof. Semih G. Yıldırım (PhD) from the Department of Architecture and Assoc. Prof. Stuart W. Baur (PhD) from Missouri University of Science & Technology, was published in the June 2025 issue of the “ASEAN Journal of Engineering Education”.

-The article titled “Evaluation of Transitional Space Designs in Terms of Visual Perception Parameters” co- authored by Dr. Semih G. Yıldırım from the Department of Architecture and Dr. İbrahim Erol from the Department of Interior Architecture and Environmental Design, was published in the July 2025 issue of the “Turkish Online Journal of Design, Art and Communication (TOJDAC)”.

ARCHITECTURE

THE ARTICLE BY DR. N. ÖMER SAATCIOĞLU AND DR. MURAT ARAPOĞLU HAS BEEN PUBLISHED IN ARTICLE JOURNAL

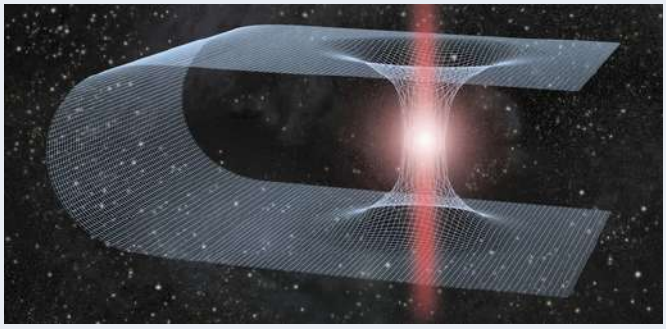
An academic article co-authored by Dr. N. Ömer Saatcıoğlu and Dr. Murat Arapoğlu, faculty members at Istanbul Gelişim University, Department of Architecture, has been published in the ARTicle: Journal of Art and Design (Volume 5, Issue 1, July 4, 2025), on pages 142–170. The article is titled “A Historical and Evolutionary Analysis of Straw Bale Construction Systems in the World and in Turkey.”

The study emphasizes the necessity of reducing the environmental impact of the construction industry in line with the European Green Deal and global climate targets. Given that the construction sector accounts for 36% of global energy consumption and 37% of CO_2 emissions, the use of sustainable building materials is highlighted as a matter of critical importance. The research focuses on the use of straw bales as an ecological and sustainable construction material, and offers a comparative analysis of their historical development both globally and in Turkey.

The article is based on the historical analysis method, incorporating archival research and an extensive literature review. The period from the 1850s to the present day is classified by geographical region (America, Europe, Turkey) and technological development phases. Construction techniques, prefabrication systems, and built examples are evaluated through comparative analysis. By exploring the potential of straw as a building material in Turkey, the article opens a critical discussion on its relevance and application within the global context.

The full text of the article is available at:
https://dergipark.org.tr/tr/pub/stdarticle/issue/90685/1709200

A NOTEWORTHY PUBLICATION ON WORMHOLES BY DR. MURAT METEHAN TÜRKOĞLU



An important development has taken place for researchers in Türkiye interested in exotic topics within theoretical physics. A study titled "Evolution of Wormholes under Karmarkar Condition and Casimir Energy", authored by Dr. Murat Metehan Türkoğlu, a faculty member in the Department of Aeronautical Engineering, Faculty of Engineering and Architecture, has been published on arXiv, one of the internationally accessible platforms in the field of physics.

The study theoretically investigates how the metric structures that allow for the existence of wormholes can be shaped under certain mathematical and physical conditions. Within this framework, the potential role of the Karmarkar embedding condition in wormhole solutions is examined, and the possibility that Casimir energy, with its capacity to generate negative energy density, may contribute to the formation of such exotic structures is evaluated from a theoretical perspective.

These kinds of topics typically lie at the intersection of general relativity and quantum field theory, and are subject to intense theoretical discussion on the international stage. Dr. Türkoğlu's study stands out as a significant example of academic work on exotic subjects emerging from Türkiye.

🎥 The study has also been featured on a YouTube channel that produces science-focused content. The video aims to make the topic more accessible to the general public and can be viewed at the link below:

🔗 https://www.youtube.com/watch?v=KkwuKj5Z3Z8

📄 Links to the article:

🔗 TÜBİTAK Physics journal version: https://journals.tubitak.gov.tr/physics/vol49/iss3/4/

🔗 arXiv version: https://arxiv.org/abs/2506.02074

• TAG •

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