FACULTY OF ENGINEERING AND ARCHITECTURE

BULLETIN

● AUGUST 2025 ●

WHAT YOU WILL READ IN THIS ISSUE:

News from Faculty

Actuel Topics in Engineering and Architecture

Academic and Scientific Activities

FACULTY OF ENGINEERING AND ARCHITECTURE

NEWS FROM THE FACULTY

MONTHLY BULLETIN

AUGUST 2025

NEWS FROM THE FACULTY

● COMPUTER ENGINEERING ●

DEPARTMENT OF COMPUTER ENGINEERING ENGAGES WITH EXTERNAL STAKEHOLDERS FOR THE UPCOMING ACADEMIC TERM

The preparation process for the new academic year in the field of computer engineering is progressing rapidly. In order to enhance both the academic and professional development of its students, the department has taken a significant step by establishing collaborations with external stakeholders. In this context, comprehensive meetings were held with CİM Games and North Tech, two companies playing an active role in the technology and informatics sector. During the meetings, joint areas of collaboration were identified to ensure that computer engineering students are better aligned with current industry requirements, to strengthen practice-oriented educational processes, and to prepare students for future career opportunities. Representatives of the companies shared insights particularly on game technologies, software development, artificial intelligence applications, and hardware-based solutions. This interaction is expected to enable students to experience an education enriched not only with theoretical knowledge but also with real-world industry practices. Experts emphasize that such connections with the industry are among the strategic steps that will shape the future direction of computer engineering education by reinforcing university-industry collaboration. Consequently, opportunities for internships and project-based learning for students are expected to expand, while new research and applied project collaborations will emerge for academic staff. This initiative, taken in preparation for the upcoming academic term, will not only raise the overall quality of education but also contribute to strengthening the professional standing of graduates in the sector. The meetings conducted with external stakeholders are considered a crucial development, providing computer engineering students with the opportunity to closely follow the latest technological trends and to learn directly from industry representatives, thereby fostering the cultivation of more competent engineers for the future.

PROUD ACHIEVEMENT FROM THE DEPARTMENT OF INDUSTRIAL ENGINEERING!

Elif Sözeroğlu, our Industrial Engineering student from Istanbul Gelişim University's Faculty of Engineering and Architecture, graduated top of her class with a 3.75/4.00 GPA. She has made us all proud with her outstanding academic achievements.

In addition to her academic success, Elif Sözeroğlu, who completed a double major in Computer Engineering, has developed herself in various fields. Through internships and experience gained at various companies, she has progressed firmly into her engineering career.

We congratulate our dear student and wish her continued success throughout her life. We also thank her family for her support, our professors for their support, and her friends for their support.

We wholeheartedly congratulate Elif Sözeroğlu, our top student, and wish her continued success in her other undergraduate program, Computer Engineering!

● CIVIL ENGINEERING ●

PROF. ALYAA ABBAS AL-ATTAR, RECTOR OF NORTHERN TECHNICAL UNIVERSITY (IRAQ), VISITED OUR UNIVERSITY

The Department of Civil Engineering at Istanbul Gelisim University had the distinct honor of hosting Prof. Alyaa Abbas AL-Attar, Rector of Northern Technical University (Iraq), for a courtesy visit aimed at fostering academic collaboration and strategic dialogue between the two institutions.

During the visit, a wide range of academic cooperation opportunities were discussed, including the development of joint research projects, bilateral student and faculty exchange programs, and the organization of international symposia and workshops. The potential for interdisciplinary collaboration was also explored in detail, with emphasis on mutual interests in engineering education and innovation.

The visit also provided a platform to share comprehensive information about our university's academic vision, research infrastructure, and especially the undergraduate and graduate programs offered under the Faculty of Engineering, with a specific focus on the Department of Civil Engineering. Current research conducted in the field of civil engineering was introduced within the framework of our internationally accredited educational structure, certified by ABET, highlighting the department's commitment to global quality standards. In this context, future interdisciplinary and collaborative project opportunities were thoroughly discussed.

On the occasion of this visit, carried out in a spirit of mutual understanding and academic solidarity, we, as the Department of Civil Engineering at Istanbul Gelişim University, would like to express our sincere pleasure in welcoming Prof. Alyaa Abbas AL-ATTAR to our campus. We hope that the foundations laid during this meeting will soon transform into concrete academic and research outputs, particularly in the field of civil engineering and across other engineering disciplines.

"ABET ACCREDITATION PROCEDURES" WORKSHOP DELIVERED TO THE DELEGATION FROM NORTHERN TECHNICAL UNIVERSITY, IRAQ

A workshop titled "ABET Accreditation Procedures" was delivered by our Department Chair Asst. Prof. Ahmad Reshad NOORI to the academic delegation from the Department of Civil Engineering, Northern Technical University, Iraq.

The workshop provided detailed insights into our department's ABET accreditation process, including preparation stages, quality assurance steps, and the experiences gained throughout the process. Participants had the opportunity to learn about the contributions of accreditation to educational programs and its implementation procedures.

Sharing our department's experiences in the ABET accreditation process with international academic institutions represents an important step that not only strengthens collaborations but also contributes to the dissemination of academic quality standards.

NEWS FROM THE FACULTY

● CIVIL ENGINEERING ●

A NEW STEP IN THE ACADEMIC JOURNEY OF RES. ASST. BILGE SULTAN DEMİRTAŞ

One of our department's faculty members, Res. Asst. Bilge Sultan DEMİRTAŞ, has taken an important step in her academic career and will continue her professional journey as a research assistant at the Boğaziçi University Kandilli Observatory and Earthquake Research Institute.

Throughout her time in our department, she has consistently demonstrated strong academic work, dedication, and meaningful contributions to our students. We are confident that she will achieve further success and make significant contributions in her new position with her valuable expertise and experience.

On behalf of our department, we extend our gratitude and wish her the best in her new role.

RES. ASST. ŞEYHMUS CAN TUNÇ EMBARKS ON PHD STUDIES AT OHIO STATE UNIVERSITY

One of our department's faculty members, Res. Asst. Şeyhmus Can TUNÇ, has been accepted to the Ohio State University and will continue his academic career by pursuing his PhD studies there.

Throughout his time in our department, he has stood out with his academic efforts, dedication, and valuable contributions to our students. We are confident that the knowledge and experience he will gain at Ohio State University will contribute not only to his academic growth but also to the scientific productivity of our department.

We sincerely thank him for his efforts and wish him great success in this new academic journey.

NEWS FROM THE FACULTY

● ARCHITECTURE ●

MASTER'S JURY MEMBERSHIP

At the invitation of MELEK ELİF SOMER, one of our faculty members, İLKE CİRİTCİ, served as a jury member for HALAH ABDULRAHMAN HAMEED AL OMAIR, a graduate student at the Bahçeşehir University Department of Architecture, on his thesis, "Documentation Of The Westernizatıon Period In Iraqı Architecture (1920–1980): Building Materials And Building Components In The Example Of Baghdad"

WORKSHOP PARTICIPATION

Sümeyye Şahin – Participation in the Extended Reality (XR) and Phygital Cities Workshop

Sümeyye Şahin, a 3rd-year student in the Architecture Department at Istanbul Gelişim University, successfully completed the course titled "Extended Reality (XR) and Phygital Cities: Designing Hybrid Urban Experiences through Design Fiction," organized within the scope of the IPA Lesson: City School Planning Program by the Istanbul Planning Agency (IPA) of the Istanbul Metropolitan Municipality, in collaboration with Koç University KARMA Reality Laboratory.

Sümeyye Şahin took an active role in the course both as a participant and assistant. As part of the fieldwork conducted in the Tophane district, she participated in workshops focused on digital production and creative design. She approached urban experiences from multiple perspectives, developed various stakeholder personas, created experience maps, and carried out prototyping and visualization studies.

At the end of the course, she presented her imagined stakeholder personas, hybrid experiences, and the hybrid applications she designed for the near future of Istanbul. Through her dedicated contributions and successful participation, she was awarded a certificate of participation.

FACULTY OF ENGINEERING AND ARCHITECTURE

ACTUEL TOPICS IN ENGINEERING AND ARCHITECTURE

MONTHLY BULLETIN

AUGUST 2025

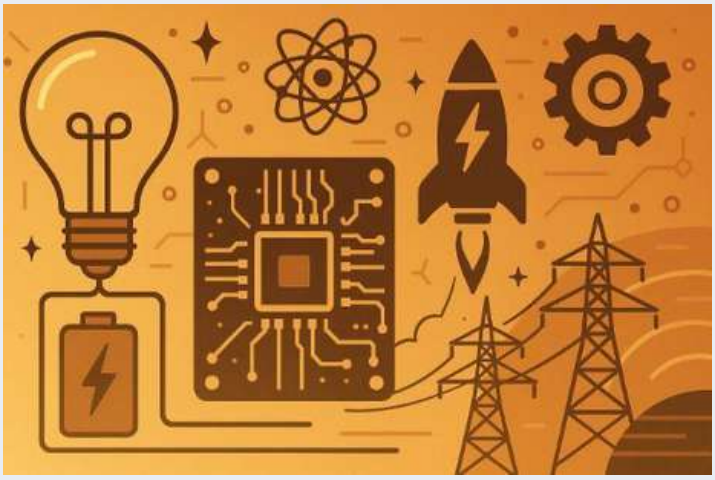
REVOLUTION IN QUANTUM COMPUTING: MAGIC STATE DISTILLATION FOR FAULT-TOLERANT COMPUTATION

An exciting development is unfolding in the world of computer engineering... Researchers have taken a groundbreaking step that may fundamentally transform the future of artificial intelligence hardware by introducing a pioneering architecture in the field of neuromorphic computing. This innovation enables the design of systems that more closely resemble the functioning of the human brain, operate with significantly greater energy efficiency, and replicate neural processes at the hardware level. In this study, a structure with near-zero net magnetization was achieved by utilizing GdCo (gadolinium–cobalt) ferrimagnetic alloys. Through this unique material, the movement of magnetic domain walls was employed to emulate the behavior of biological neurons and synapses. In doing so, neural mechanisms such as “leaky integration” and “winner-take-all,” which play a vital role in the natural functioning of the brain, were implemented directly within a hardware-based system. This architecture not only provided more realistic neural functionalities but also enabled a voltage-controlled computational process with extremely low energy consumption. Experts emphasize that this technology not only reduces hardware complexity but also introduces the capability of in-memory computing, which allows data to be processed within memory itself. This feature offers much faster and more efficient information processing compared to the traditional von Neumann architecture, where continuous data transfer leads to substantial energy loss. Experimental findings have revealed that this novel architecture consumes substantially less power than conventional CMOS-based systems while simultaneously offering high scalability. How, then, might this development shape our future? Expert projections are remarkably clear: in the coming years, artificial intelligence hardware will become increasingly aligned with the biological functioning of the brain. Its minimized energy consumption is expected to generate revolutionary solutions across numerous domains, ranging from autonomous vehicles and portable medical devices to smart city infrastructures and space technologies. Not only will massive supercomputers with high energy demands benefit from such advancements, but even small-scale devices in everyday life will gain the capacity to run advanced AI algorithms.

ACTUEL TOPICS IN ENGINEERING AND ARCHITECTURE

● ELECTRICAL AND ELECTRONICS ENGINEERING ●

TOUCHING THE FUTURE WITH ELECTRICAL AND ELECTRONICS ENGINEERING



Electrical and Electronics Engineering is a strategic discipline that builds the invisible infrastructure of the modern world. Traces of this engineering can be found in the uninterrupted communication of our mobile phones, the energy networks that illuminate our cities, and the advanced devices used in medicine.

The education provided in our department is not limited to lectures; it motivates our students to research, produce, and develop innovative solutions. Through advanced laboratory facilities, project-based courses, and collaborative work with industry, our students have the opportunity to put theory into practice.

Projects in critical areas such as embedded systems, communication technologies, artificial intelligence applications, renewable energy systems, and defense electronics create both scientific and industrial value. Our graduates take on leading roles in these fields, distinguishing themselves not only as engineers but also as leaders shaping the future.

Electrical and Electronics Engineering lies at the heart of technology and offers new opportunities every day. Today's students will be the visionary engineers who will design tomorrow's smart cities, sustainable energy systems, and advanced communication technologies.

● INDUSTRIAL ENGINEERING ●

A ROADMAP FOR INDUSTRIAL ENGINEERS SHAPING THE FUTURE

Industrial Engineering is a profession that plays an active role not only in the manufacturing and service sectors, but also in diverse fields such as healthcare, transportation, energy, IT, and sustainability. This department assigns students the responsibility of making systems more efficient, balanced, and people-centered. Today's students will be tomorrow's decision-makers and transformational leaders.

A few tips for future industrial engineers:

• Be Open to Continuous Learning: Technology is changing at a dizzying pace. Concepts such as artificial intelligence, machine learning, big data, and digital twins are shaping the future of our profession. Therefore, constantly keeping yourself up-to-date will make a difference in your career.

• Embrace Interdisciplinary Work: Industrial engineering lies at the intersection of different fields. An engineering vision blended with economics, psychology, computer science, and management knowledge will always add value to you.

• Strong Communication and Leadership: A good industrial engineer is not only someone who performs calculations, but also someone who leads teams and leads projects to success. Prioritize developing your communication and leadership skills early on.

• Gain Hands-On Experience: Consider internships and projects as opportunities to see the reflection of theoretical knowledge in the field. Each experience will prepare you one step further for the professional world.

• Be Ethical and Sustainability-Focused: Future engineers must consider not only efficiency but also social benefit and environmental impact. Acting with this awareness will provide you with a strong vision in both academic and professional life.

It's important to remember that Industrial Engineering is not just a profession; it's also key to the vision of making the world more livable, sustainable, and equitable. Small steps taken today will shape the major transformations of tomorrow.

● MECHATRONICS ENGINEERING ●

THE NEW FACE OF AUTOMATION: COLLABORATIVE ROBOTS (COBOTS) AND THE FUTURE OF INDUSTRY

As mechatronics engineering continues to combine machine, electronics, and software disciplines to design intelligent systems, one of the most dynamic topics in this field, collaborative robots (cobots), is revolutionizing industrial production. Unlike traditional industrial robots, cobots are designed to safely share the same workspace with humans, making automation more flexible, accessible, and efficient. So, what does this technology mean for mechatronics engineers, and what awaits us in the future?

Why Are Cobots So Important?

Traditional robots are excellent for high-speed, high-power, repetitive tasks but typically need to operate behind safety cages. Cobots, however, are changing this paradigm. Equipped with advanced sensors, force feedback mechanisms, and smart control algorithms, these robots can immediately stop or limit their force upon contact with a human. This feature allows humans and machines to work together on the same task: humans utilize problem-solving, adaptation, and fine motor skills, while the cobot undertakes strenuous, dangerous, or repetitive jobs. This collaboration significantly increases both efficiency and workplace ergonomics.

Image 1: A cobot working safely alongside an operator on a production line.

Opportunities for Mechatronics Engineers

The rise of cobot technology opens exciting new doors for mechatronics engineers:

- Design and Integration: Innovative mechanical and electronic designs are required to make cobots more compact, lightweight, and user-friendly.

● MECHATRONICS ENGINEERING ●

- Smart Control Systems: Developing advanced control algorithms that understand human movement, predict intentions, and react accordingly is critically important. This involves a wide range of studies from PID control to AI-based models.

- Sensor Fusion and Perception: The integration of data from cameras, laser scanners (LiDAR), and force/torque sensors (sensor fusion) is necessary for cobots to perceive their environment in 3D and interact safely with humans.

Image 2: Cobots complement human abilities in tasks requiring precision, such as delicate assembly and quality control.

- Human-Machine Interfaces (HMI): Designing intuitive and interactive interfaces (e.g., teaching by physically guiding the robot arm) is a major research area, replacing complex programming languages to allow operators to easily program cobots.

Future Perspective: Towards Industry 5.0

Cobots are one of the key technologies driving us beyond Industry 4.0 towards Industry 5.0, where human-centric production is at the core. In the future, cobots are expected to become even "smarter" with artificial intelligence and machine learning, performing tasks learned from human operators more efficiently. This technology will enable the widespread adoption of automation not only in large factories but also in small and medium-sized enterprises (SMEs), laboratories, the healthcare sector, and even the service industry.

In conclusion, collaborative robots are a field that transforms the theoretical knowledge of mechatronics engineering into a tangible product, shaping the future. Developments in this area make production processes safer and more efficient, combining human creativity and problem-solving ability with the power of technology.

DATA ENGINEERING: THE ERA OF "DATA MESH" AND REAL-TIME DATA PRODUCTS

In today's data-intensive world, the traditional, centralized data management approaches of organizations are confronting significant challenges in the face of increasing data volume and complexity. Although monolithic architectures like data warehouses and data lakes aim to collect all data in a single hub, this situation often creates bottlenecks for central data teams and slows down data access for business units. As a solution to these inefficiencies, Data Mesh has been developed as a new socio-technical paradigm that introduces a decentralized, distributed perspective to data engineering. At the core of this approach lies the principle of transferring data ownership from a central team to the business domains that produce the data and best understand its context.

The Data Mesh philosophy is built on two main pillars. The first is the treatment of data as a "product." According to this model, each business domain is responsible for delivering its data not merely as a byproduct, but as a clean, accessible, and documented product that other units within the organization can use with confidence and ease. The second pillar is the "self-serve data infrastructure," which prevents this distributed structure from descending into uncontrolled chaos. A central platform team offers the necessary infrastructure and tools as a service, enabling domain teams to develop their own data products in a standard and governance-compliant manner. In this way, a balance is struck between autonomy and centralized governance.

In conclusion, Data Mesh is not just a technological architectural shift, but also a fundamental cultural transformation regarding data and data ownership. It lays a highly suitable foundation for modern applications, where real-time data streams are gaining importance over batch processing. By distributing data responsibility to the grassroots, this model enhances organizational agility and elevates data quality, allowing institutions to derive value from data more quickly and effectively and thus placing itself at the center of modern data strategies.

FACULTY OF ENGINEERING AND ARCHITECTURE

ACADEMIC AND SCIENTIFIC ACTIVITIES

MONTHLY BULLETIN

AUGUST 2025

ACADEMIC AND SCIENTIFIC ACTIVITIES

"At the ceremony held in the Dean's Office on August 29, 2025, Prof. Dr. Bayram ÜNAL, a faculty member of the Department of Electrical and Electronics Engineering, assumed office as the new Dean of our Faculty. We congratulate him and wish him success in his new position."

Faculty of Engineering and Architecture

ACADEMIC AND SCIENTIFIC ACTIVITIES

ARCHITECTURE

The article titled “Endüstri Mirası Yapıların Yeniden İşlevlendirilmesi; Karar Alma ve Model Oluşturmada Yerel Halkın Katılımının Önemi”, co-authored by Assoc. Prof. Dr. İlke CİRİTCİ, one of our faculty members in the Department of Architecture, and her graduate student İbrahim GEDİK, has been published.

Access link:
https://dergipark.org.tr/tr/pub/yenifikirjournal/issue/94045/1658515

Gedik, İ., & Ciritci, İ. (2025). Endüstri Mirası Yapıların Yeniden İşlevlendirilmesi; Karar Alma ve Model Oluşturmada Yerel Halkın Katılımının Önemi. Yeni Fikir Journal, 17(34), 57–65. https://doi.org/10.57205/yenifikirjournal.1658515

The article titled “Yerel-Kırsal Kalkınmaya Katkı Sağlaması Açısından Endüstriyel Mirasın Araç Olarak Kullanılması”, co-authored by Assoc. Prof. Dr. İlke CİRİTCİ, one of our faculty members in the Department of Architecture, and her graduate student Abdullah Engin KOŞAR, has been published.

Access link:
https://dergipark.org.tr/tr/pub/yenifikirjournal/issue/94045/1639553

Koşar, A. E., & Ciritci, İ. (2025). Yerel-Kırsal Kalkınmaya Katkı Sağlaması Açısından Endüstriyel Mirasın Araç Olarak Kullanılması. Yeni Fikir Journal, 17(34), 27–37. https://doi.org/10.57205/yenifikirjournal.1639553

The article entitled “Adaptive Reuse of Historical Buildings Through Cultural Heritage Conservation: The Warehouse of Sirkeci Train Station”, authored by Assist. Prof. Semih G. Yıldırım (PhD) and Assoc. Prof. İlke Ciritci (PhD) from the Department of Architecture, has been published in New Design Ideas.

The article entitled “Integration of Natural and Artificial Lighting in Office Spaces to Promote Sustainability”, authored by Nahid Babaei and Assist. Prof. Semih G. Yıldırım (PhD) from the Department of Architecture, has been published in the International Journal of Engineering Technologies. The article was produced from the master’s thesis of the first author, conducted under the supervision of the second author.

ACADEMIC AND SCIENTIFIC ACTIVITIES

● ARCHITECTURE ●

Asst. Prof. Dr. Oluwagbemiga Paul Agboola, co-authored by Dr. Yassin, Y.N., published a Scopus-indexed 'Book Chapter' entitled 'AI Applications in Education: Enhancing Human Creativity Through Collaborative Design. In: Uden, L., Ting, IH. (eds) Knowledge Management in Organisations. KMO 2025. Communications in Computer and Information Science, Vol 2563. Pages 45-69. Springer. Cham.
Publication link: https://doi.org/10.1007/978-3-031-95901-1_4
About the publication: The swift incorporation of artificial intelligence (AI) into creative fields has brought about significant opportunities and challenges, especially in design and the creativity of human learning. This publicatıon explores the changing dynamics between AI-generated design and human creative processes, highlighting the interaction between technological advancements and human artistic insight. The findings shed light on the elements that facilitate effective collaboration between AI and human designers, such as the significance of user-friendly interfaces, adaptable algorithms, and ethical considerations. This research adds to the broader discussion about the future of creativity in a world influenced by AI by promoting a collaborative relationship between human and machine intelligence.

Asst. Prof. Dr. Oluwagbemiga Paul Agboola, co-authored by J. N. Uwa, published a Scopus-indexed 'Book Chapter' entitled 'Applications of Immersive Technology in Building Construction Phase: Fostering Sustainability in the Global Context. Book Chapter 8: In Applications of Immersive Technology in Architecture, Engineering and Construction: A Handbook. Edited by Prabhakaran, A., Mahamadu, A.-M., Booth, C.A., & Manu, P. (Eds.). (2025). (1st ed.). eBook ISBN: 9781032662909. Taylor & Francis Ltd. Pp 1-320.
Publication link: https://doi.org/10.1201/9781032662909-10
About the publication: The research addresses the critical importance of adopting sustainable practices in the construction industry, particularly in light of environmental degradation caused by rapid urbanisation, globalisation, and climate change. The main argument raised by the chapter is that immersive technology, including Virtual Reality (VR), Augmented Reality (AR), and Building Information Modelling (BIM), can play a transformative role in promoting sustainability and effective environmental management practices within the construction sector. The study underscores the critical importance of widespread adoption and utilisation of immersive technology to foster sustainable construction practices globally, highlighting its potential to mitigate environmental degradation and promote environmentally conscious decision-making throughout the construction industry.

Asst. Prof. Dr. Oluwagbemiga Paul Agboola, co-authored by Assoc Prof. Dr. İrgin Uzun, T., Assoc. Prof. Dr. Soydaş Çakır, published a Scopus-indexed 'Journal' entitled 'Critical Spatial Reasoning in Designing: A Visitor's Centre Relating to Beylikdüzü Archaeological Site, Istanbul. New Design Ideas, 9(2), 382-409.
Publication link: https://doi.org/10.62476/ndi.92382
About the publication: Architectural Design Studio helps students develop the skills to abstract, conceptualise and analyse space. This paper addresses the process of developing critical thinking and design, focusing on the central project, relating to Beylikdüzü Archaeological Excavation Site in Istanbul, Turkiye. This project provides the opportunity for students to explore the context, restrictions of the site and metaphors in design while operating more as an incubator for collaboration than a formal studio course. The study's findings show integrated and innovative solutions that combined the welcome centre with the archaeological area, helping to enrich the visitor experience. Cultural preservation and taking into consideration the value of archaeological sites to integrate them with minimum damage in new architectural interventions is another aspect seen through this project.

• TAG •

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