

FEA

MONTHLY BULLETIN

JULY 2026



ISTANBUL GELİŞİM UNIVERSITY FACULTY OF ENGINEERING AND ARCHITECTURE SENT OFF ITS GRADUATES WITH A CEREMONY

Istanbul Gelişim University (IGU) Faculty of Engineering and Architecture held its 2025–2026 Academic Year graduation ceremony on July 21, 2026, at Sinan Erdem Sports Arena. Graduates from the Faculty's nine departments — Computer Engineering, Electrical-Electronics Engineering, Industrial Engineering, Civil Engineering, Mechatronics Engineering, Architecture, Aircraft Engineering, Software Engineering, and Basic Sciences — received their diplomas at the ceremony, which was attended by graduates, their families, and faculty members.

The ceremony, which brought together thousands of graduates and their loved ones, concluded with a cap-tossing ceremony. Having gained theoretical and practical knowledge throughout their undergraduate education, the students earned the right to take their first steps into professional life in the fields of engineering and architecture.

The Faculty's nine departments offer students education opportunities across various disciplines, including analytical thinking, design, data analytics, optimization, artificial intelligence applications, software development, structural design, and aviation technologies. Some of the Faculty's departments hold international accreditation from ABET EAC (Accreditation Board for Engineering and Technology).

During the ceremony, it was emphasized that the graduates had reaped the rewards of years of academic effort, and faculty members celebrated this achievement together with their students.

Istanbul Gelişim University Faculty of Engineering and Architecture congratulates its 2025–2026 graduates and wishes them success in their careers.



CONTENTS

1 NEWS FROM THE FACULTY

Asst. Prof. Didem Yılmaz Served on a Ph.D. Thesis Defense Committee

Asst. Prof. Didem Yılmaz Served on a Master's Thesis Defense Committee

Assoc. Prof. Dr. Engin Erbayrak to Take Part in an EU-Supported R&D Project

Civil Engineering Students Celebrated Their Graduation

2 CURRENT TOPICS IN ENGINEERING AND ARCHITECTURE

Asst. Prof. Didem Yılmaz Served on a Ph.D. Thesis Defense Committee

Asst. Prof. Didem Yılmaz Served on a Master's Thesis Defense Committee

3 ACADEMIC AND SCIENTIFIC ACTIVITIES

- 1 Asst. Prof. Didem Yılmaz Served on a Ph.D. Thesis Committee 6
- 2 Asst. Prof. Didem Yılmaz Served on a Master's Thesis Committee 7
- 3 The Unseen Power in the Supply Chain: Demand Forecasting Revolutionizing Software Architecture: WASM and Edge Runtime 8
- 4 Dr. Turgut Şahin Researcher in Nanomaterials Project 10
- 5 Dr. Turgut Şahin on Qualifying Exam and Thesis Committees 12
- 6 Asst. Prof. Nurdan Tuysuz's Study Published in Q1 Journal 13
- 7 Prof. Dr. Tarık Çakar's Study on Renewable Energy Published 13
- 8 Asst. Prof. Nurdan Tüysüz Presented Research at INFUS 2026 14
- 9 Asst. Prof. Mert Yıldırım Presented Paper at ICENSTED 2026 15
- 10 Asst. Prof. Binnur Akıf Presented Research at YAEM 2026 15
- 11 Res. Asst. Duygu Tüylü's Book Chapter Published by Cambridge 16
- 12 Asst. Prof. Mustafa Yurdabağ Apak's Article Published (Civil Eng.) 17
- 13 Asst. Prof. Mustafa Yurdabağ Apak's Article Published (Polymers) 17
- 14 Asst. Prof. Mustafa Yurdabağ Apak's Article Published (Pavement) 18
- 15 Asst. Prof. Mustafa Yurdabağ Apak's Paper at Int'l Congress 19
- 16 Res. Asst. Tunay Acıman's Article of the Month 19
- 17 Assoc. Prof. Haydar Kepekçi at Int'l Symposium 20
- 18 Asst. Prof. Türkoğlu and Oluwagbemiga's Article Published 21
- 19 Basic Sciences Faculty Member Adds 15 New Publications 22

IGU FEA

ARTIFICIAL
INTELLIGENCE

NEWS FROM THE FACULTY

TECHNOLOGY

SCIENCE

INNOVATION

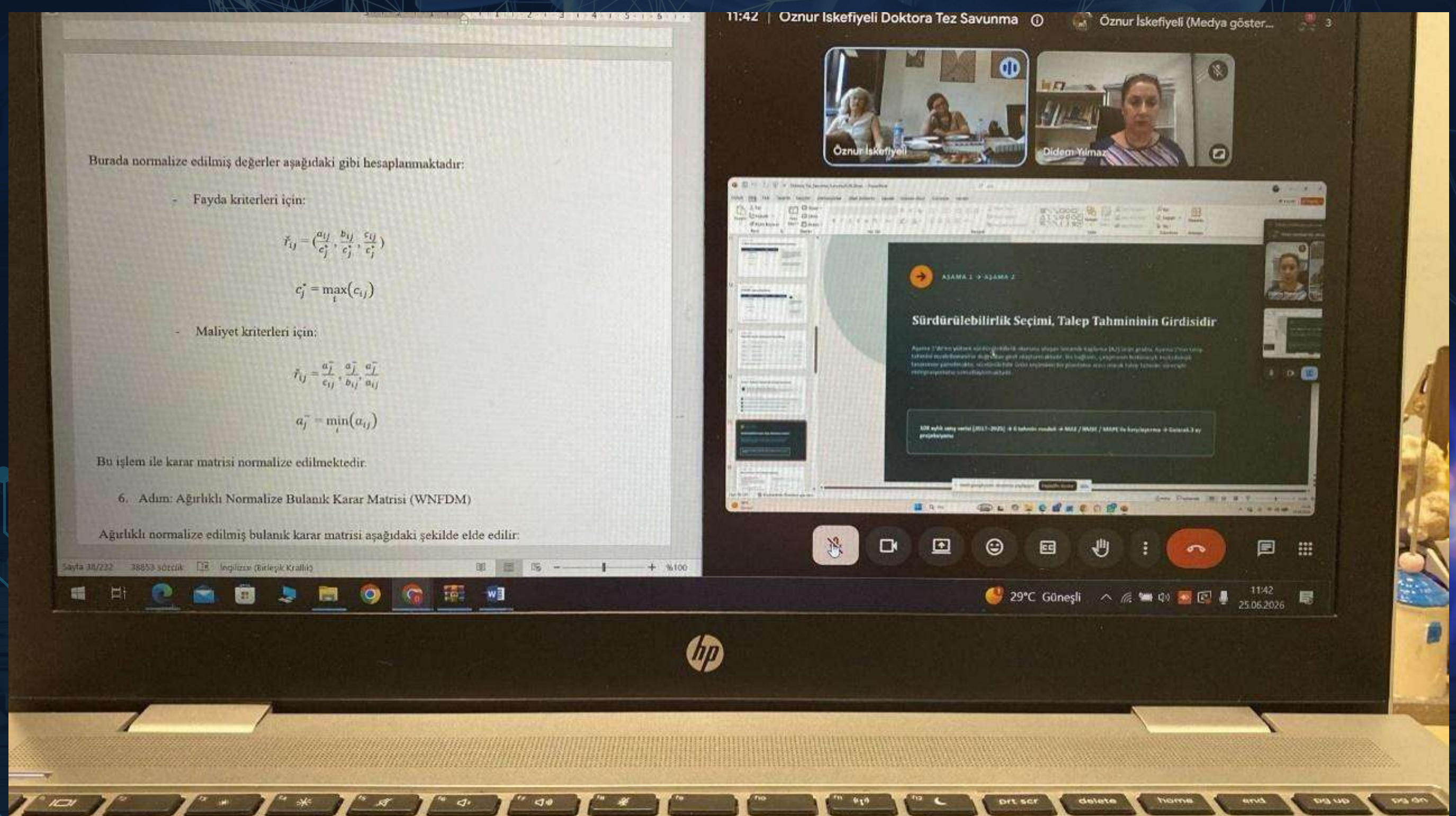
Powering the Future with Technology

**ASST. PROF. DIDEM YILMAZ SERVED ON A PH.D.
THESIS DEFENSE COMMITTEE**

Asst. Prof. Didem Yilmaz, a faculty member of the Department of Industrial Engineering, Faculty of Engineering and Architecture at Istanbul Gelisim University, served as a jury member for a Ph.D. thesis defense conducted at the Department of Industrial Engineering, Graduate School of Natural and Applied Sciences, Kocaeli University.

The doctoral dissertation entitled “The Impact of Artificial Intelligence on Demand Forecasting and Demand Planning in the Chemical Industry,” prepared by Öznur İskefli, was evaluated by the thesis committee and was successfully approved.

We congratulate Asst. Prof. Didem Yilmaz on her valuable academic contributions and wish her continued success in her academic endeavors.



ASST. PROF. DIDEM YILMAZ SERVED ON A MASTER'S THESIS DEFENSE COMMITTEE

Asst. Prof. Didem Yilmaz, a faculty member of the Department of Industrial Engineering, Faculty of Engineering and Architecture at Istanbul Gelisim University, served as a jury member for a master's thesis defense conducted at the Department of Industrial Engineering, Graduate School of Natural and Applied Sciences, Kocaeli University.

The master's thesis entitled "Predicting Employee Turnover in the Automotive Industry: A Machine Learning-Based Application," prepared by Beyza Solmaz, was evaluated by the thesis committee and was successfully approved.

We congratulate Asst. Prof. Didem Yilmaz on her valuable academic contributions and wish her continued success in her academic endeavors.



MECHATRONICS ENGINEERING

ASSOC. PROF. DR. ENGIN ERBAYRAK TO TAKE PART IN AN EU-FUNDED R&D PROJECT

Here's the English version:

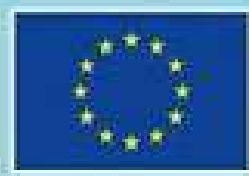
Assoc. Prof. Dr. Engin ERBAYRAK, a faculty member at Istanbul Gelişim University's Faculty of Engineering and Architecture, Department of Mechatronics Engineering, will take part in an international R&D project supported under the European Union's HORIZON-WIDERA programme.

The project aims to develop innovative cable technologies for fast-charging systems for electric vehicles. Within the project, Assoc. Prof. Dr. Engin ERBAYRAK will serve as Senior Researcher and Commercialization and Dissemination Leader. He will contribute to efforts aimed at increasing the academic and industrial impact of the research carried out under the project, as well as to activities focused on disseminating and commercializing its outcomes.

We congratulate our faculty member and wish him great success in his work on this significant international project.



Bu proje Avrupa Birliği ve Türkiye Cumhuriyeti tarafından finanse edilmektedir.



EUROPEAN UNION

#HorizonEU

HORIZON
EUROPE



Hop on facility

CIVIL ENGINEERING STUDENTS CELEBRATED THEIR GRADUATION

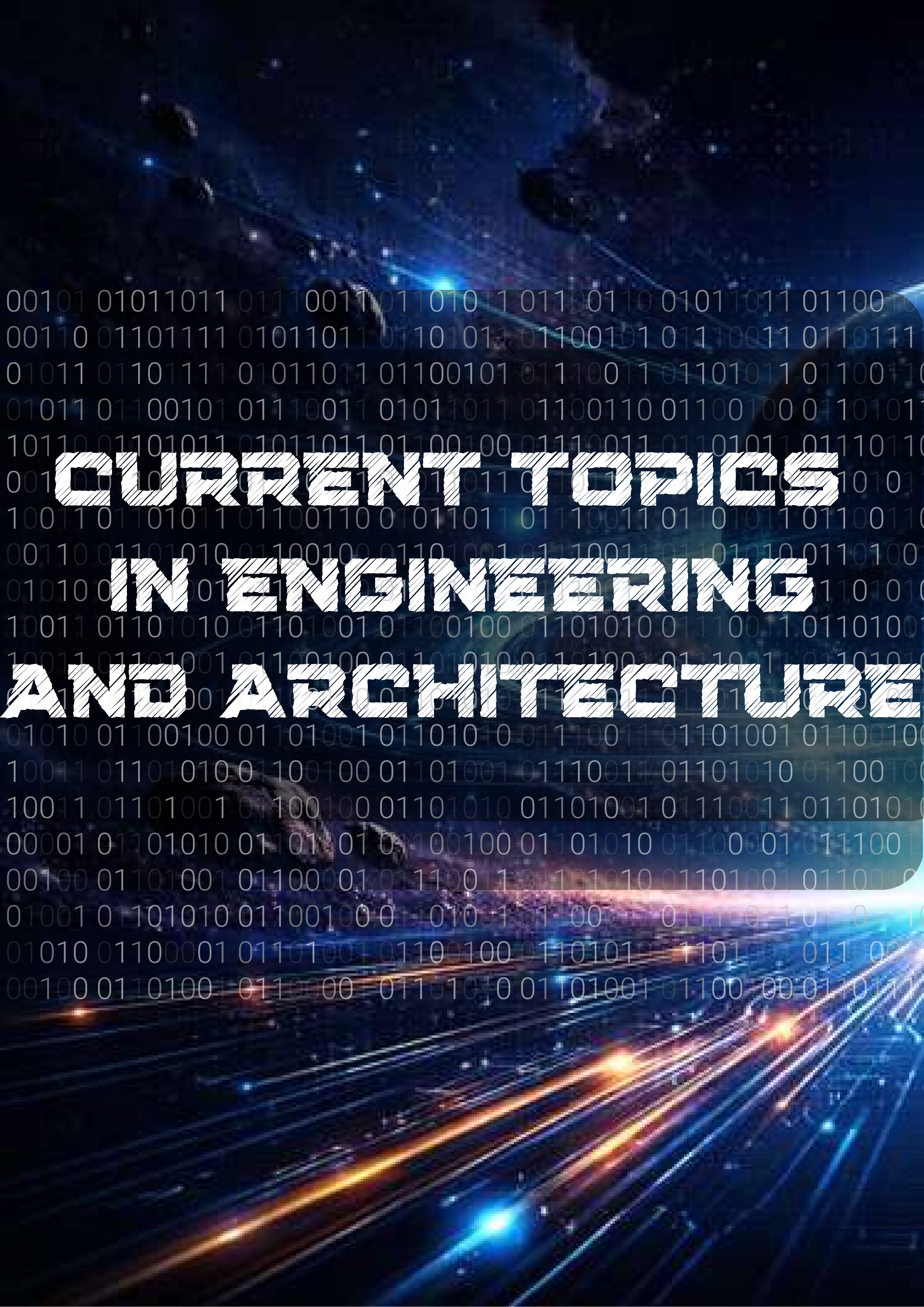
Students of the Civil Engineering Department celebrated their graduation with great pride and joy as part of the Istanbul Gelisim University 2026 Graduation Ceremony. The ceremony for the Faculty of Engineering and Architecture graduates was held on 21 July 2026 at Sinan Erdem Sports Hall with the participation of graduates, their families, and academic staff.

After successfully completing a challenging and rewarding academic journey, our students received their diplomas and took the first step toward their professional careers. The graduation ceremony provided memorable moments as graduates celebrated this significant milestone together with their families and faculty members.

We believe that the knowledge and experience our graduates have gained throughout their education will guide them toward successful professional careers and enable them to make valuable contributions to the engineering profession and society.

The Civil Engineering Department congratulates all of its graduates and wishes them a future filled with success, happiness, and professional achievement.

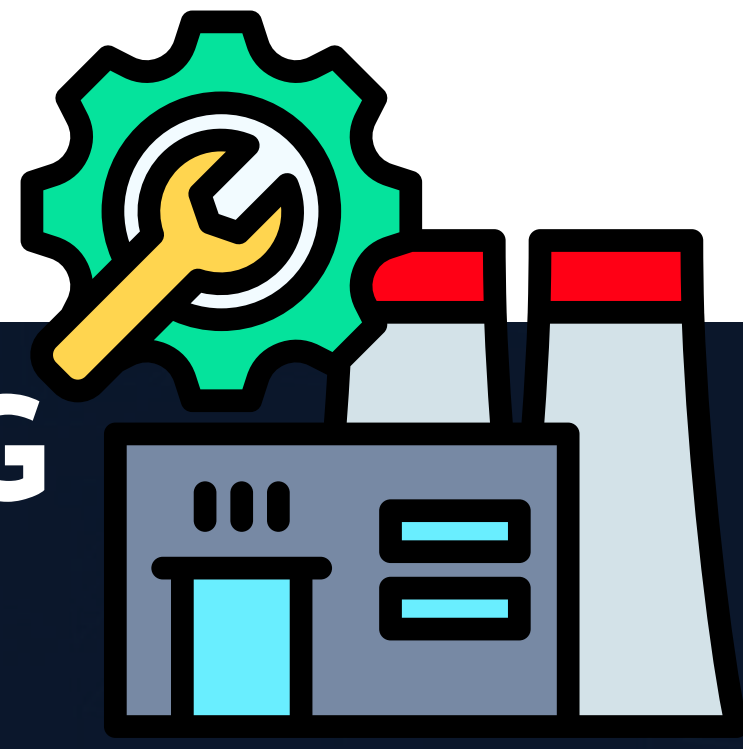




CURRENT TOPICS IN ENGINEERING AND ARCHITECTURE

INDUSTRIAL ENGINEERING

Res. Asst. Duygu TÜYLÜ



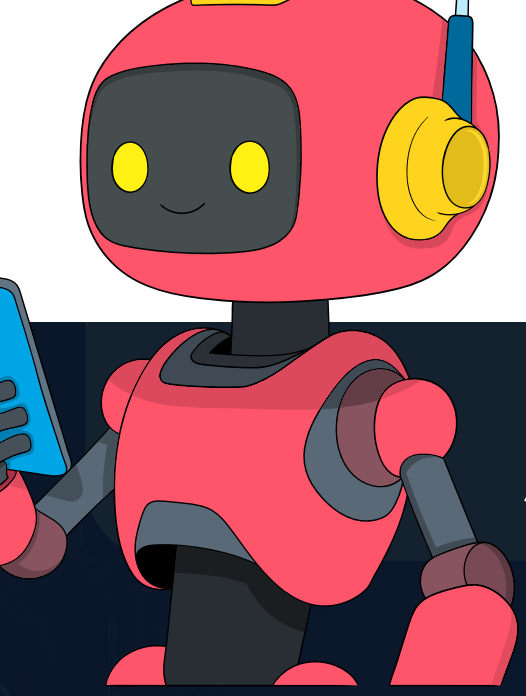
THE UNSEEN POWER IN THE SUPPLY CHAIN: WHY IS DEMAND FORECASTING SO IMPORTANT?

In today's competitive business world, delivering the right product to the customer at the right time and in the right quantity has become a strategic advantage for businesses. At the heart of this success lies demand forecasting. Demand forecasting, one of the most important areas of study in Industrial Engineering, forms the basis of data-driven decision-making processes that enable businesses to look to the future with more confidence.

Demand forecasting aims to predict future demand by analyzing many different data points such as past sales data, seasonal changes, economic indicators, and customer behavior. Thanks to accurate forecasts, excess inventory and product shortages are reduced, production plans can be prepared more effectively, and the supply chain can be managed more efficiently.

In addition to traditional statistical methods, artificial intelligence and machine learning-based forecasting models have also been widely used in recent years. These technologies can reveal complex demand patterns by analyzing large datasets and significantly increase forecasting accuracy. Data-driven demand forecasting systems are among the critical tools that increase the competitiveness of businesses, especially in the retail, e-commerce, healthcare, automotive, and electronics sectors. Industrial engineers not only forecast demand but also integrate these forecasts with production planning, inventory management, capacity planning, and logistics processes, helping businesses utilize their resources in the most efficient way. This reduces operational costs and increases customer satisfaction.





SOFTWARE ENGINEERING

Res. Asst. Enis ÖZBEK

REVOLUTIONIZING SOFTWARE ARCHITECTURE IN 2026: DETERMINISTIC WEBASSEMBLY AND EDGE RUNTIME OPERATIONS

By 2026, a fundamental paradigm shift has taken place in modern software architecture, moving performance from "centralized cloud computing" to "distributed, deterministic edge execution." WebAssembly at the Edge (WASM), acting as the next evolution of serverless infrastructure, has become an ecosystem capable of running heavy backend logic, compiled algorithms, and complex systems close to the end user with near-zero cold start overhead. This transformation represents a shift from traditional containerized microservices to highly isolated, lightweight, and language-agnostic edge runtime environments.

Industry reports and performance benchmarks clearly demonstrate the massive impact of this architectural shift on latency and infrastructure efficiency. According to current backend engineering research, enterprise teams that have migrated critical API routes and real-time data processing pipelines to WebAssembly edge runtime environments have reduced global end-to-end latency by over 55%. Furthermore, the operational burden of managing heavy server infrastructure and mitigating cold start issues has dropped by 40%, allowing software teams to redirect significant resources toward core system design and feature scalability. Running high-performance logic at the edge without compromising security boundaries has become one of the cornerstones of modern software engineering in distributed, high-concurrency systems.

Despite these architectural advantages, edge-native deterministic execution brings with it a critical technical bottleneck: Distributed State Management and Data Consistency. While running stateless WASM modules at the edge offers exceptional execution speed, maintaining ACID compliance and low-latency state synchronization across globally distributed edge nodes poses serious challenges. Current system analyses show that unmanaged state replication across edge nodes can lead to race conditions, eventual consistency delays, and data synchronization failures under high write loads — creating the structural risk of "an ultra-fast execution layer running on top of unsynchronized data stores."

As a result, 2026 stands as a critical year for distributed systems engineering that balances ultra-low-latency execution with robust state architecture. Current industry trends indicate that the role of backend engineers and system architects is shifting from traditional server orchestration to "edge ecosystem curation." In this role, engineers are responsible for configuring finely tuned WASM modules, managing data pipelines from edge to core, and ensuring strict memory safety across isolated sandboxes. Senior software engineering in this era will be defined by the ability to blend the raw execution speed offered by WebAssembly edge runtime environments with the uncompromising data consistency demanded by mission-critical applications.





ACADEMIC AND SCIENTIFIC ACTIVITIES

ELECTRIC ELECTRONICS ENGINEERING

ASST. PROF. TURGUT ŞAHİN SERVES AS A RESEARCHER IN A NANOMATERIALS PROJECT SUPPORTED BY BURSA ULUDAĞ UNIVERSITY

Asst. Prof. Turgut Şahin, a faculty member of the Faculty of Engineering and Architecture, is serving as a researcher on the project titled "Growth and Characterization of Ni and Cr Nanowires within Anodic Aluminum Oxide Templates via Electrodeposition," supported by Bursa Uludağ University's Scientific Research Projects (BAP) Coordination Unit and led by Assoc. Prof. Mürşide Hacıismailoğlu. Conducted in the field of nanotechnology and materials science, the project aims to grow nickel (Ni) and chromium (Cr) nanowires within anodic aluminum oxide (AAO) templates using electrodeposition, and to characterize the resulting nanostructures in detail through various techniques. The findings are expected to contribute to next-generation nanomaterial solutions applicable in fields such as sensor technologies, magnetic applications, corrosion-resistant coatings, and energy storage.

This collaboration, which brings together researchers from different universities, is also significant in strengthening inter-institutional scientific interaction. We congratulate Asst. Prof. Turgut Şahin on this valuable project work.



ELECTRIC ELECTRONICS ENGINEERING

ASST. PROF. TURGUT ŞAHİN SERVED ON A DOCTORAL QUALIFYING EXAM COMMITTEE AT BURSA ULUDAĞ UNIVERSITY

Asst. Prof. Turgut Şahin served as a jury member at the doctoral qualifying exam of Onur Başlı, a PhD student in the Physics Department at Bursa Uludağ University's Graduate School of Natural and Applied Sciences.

We congratulate Asst. Prof. Turgut Şahin for his contribution to graduate education processes and wish him continued success in his academic work.

ASST. PROF. TURGUT ŞAHİN SERVED ON TWO DOCTORAL THESIS MONITORING COMMITTEES AT BURSA ULUDAĞ UNIVERSITY

Asst. Prof. Turgut Şahin has served on doctoral thesis monitoring committees conducted within Bursa Uludağ University's Graduate School of Natural and Applied Sciences.

In this context, he took part in the monitoring committees for Elif Subaşı's thesis titled "Production and Characterization of Doped Cu_2O Semiconductor Material via Electrodeposition" and Elif Uzak Çebi's thesis titled "Investigation of the Magnetic and Magnetoresistance Properties of Composite Structures Containing Polyaniline and Ferromagnetic Particles Produced by Electrodeposition," contributing to the evaluation of these studies.

We congratulate Asst. Prof. Turgut Şahin for his academic contributions and wish him continued success.



INDUSTRIAL ENGINEERING

Asst. Prof. Nurdan Tuysuz's Study Published in the Q1 Journal of Enterprise Information Management

A research article authored by Asst. Prof. Nurdan Tuysuz, a faculty member of the Department of Industrial Engineering at Istanbul Gelisim University, entitled "Sustainable Technology Selection Using Decomposed Spherical Fuzzy Z AHP and VIKOR Methodology," has been published in the Q1-ranked, SCI-indexed Journal of Enterprise Information Management. The study introduces a novel decision-making framework that integrates the Decomposed Spherical Fuzzy Z-AHP and Decomposed Spherical Fuzzy Z-VIKOR methodologies for sustainable vehicle engine technology selection. By incorporating uncertainty, reliability, and consistency into decision-makers' evaluations, the proposed approach offers a comprehensive fuzzy decision-making model and demonstrates its effectiveness through a real-world sustainability application.

We congratulate Asst. Prof. Nurdan Tuysuz on this outstanding academic achievement and wish her continued success in her future scientific endeavors.

Sustainable technology selection using decomposed spherical fuzzy Z AHP and VIKOR methodology

Nurdan Tuysuz

*Department of Industrial Engineering, Istanbul Gelisim University,
Istanbul, Türkiye, and*

Fatih Tuysuz

*Department of Industrial Engineering, Istanbul University-Cerrahpaşa,
Istanbul, Türkiye*

Journal of
Enterprise
Information
Management

Received 20 January 2026
Revised 23 April 2026
27 June 2026
Accepted 1 July 2026



INDUSTRIAL ENGINEERING

Prof. Dr. Tarık Çakar's New Study on Renewable Energy Published

A research article entitled “An Interval Type-2 Fuzzy Analytic Hierarchy Process Approach for Selection of Renewable Energy Source,” co-authored by Prof. Dr. Tarık Çakar, a faculty member of the Department of Industrial Engineering at Istanbul Gelisim University, has been published in the Journal of Engineering Sciences of Niğde Ömer Halisdemir University.

The study employs the Interval Type-2 Fuzzy Analytic Hierarchy Process (IT2F-AHP) to more effectively model uncertainty in the selection of renewable energy sources. Within a multi-criteria decision-making framework, renewable energy alternatives—including solar, wind, biomass, and hybrid energy systems—were systematically evaluated.

We congratulate Prof. Dr. Tarık Çakar on this significant academic achievement and wish him continued success in his future scholarly endeavors.



INDUSTRIAL ENGINEERING

Asst. Prof. Nurdan Tüysüz Presented Her Research to the International Scientific Community at INFUS 2026

The full paper entitled “Novel Hesitant Fuzzy Linguistic Term Sets Based Full Consistency Method and an Application to the Evaluation of the Factors Affecting MCDM Method Selection,” authored by Asst. Prof. Nurdan Tüysüz, a faculty member of the Department of Industrial Engineering at Istanbul Gelisim University, was presented at The International Conference on Intelligent and Fuzzy Systems (INFUS 2026), held at Istanbul Technical University between July 7–9, 2026.

The full paper will be published by Springer in the conference proceedings.

We congratulate Asst. Prof. Nurdan Tüysüz on this significant academic achievement and wish her continued success in her future scholarly endeavors.



INDUSTRIAL ENGINEERING

Asst. Prof. Mert Yildirim Presented an Oral Paper at ICENSTED 2026

Asst. Prof. Mert Yildirim, a faculty member of the Department of Industrial Engineering, Faculty of Engineering and Architecture at Istanbul Gelisim University, participated in the 3rd International Conference on Engineering, Natural Sciences, and Technological Developments (ICENSTED 2026), where he delivered an oral presentation entitled “The Influence of Fiber Stacking Sequence on the Tensile and Flexural Properties of Natural Fiber/Glass Fiber Hybrid Composites.”

The study investigated the effects of fiber stacking sequence on the tensile and flexural properties of natural fiber/glass fiber-reinforced hybrid composites. By combining the environmentally friendly, lightweight, and cost-effective characteristics of natural fibers with the superior mechanical strength of glass fibers, the research aimed to contribute to the development of sustainable, high-performance hybrid composite materials.

The findings demonstrated that the fiber stacking sequence plays a decisive role in determining the mechanical performance of hybrid composites. The results are expected to provide valuable insights for the design of more efficient and sustainable hybrid composite materials with potential applications in the automotive, aerospace, construction, and other engineering sectors.



INDUSTRIAL ENGINEERING

Asst. Prof. Binnur Akıf and Student İrem Nur Günel Presented Their Research at YAEM 2026

The conference paper entitled “Life Cycle Assessment of LPG and Photovoltaic Solar Energy Systems: Logistics Emission Optimization through the Capacitated Vehicle Routing Problem,” authored by Asst. Prof. Binnur Akıf, a faculty member of the Department of Industrial Engineering at Istanbul Gelisim University, and her student İrem Nur Günel, was presented at the 45th National Operations Research and Industrial Engineering Congress (YAEM 2026). We congratulate Asst. Prof. Binnur Akıf and her student İrem Nur Günel on this significant academic achievement and wish them continued success in their future academic endeavors.

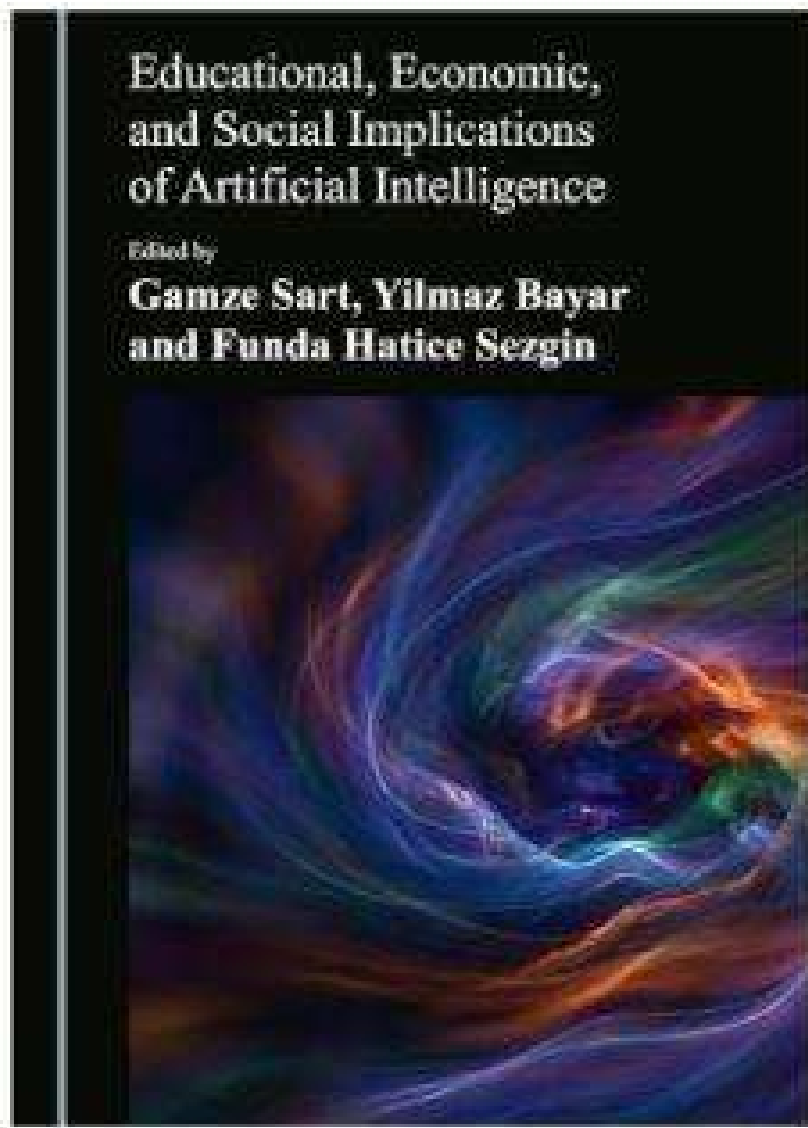


INDUSTRIAL ENGINEERING

Ress. Asst. Duygu Tüylü's Book Chapter Published by Cambridge

The book chapter entitled “Analyzing the Use of Artificial Intelligence Tools in Academic Research among Graduate Students,” authored by Research Assistant Duygu Tüylü from the Department of Industrial Engineering at Istanbul Gelisim University, has been published in the international academic book Educational, Economic, and Social Implications of Artificial Intelligence, published by Cambridge.

We congratulate Research Assistant Duygu Tüylü on this significant academic achievement and wish her continued success in her future scholarly endeavors.

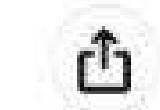


Educational, Economic, and Social Implications of Artificial Intelligence

by Gamze Sart (Editor), Yilmaz Bayar (Editor), Funda Hatice Sezgin (Editor) | Format: Hardcover

✓ Savings Pre-order Price Guarantee. [Terms](#)

Remarkable progress has been achieved in the field of Artificial Intelligence in recent years and AI applications have begun to be used in a wide range of areas including education, health, economic applications, and scientific studies. In this regard, Artificial Intelligence can make a contribution to education, business, and economic performance through multiple perspectives such as personalized learning experiences, enhanced teaching strategies, labour productivity, improved customer engagement, data analysis, and strategic recommendations. Therefore, this book explores the educational, economic, and social implications of rapidly spreading Artificial Intelligence from a global perspective. In conclusion, the results and recommendations by the book will be useful for both researchers and policy-makers to benefit positively from the use of Artificial Intelligence.



CIVIL ENGINEERING

CIVIL ENGINEERING FACULTY MEMBER ASST. PROF. MUSTAFA YURDABAL APAK'S ARTICLE PUBLISHED IN A Q1-CATEGORY JOURNAL

Asst. Prof. Mustafa Yurdabal Apak, a faculty member of the Department of Civil Engineering, had his article titled "A Sustainable Lightweight Pumice Concrete Slab for Underground Utility Protection: Experimental Validation and Finite-Element Analysis" published in Journal of Materials in Civil Engineering, a prestigious Q1-category journal in the field of civil engineering.

The study investigates the performance of lightweight, sustainable, and highly heat-insulating pumice aggregate concrete slabs as an alternative to conventional concrete barriers used for protecting natural gas pipelines and electrical power lines within urban infrastructure. Supported by experimental studies and finite element analyses, the research revealed that, in addition to their low weight and high thermal insulation, the developed concrete slabs also demonstrated reliable performance under fire and mechanical loads.

The research results show that pumice-based concrete slabs offer significant advantages in terms of both sustainability and durability in protecting underground infrastructure systems. The study is expected to contribute to future research on infrastructure engineering, construction materials, and sustainable construction applications.

The Department of Civil Engineering congratulates Asst. Prof. Mustafa Yurdabal Apak on this valuable scientific work and wishes him continued success in his academic endeavors.

Technical Papers | Jun 16, 2026

 Check for updates

A Sustainable Lightweight Pumice Concrete Slab for Underground Utility Protection: Experimental Validation and Finite-Element Analysis

Authors: [Mustafa Yurdabal Apak, Ph.D.](#)  , [Metehan Calis](#)  , and [Ahmet Fazil Kara](#)   | [AUTHOR AFFILIATIONS](#)

Publication: Journal of Materials in Civil Engineering • Volume 38, Issue 9 • <https://doi.org/10.1061/JMCEE7.MTENG-22819>



CIVIL ENGINEERING

CIVIL ENGINEERING FACULTY MEMBER ASST. PROF. MUSTAFA YURDABAL APAK'S ARTICLE PUBLISHED

Asst. Prof. Mustafa Yurdabal Apak, a faculty member of the Department of Civil Engineering, had his article titled "Assessing the Potential of Olive Stone Powder as a Bitumen Biopolymer Through Physical, Chemical, and Rheological Characterization" published in *Polymers*, a Q1-ranked journal in the field of materials science and polymer engineering.

The study evaluates the usability of olive stone powder — an agricultural waste product — as a biopolymer additive in bituminous binders, from physical, chemical, and rheological perspectives. As part of the research, tests conducted on bitumen samples containing olive stone powder at different ratios revealed that this natural additive increases resistance to deformation at high temperatures, reduces temperature sensitivity, and contributes positively to the thermal stability of bitumen.

The findings show that olive stone powder holds significant potential as an environmentally friendly and cost-effective biopolymer additive for developing sustainable road surface materials. The study is expected to contribute to the use of recyclable materials in civil engineering and to the development of sustainable transportation infrastructure.

The Department of Civil Engineering congratulates Asst. Prof. Mustafa Yurdabal Apak on this valuable scientific work and wishes him continued success in his academic endeavors.



Article

Assessing the Potential of Olive Stone Powder as a Bitumen Biopolymer Through Physical, Chemical, and Rheological Characterization

Ozgur Ozcan ^{1,2,*}, Halil Ibrahim Yumrutas ², Abdulgazi Gedik ^{3,4}, Sedat Ozcanan ¹
and Mustafa Yurdabal Apak ⁵

¹ Department of Civil Engineering, Faculty of Engineering, Sirtak University, 73000 Sirtak, Türkiye

² Department of Civil Engineering, Faculty of Engineering and Natural Science, Karabuk University, 78050 Karabuk, Türkiye

³ Department of Civil Engineering, Faculty of Engineering and Natural Sciences, Malatya Turgut Ozal University, 44900 Malatya, Türkiye

⁴ Faculty of Civil Engineering, Istanbul Technical University, 34469 Istanbul, Türkiye

⁵ Department of Civil Engineering, Faculty of Engineering and Architecture, Istanbul Gelisim University, 34310 Istanbul, Türkiye

* Correspondence: ozgurozcan@sirtak.edu.tr



CIVIL ENGINEERING

CIVIL ENGINEERING FACULTY MEMBER ASST. PROF. MUSTAFA YURDABAL APAK'S ARTICLE PUBLISHED

Asst. Prof. Mustafa Yurdabal Apak, a faculty member of the Department of Civil Engineering, had his article titled "Asphalt Pavement Resilience Under Wildfire: An Experimental Observation and Numerical Analysis" published in Road Materials and Pavement Design, a Q1-ranked journal in the field of transportation infrastructure and pavement engineering.

The study comprehensively examines the effects of wildfires on asphalt pavements using experimental studies and numerical analyses. As part of the research, the high-temperature performance of conventional hot-mix asphalt was compared with that of asphalt mixtures containing boron and wood flour additives, evaluating changes in mechanical strength, thermal conductivity, surface properties, and microstructure.

The results revealed that wildfires cause significant structural deterioration in the upper layers of asphalt pavements, while asphalt mixtures containing wood flour additive demonstrated higher performance following fire exposure. The study offers valuable contributions toward developing sustainable, cost-effective, and fire-resistant road surface structures.

The Department of Civil Engineering congratulates Asst. Prof. Mustafa Yurdabal Apak on this valuable scientific work and wishes him continued success in his academic endeavors.

ROAD MATERIALS AND PAVEMENT DESIGN
<https://doi.org/10.1080/14680629.2026.2689137>



Taylor & Francis
by informa...

Check for updates

Asphalt pavement resilience under wildfire: an experimental observation and numerical analysis

Metehan Calis ^a, Mustafa Yurdabal Apak ^b, Ahmet Fazıl Kara ^c,
Halil Ibrahim Yumrutas ^d and Isxaq Osman Abdirahman ^d

^aTurkish Standards Institution, Construction Materials Fire and Acoustics Laboratory, Turkish Standards Institution, Istanbul, Türkiye; ^bDepartment of Civil Engineering, Istanbul Gelisim University, Istanbul, Türkiye;

^cThe Scientific and Technological Research Council of Türkiye (TÜBİTAK), Gebze, Türkiye; ^dFaculty of Engineering and Natural Sciences, Department of Civil Engineering, Karabuk University, Karabuk, Türkiye



CIVIL ENGINEERING

CIVIL ENGINEERING FACULTY MEMBER ASST. PROF. MUSTAFA YURDABAL APAK'S PAPER PUBLISHED AT AN INTERNATIONAL CONGRESS

Asst. Prof. Mustafa Yurdabal Apak, a faculty member of the Department of Civil Engineering, had his paper titled "A Comparative Analysis of Road Barrier Standards in the Context of Road Safety and Critical Area Protection" published as part of the 10th International Boğaziçi Scientific Research Congress.

The paper comparatively evaluates road barrier standards, which play an important role in ensuring road safety. The study examines the performance of different road barrier systems in protecting critical areas, enhancing traffic safety, and reducing the effects of potential accidents within the framework of international standards.

The research aims to contribute to the improvement of safety systems used in road infrastructure and presents important insights for safe and sustainable transportation solutions in the field of transportation engineering.

The Department of Civil Engineering congratulates Asst. Prof. Mustafa Yurdabal Apak on this valuable scientific work and wishes him continued success in his academic endeavors.

**DR. ÖĞR. ÜYESİ
MUSTAFA YURDABAL
APAK'IN YENİ BİLDİRİSİ
YAYIMLANDI!**



**A COMPARATIVE ANALYSIS OF ROAD BARRIER STANDARDS IN
THE CONTEXT OF ROAD SAFETY AND CRITICAL AREA
PROTECTION**



MECHATRONICS ENGINEERING

MECHATRONICS ENGINEERING FACULTY MEMBER RES. ASST. TUNAY ACIMAN'S
ARTICLE SELECTED AS ARTICLE OF THE MONTH

Res. Asst. Tunay ACIMAN from the Department of Mechatronics Engineering had his article titled "CG-VSM-AMCL: Confidence-Gated Virtual Scan Motion-Adaptive Monte Carlo Localization" published in Electronics, a Q1-ranked journal.

The study presents a new approach aimed at improving localization accuracy in mobile robotic systems. The proposed CG-VSM-AMCL method increases localization precision in scenarios involving narrow corridors, symmetric environments, and dynamic obstacles by filtering virtual scan data according to confidence levels and using a particle distribution adaptive to the robot's motion state. Directly contributing to autonomous navigation, smart factory systems, and unmanned vehicle technologies, this study makes an important contribution to the current literature in the field.

We congratulate Res. Asst. Tunay ACIMAN on this valuable work.



electronics



Article

CG-VSM-AMCL: Confidence-Gated Virtual Scan Motion-Adaptive Monte Carlo Localization

Suat Karakaya ^{1,*} and Tunay Acıman ^{2,*}

¹ Mechatronics Engineering Department, Kocaeli University, 41001 Kocaeli, Türkiye

² Mechatronics Engineering Department, Istanbul Gelisim University, 34310 Istanbul, Türkiye

* Correspondence: suat.karakaya@kocaeli.edu.tr (S.K.); taciman@gelisim.edu.tr (T.A.)

MECHATRONICS ENGINEERING

MECHATRONICS ENGINEERING FACULTY MEMBER Assoc. Prof. Haydar Kepekçi PRESENTED HIS WORK AT AN INTERNATIONAL SYMPOSIUM

The study by Assoc. Prof. Haydar Kepekçi, a faculty member of the Department of Mechatronics Engineering, titled "Waste Heat-Driven sCO₂ Cycle System for Energy Conversion onboard Ships," was presented as a full paper at the international ISTRAS'26 (Sustainable Transportation: Technologies, Systems and Policies) symposium, whose proceedings are indexed in Scopus and will be published by Springer.

The study focuses on converting waste heat generated on ships into electrical energy through supercritical carbon dioxide (sCO₂) cycle systems. Standing out for its more compact structure and higher thermal efficiency compared to traditional steam cycles, this system is regarded as an innovative solution contributing to fuel efficiency and emission reduction goals in the maritime sector.

We congratulate Assoc. Prof. Haydar Kepekçi on this valuable study.



Memory of
Dr. Fuad Mirzayev, RIP

INTERNATIONAL SUSTAINABLE TRANSPORTATION SYMPOSIUM



ISTRAS'26

Online

17th-19th
JUNE 2026

ISTRAS'26

Online

International Sustainable Transportation Symposium

17th -19th June 2026 | Piri Reis University, İstanbul, Türkiye

Submission Deadline: 1 May 2026

ARCHITECTURE

ARCHITECTURE DEPARTMENT FACULTY MEMBERS ASST. PROF. İLKNUR TÜRKOĞLU AND ASST. PROF. PAUL OLUWAGBEMIGA'S ARTICLE HAS BEEN PUBLISHED

Architecture Department faculty members Asst. Prof. Paul Oluwagbemiga and Asst. Prof. İlknur Türkoğlu had their article titled "Understanding eco urbanism development through expert perspectives on drivers and barriers" published in the scientific journal Discover Sustainability.

The article aims to examine built environment experts' awareness, perceptions, and acceptance regarding the principles of eco-urbanism, and to identify the factors influencing their adoption in practice. In this context, the study pursues three main objectives: 1. Assessing the level of awareness, perception, and acceptance of eco-urbanism among professionals from different disciplines; 2. Identifying the main drivers encouraging the adoption of eco-urbanism principles; and 3. Determining the key barriers preventing their effective implementation.

A structured survey was conducted with professionals in planning and design, social and behavioral sciences, policy, economics, and development sectors. The findings reveal a generally high level of awareness regarding eco-urbanism, particularly concerning green space integration; more than 70% of participants across professional groups stated they were "very aware" of the concept. The study concluded that rapid urbanization and population growth are the most significant drivers of professional acceptance, while financial constraints emerged as the most notable barrier to implementation. Additionally, correlation results show that certain demographic factors, including gender, significantly influence professionals' attitudes toward eco-urbanism.

SPRINGER NATURE Link

[Find a journal](#)
[Publish with us](#)
[Track your research](#)
 Search

[Home](#) > [Discover Sustainability](#) > Article

Understanding eco urbanism development through expert perspectives on drivers and barriers

Research | [Open access](#) | Published: 06 June 2026

[Cite this article](#)

✓ You have full access to this [open access](#) article

[Download PDF](#)
[Save article](#)



Discover Sustainability

[Aims and scope](#) →

[Submit manuscript](#) →

[Abdulaziz Mislat Alsharif](#), [Oluwagbemiga Paul Agboola](#) & [İlknur Türkoğlu](#)

43 Accesses [Explore all metrics](#) →

! We are providing an unedited version of this manuscript to give early access to its findings.

Sections

[Abstract](#)

[Funding](#)



BASIC SCIENCES

BASIC SCIENCES DEPARTMENT FACULTY MEMBER ADDS 15 NEW INTERNATIONAL SCIENTIFIC PUBLICATIONS

Prof. Dr. T. Abdeljawad, a faculty member of the Department of Basic Sciences at Istanbul Gelişim University's Faculty of Engineering and Architecture, has added 15 new publications to his international scientific work within 2026, achieving a significant academic milestone. Building on the 36 studies published previously, his total number of publications in international indexed journals has reached 51 this year.

The newly published studies focus on advanced mathematical topics such as fractional and fractal-fractional differential equations, delayed integro-differential equations, fixed point theory, stability analysis of nonlinear wave equations, spectral and collocation methods, optimal control problems, mathematical inequalities, and artificial neural networks.

The studies also include interdisciplinary applications such as the mathematical modeling of cutaneous leishmaniasis and pine wilt diseases, comparative analysis of brain diseases using multi-criteria decision-making methods, hybrid nanofluid analysis via artificial neural networks, and probabilistic examination of electromagnetic surface waves and epidemiological control systems in metric spaces.

Published in internationally indexed journals within SCI-Expanded, ESCI, and Scopus, these studies strengthen the interaction between theoretical mathematics, computational sciences, engineering, health sciences, and artificial intelligence. Prof. Dr. T. Abdeljawad's mathematical theories offer solutions to real-life problems through numerical methods, artificial neural networks, and provide an important academic vision for universities' research focus and innovative research.

As the Istanbul Gelişim University family, we congratulate Prof. Dr. T. Abdeljawad for his high scientific productivity in 2026 and his valuable contributions to the international academic literature, and wish him continued success.

New Publications in 2026:

1. Coherent Control of Dark and Bright Spatio-Temporal Solitons of SPPs at a Silver Silica Nano-Composite Interface with Gain-Assisted Atomic Medium
2. A Robust Numerical Scheme for Addressing AVIEs and AVIDEs Involving Smooth and Weakly Singular Kernels
3. Fully Discrete RBF Collocation Method for Linear and Nonlinear One- and Two-Dimensional Third-Kind Caputo–Hadamard Fractional Delay Integro-Differential Equations with Nonlinear Vanishing Delays
4. On Conformable Fractional Schweitzer-Type Inequality
5. Numerical Simulations and Hyers-Ulam Stability of a Novel Nonlocal Anthropogenic Cutaneous Leishmaniasis Mathematical Model
6. A Chelyshkov-Based Spectral Homotopy Analysis Method for Singular Nonlinear Lane–Emden-Type Equations
7. New Analytical Solutions and Stability Analysis of Coupled Time-Fractional Boussinesq–Burgers System
8. Novel Approaches for Nonlinear Time-Fractional Telegraph Equation Through Stability Analysis
9. Using Artificial Deep Neural Network Analysis for the Investigation of Fractional-Order Pine Wilt Disease Mathematical Model
10. On the Solution Structure of Sequential φ -Hilfer Fractional Differential Equations with p-Laplacian Operator
11. Fractional-Order Delayed Epidemic Models in Memory-Based Probabilistic Controlled Metric Spaces via Fixed Point Theory
12. Development of Chelyshkov Wavelets Neural Network Method for Solving Nonlinear Fractal-Fractional Optimal Control Problems
13. Application of Neural Network Analysis to Study Thermally Stratified Hybrid Nanofluid over a Variable Thickness Sheet
14. Comparative Analysis of Brain Diseases and Disorders Using WASPAS Models and Sugeno-Weber Information
15. Adaptive Meir-Keeler Contractions in Double Controlled Metric Spaces: Theory and Applications to Caputo Fractional Equations

SHAPE THE FUTURE

IGU FEA

COORDINATORS

Prof. Dr. Bayram ÜNAL

Asst. Prof. Nurdan TÜYSÜZ

Asst. Prof. Seda ERBAYRAK

CONTENT EDITORS

Res. Asst. Betül GÖK

Res. Asst. Elif ÖZTÜRK

Res. Asst. Enis ÖZBEK

Res. Asst. Melis Özşahin TOKER

Res. Asst. Ufuk ATEŞOĞLU

Res. Asst. Duygu TÜYLÜ

Res. Asst. Kemal ERTUNÇ

Res. Asst. Hasan YILDIRIM

DESIGN AND EDITING

Res. Asst. Beray İKİNCİ

CONTACT

(+90) 212 422 70 00

www.mmf.gelisim.edu.tr/en/

