FACULTY OF ENGINEERING AND ARCHITECTURE

BULLETIN

FEBRUARY 2024

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NEWS FROM THE FACULTY

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FEBRUARY 2024

INDUSTRIAL ENGINEERING

Res. Assist. Nurdan Tüysüz, who works at IGU Industrial Engineering Department, successfully completed her doctoral education at Istanbul Technical University, passing the defense exam dated February 1, 2024.
We congratulate her and wish her continued success.

Working in Industrial Engineering, **Assist Prof. Dr. Binnur Gürül** participated as a jury in the Egemen Bağış's doctoral thesis defense at Istanbul Aydın University.

NEWS FROM THE FACULTY

FEBRUARY 2024

INDUSTRIAL ENGINEERING

Working in Industrial Engineering, **Assist Prof. Dr. Mert Yıldırım** was awarded **the second prize in the TET Project Market 12 Competition** organized by the Electrical and Electronics Exporters Association operating within the Istanbul Mineral and Metals Exporters Association (İMMİB) with the support of the Ministry of Commerce and the coordination of the Turkish Exporters' Assembly (TİM).
At the TET Project Market 12 Awards Ceremony held at Hilton Istanbul Bosphorus on February 13, 2024. Assist Prof. Mert Yıldırım came second with his **"Multifunctional Smart Composites" project** in the Other Applications category. Assist Prof. Mert Yıldırım received the award **T.C. Deputy Minister of Trade Özgür Volkan Ağar, TİM President Mustafa Gültepe and TET Chairman of the Board of Directors Dr. Güven Uçkan.**

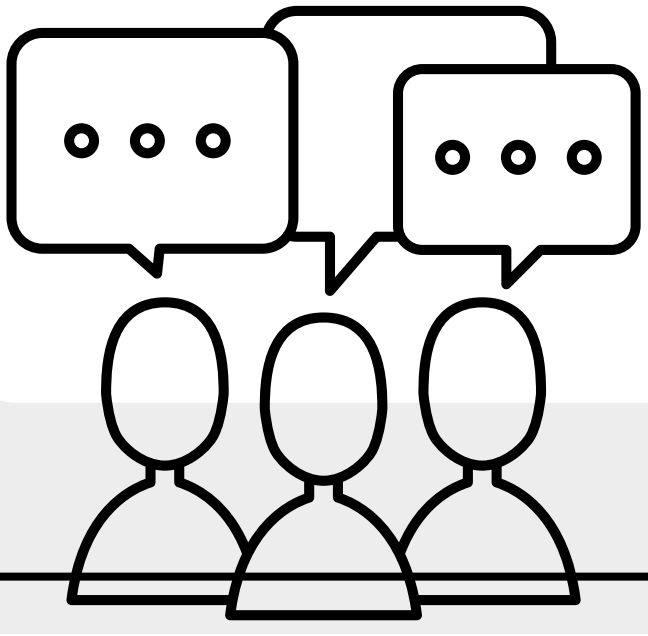
INDUSTRIAL ENGINEERING

Industrial Engineering Students and Graduates Came Together

Our 2020 graduate Mazlum Öztürk met with Industrial Engineering students at K-Blok Auditorium on Monday, 26.02.2024 between 13.00-15.00 and answered the questions our students were curious about.

Architecture

The Department of Architecture Board meeting was held on February 15, 2024. Department board decisions have been made for the 2023-2024 Spring Semester.



Architecture

On February 8, 2024, **Assoc. Prof. Dr.** Türkan UZUN, a faculty member of the Department of Architecture, participated in the thesis supervision jury titled "An Essay on St. Pierre Han" in the Kocaeli University master's program, under the supervision of Prof. Dr. Nevnihal ERDOĞAN.

A conversation was held with Prof. Dr. Nevnihal ERDOĞAN, one of the editors, about the book Architecture in Literature, which was published in collaboration with a very rich author partnership. Authors Prof. Dr. Nevnihal ERDOĞAN and Dr. Selma TUNALI signed their chapters for our department faculty member **Assoc. Prof. Dr. Türkan UZUN.**

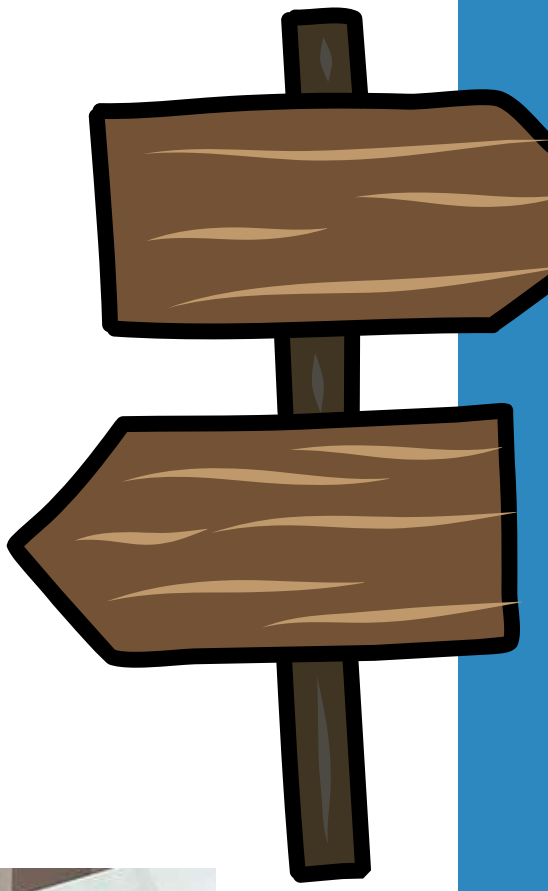
Architecture

HAN TÜMTERTEKİN - SEYHAN ÖZDEMİR

Organized by our lecturer Burak Kaan Yılmazsoy, who also invited our guests and president of architecture club Ebrar Sugün, shared a lot of effort to organize this event. In addition, another contibution to this organization was provided by Assoc Prof Dr Türkan Uzun, who gave an opening speech. During the event, architect Han Tumertekin and architect seyhan ozdemir gave presentations regarding examples of their work. In addition, our interrior architecture department contributed to this event with their perspective by giving information about design and implementation stages of projects.

After finishing to watch all presentations of our guests, questions and answers session with our students was helded. In the final session, our head of the department Assoc Prof Dr İlke Ciritçi gave our appreciation plaque to our speakers.

Aeronautical Engineering



“Aviation Days Attracted Great Interest at Istanbul Gelişim University

The Aviation Days event, organized by Istanbul Gelişim University, Anka Aviation Club, was held at Mehmet Akif Ersoy Conference Hall on 21-22 February 2024. The event attracted great attention from students.

Aeronautical Engineering

Istanbul Gelişim University ANKA Aviation Club Visited TAI's Ankara Kazan Campus

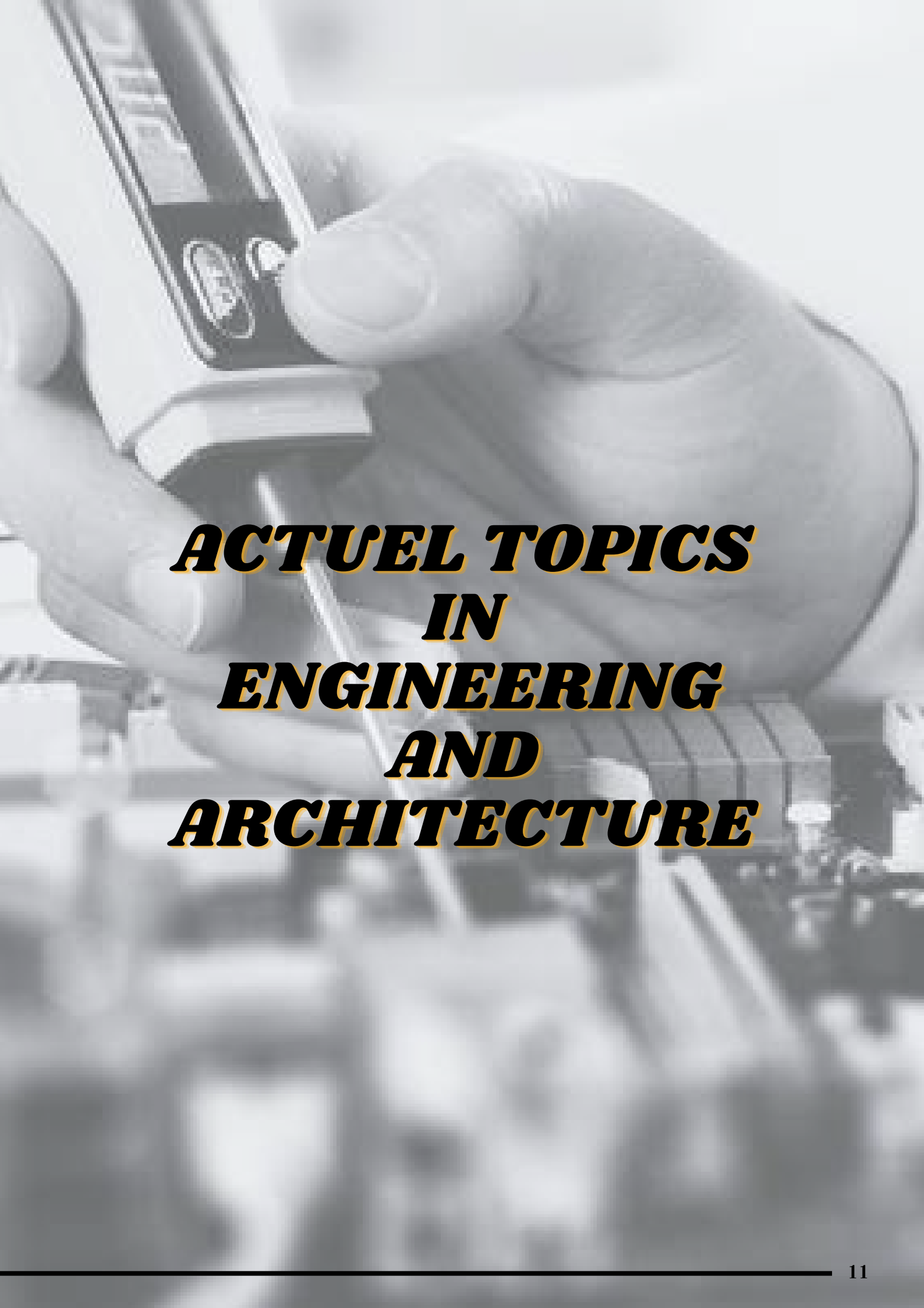
Istanbul Gelişim University students visited the Ankara Kazan campus of TAI, one of Turkey's leading aviation companies, under the leadership of ANKA Aviation Club. A group of 40 students, led by Club President Begüm Şimşek, had the opportunity to closely examine the technical infrastructure of TAI, one of the largest companies in Turkish aviation.

During the technical trip held on February 15, 2024, students met with TAI's expert engineers and professionals and shared information about the aviation industry. Within the scope of the trip, detailed information was provided to the students about TAI's aircraft production, maintenance and repair activities and R&D projects.

During the technical tour held at TAI's large facilities, interactive presentations were made to the students about the company's engineering capabilities, aircraft design processes and production lines. In addition, ANKA Aviation Club students had the opportunity to see TAI's state-of-the-art projects on site and follow the innovations in the sector.

Club Advisor Res. assist. Cem AVCI stated that the trip is a great opportunity for the students and said, "Such technical trips offer students a unique opportunity to see the applications and innovations in the sector, beyond theoretical knowledge. With this opportunity provided by TAI, our students can both increase their professional knowledge and gain knowledge in the sector." "They had the chance to communicate directly with professionals," he said. TAI officials stated that they were pleased to host the students.

At the end of the trip, ANKA Aviation Club students returned to their universities with satisfaction with the experience they gained from TAI's modern facilities and expert staff. It is stated that such events make a valuable contribution to students in the sectoral context and shape their future career journeys.



ACTUEL TOPICS IN ENGINEERING AND ARCHITECTURE

Türkiye's Generative Artificial Intelligence Model: MAIN

Prepared by: Res. Assist. Erdi ACAR

Get ready to experience a revolutionary breakthrough in the world of artificial intelligence! Leading technology company HAVELSAN recently introduced its latest innovation MAIN. The name "MAIN", which means "Multifunctional Artificial Intelligence Network", was chosen for this product in the " generative artificial intelligence" category.

This state-of-the-art platform-based solution for large language models is poised to revolutionize the industry with 9 billion parameters and a unique architecture built from open source.

Through MAIN, organizations will have access to a multifunctional AI network that can easily optimize their business processes and streamline their internal operations. This Turkey-based AI assistant is designed to run on internal networks and feed from local data sources, making it a safe and secure way to extract meaningful data from large data sets.

Gone are the days of relying on third-party APIs or major language models. MAIN offers a self-contained and customizable solution allowing organizations to write legislation and develop custom AI infrastructures. The possibilities are endless, and the future is brighter with MAIN.

Quantum Blockchain Technology: A Look into the Future

Prepared by: Res. Assist. Saim HATİPOĞLU

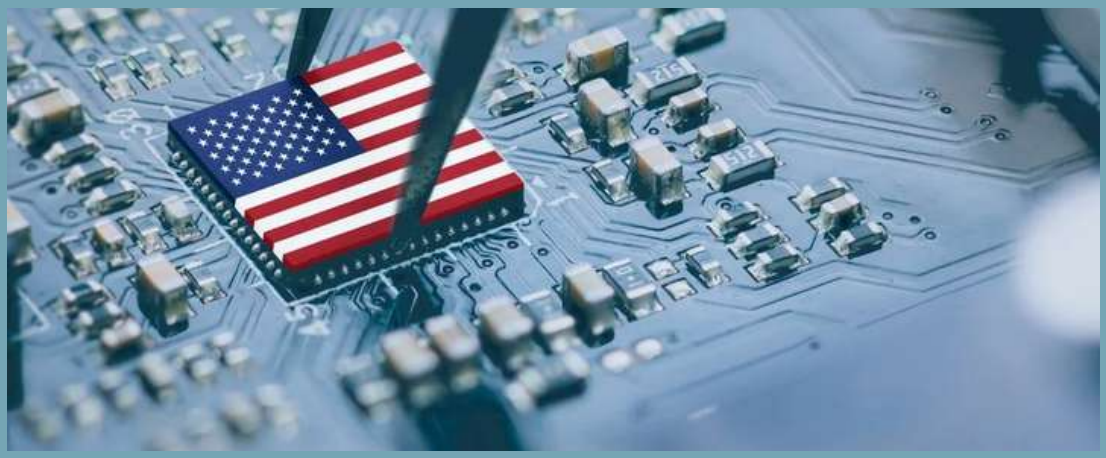
Quantum Blockchain Technology, a fascinating combination of quantum computing and blockchain,is poised to revolutionize the way we think about data security and transaction efficiency. Thisemerging field promises to address some of the critical issues that plague current blockchain technology, such as scalability and maintainability. Quantum computing offers solutions that will increase transaction speed and security and potentially revolutionize financial and other corporate operations. However, this integration is not without its difficulties. Quantum computers, with their advanced capabilities, threaten the cryptographic foundations of existing blockchain systems. This looming threat requires the development of quantum-resistant cryptographic methods, a concept that is actively researched and developed. Research highlights that quantum-secure blockchain platforms using quantum key distribution can theoretically provide secure authentication and make these platforms resilient to quantum attacks (Edwards, Mashatan, and Ghose, 2019; Kiktenko et al., 2017).

The intricacies of this technology are further exemplified by its dual nature. On the one hand, quantumcomputing poses significant threats to the security of the blockchain; On the other hand, it offers solutions that will make blockchain more robust and efficient. Innovative concepts such as quantum delegated proof of stake (QDPoS) are being explored to improve the efficiency of quantum blockchain systems. Additionally, post-quantum blockchain technology is essential for secure data sharing, especially in areas such as the Internet of Things (IoT), where data security is crucial (Li et al., 2022 ; Zeydan et al., 2022). This balance between threat and opportunity is a critical area of ongoingresearch and has important implications for the future of blockchain technology.

Looking to the future, the integration of quantum computing with blockchain technology holds great promise but also presents significant challenges. The need for quantum-resilient designs and efficient consensus mechanisms is crucial. Research in this field continues to grow, focusing on developing frameworks and protocols to protect against quantum threats and improve overall efficiency and security (Sun et al., 2019; Wang and Yu, 2022). As this technology evolves, it heralds a new era of technological advancement, poised to redefine the landscape of digital security and transaction efficiency.

Largest CHIPS Act Rewards Ever Coming to U.S. Companies

Prepared by: Res. Assist. Elif ÖZTÜRK



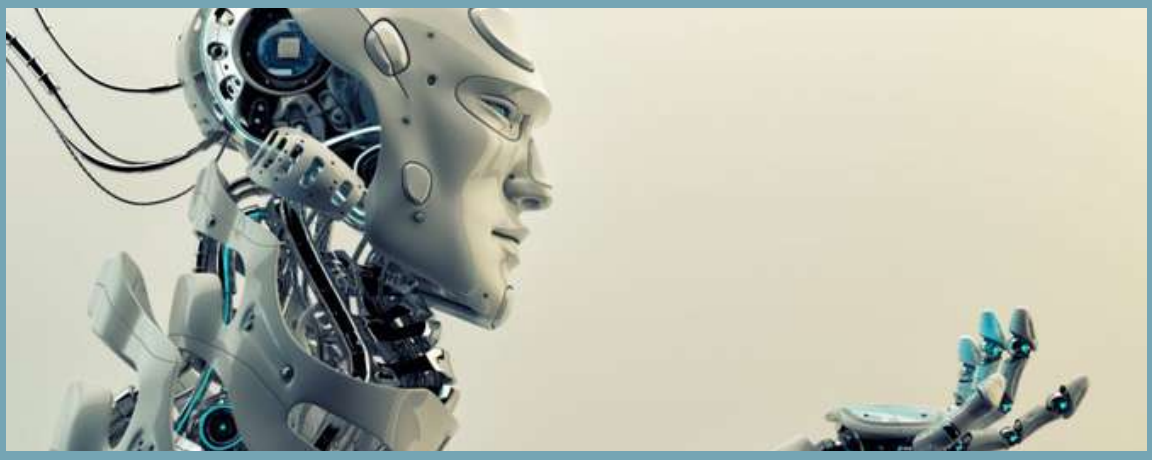
US chipmakers Intel and Micron will likely win the largest share of the $52 billion in CHIPS Act awards this year, analysts said, according to EE Times. As the 2024 U.S. presidential election approaches, the awards will help President Joe Biden show he is creating jobs and bringing semiconductor manufacturing back to the country after a long history of offshoring, analysts said.

Asian chip makers Taiwan Semiconductor Manufacturing Co. are among the top four companies seeking CHIPS subsidies, according to analysts. (TSMC) and Samsung are lower on the priority list because the U.S. government wants to avoid the perception of subsidizing foreign companies.

One of the main goals of CHIPS Act funding is to significantly reduce the United States' dependence on chip imports from Asia. But Paul Triolo, who advises technology clients at Albright Stonebridge Group, said he doesn't expect the U.S. government's program to do much to help create a local ecosystem that supports suppliers to the industry.

ROBOT TECHNOLOGIES

Prepared by: Res. Assist. Ufuk ATEŞOĞLU



With the rapid advancement of technology, robot technologies are also undergoing significant transformation. Robots used to facilitate people's lives, optimize production processes, and provide safer working environments are constantly being renewed and improved. If we examine the development of robot technologies:

Industrial Robots:
Industrial robots are fundamental elements of automation in manufacturing facilities. While traditional industrial robots are typically used in repetitive tasks, recent advancements have made them more flexible and adaptable through the integration of advanced technologies such as artificial intelligence and machine learning. These developments play a crucial role in increasing efficiency, reducing costs, and improving product quality in manufacturing processes.

Service Robots:
Service robots are designed to assist people in their daily lives. This category includes various types such as cleaning robots, healthcare service robots, maintenance robots, guide robots, and even social robots. The use of service robots, especially in fields like elderly care, is steadily increasing.

Medical and Surgical Robots
Medical and surgical robots are used to increase precision in surgical procedures, perform minimally invasive surgeries, and make surgical interventions safer. These robots enable surgeons to perform operations with smaller incisions while also assisting them with technologies such as 3D imaging and augmented reality for more accurate and effective work.

Humanoid Robots:
Humanoid robots resemble human bodies and behaviors. These robots are often used to interact with humans, perform human-like tasks, or replace humans. For example, humanoid robots that can work alongside humans in industrial environments can enhance safety and productivity.

Autonomous Robots:
Autonomous robots are capable of perceiving their environment, making decisions, and executing actions. These robots are typically equipped with a combination of artificial intelligence, deep learning, and sensor technologies. Autonomous vehicles, drones, cleaning robots, and warehouse robots are used in various fields.

In the future, further advancements in robot technologies are expected. Progress in areas such as artificial intelligence, the Internet of Things (IoT), quantum computing, and bionics will enable robots to become smarter, more flexible, and more responsive. These developments have great potential to improve people's quality of life and enable more efficient business processes in many sectors.

ACADEMIC AND SCIENTIFIC ACTIVITIES

INDUSTRIAL ENGINEERING

Yakıt, O. & Özkan, Y. (2024). Bacalı kombi satış miktarlarının tahmininde yapay sinir ağının kullanılması ve tedarik zinciri yönetimi içerisindeki önemi. Gümüşhane Üniversitesi Sosyal Bilimler Dergisi, 15(1), 237-253.

Bacalı Kombi Satış Miktarlarının Tahmininde Yapay Sinir Ağının Kullanılması ve Tedarik Zinciri Yönetimi İçerisindeki Önemi

Using Artificial Neural Network in Estimate of Sales Amounts of Vented Combi and Its Importance in Supply Chain Management

Osman Yakıt[1], Yılmaz Özkan[2]

Öz

Çalışmanın amacı, PRODTR kodlu "Bacalı Kombi" ürün satışlarını Yapay Sinir Ağı kullanarak tahmin etmek ve bu tahminin tedarik zinciri yönetimi açısından önemini açıklamaktır. Veri seti olarak Türkiye İstatistik Kurumu'nun yayınladığı "Kombi (Bacalı)" isimli ürüne ait değişken değerleri kullanılmıştır. Yıllık veriler için yapay sinir ağı oluşturulmuş ve üretilen tahmin sonuçları gerçekleşen değerlerle karşılaştırılmıştır. Tahmin duyarlılığı hesaplanmış ve tedarik zinciri yönetimi açısından önemi vurgulanmıştır. MATLAB Neural Network Toolbox, Yapay Sinir Ağının eğitilmesi ve tahmin işleminin gerçekleştirilmesi için kullanılmıştır.

Anahtar Kelimeler: Yapay Sinir Ağı, Tedarik Zinciri Yönetimi, Üretim Yönetimi

Abstract

Purpose of the study is to predict the sales of the "Combi (with chimney)" product coded PRODTR using Artificial Neural Network and to explain the importance of this prediction in terms of supply chain management. As the data set, variable values related to the product named "Combi (with chimney)" has published by the Turkish Statistical Institute were used. An artificial neural network has created for annual data, and the forecast results produced were compared with the actualized values. Forecast sensitivity has calculated and its importance for supply chain management is highlighted. MATLAB Neural Network Toolbox has used for to be trained the Artificial Neural Network and to be performed the prediction process.

Keywords: Artificial Neural Network, Supply Chain Management, Production Management

Working in Department of Industrial Engineering Prof. Dr. Yılmaz Ozkan's new article titled "Using Artificial Neural Network in Estimate of Sales Amounts of Vented Combi and Its Importance in Supply Chain Management" has published in the "Gümüshane University Journal of Social Sciences"

CIVIL ENGINEERING

The research paper titled "Analysıs of Elastic Lateral Torsional Buckling of Cantilever I Sections By The Complementary Functions Method" prepared by the head of our department, Assist. Prof. Dr. Ahmad Reshad NOORI was published in the Konya Journal of Engineering Sciences.

The research paper titled "Static Analysis of Functionally Graded Material Beams Resting on Winkler Type Elastic Foundation" prepared by the head of our department, Assist. Prof. Dr. Ahmad Reshad NOORI was published in the Cukurova University Journal of the Faculty of Engineering.

ELECTRICAL ELECTRONICS ENGINEERING

Dr. Lecturer Member Ercan Aykut and Lecturer. See. Sena Taş ASES II. held between 24-25 February 2024. He presented the paper titled "Rivet Press Automation for Instant Water Heater Thermostat Manufacturing" at the International Çanakkale Scientific Studies Conference.

COMPUTER ENGINEERING

Department of Computer Engineering Research Assistant Erdi ACAR was declared successful by the qualification jury in the doctoral qualification exam he took on 29.01.2024. We congratulate him and wish him success in his academic life.

The Master's Thesis titled "Detection of Marine Mucilage from Satellite Images with Sample Segmentation," defended by Computer Engineering Department Research Assistant M. Mustafa YURDAKUL on 01.02.2024, was declared successful by the thesis jury. We congratulate him and wish him success in his academic life.

İSTANBUL GELİŞİM UNIVERSITY GRADUATE TRACKING SYSTEM

Graduate Tracking System (METSİS) was opened to determine and follow the current status of our graduates, such as employment and post-graduation education, and to create statistical data. Istanbul Gelişim University has activated METSİS in order to strengthen its relations with graduates and contribute to the employment of graduates. Our graduates can become members of METSİS free of charge. (metsis.gelisim.edu.tr)
Our graduates who are METSİS members can follow our job postings by updating their personal profiles.

How do I become a member of METSİS?

Log in to metsis.gelisim.edu.tr platform.
You can follow the postings in the open positions box.
To apply for the postings, you can create an account from the New Candidate box.
After creating an account, you can view job postings and apply for suitable positions from the postings tab at the top.

GRADUATE SATISFACTION SURVEY

Dear IGU Alumni,

Within the scope of the Strategic Plan, a "Graduate Evaluation Survey" has been developed in order to obtain your opinions as an important stakeholder and to determine the program and course outcomes in line with these opinions.
If you want to see your university in higher rankings, we kindly ask you to fill out the survey and thank you for your participation.

Graduate Evaluation Survey:
https://metsis.gelisim.edu.tr/

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