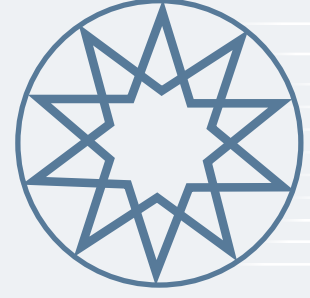


ISSN 1304-7191

E-ISSN 1304-7205



# sigma

**Journal of Engineering  
and Natural Sciences**  
Mühendislik ve Fen  
Bilimleri Dergisi

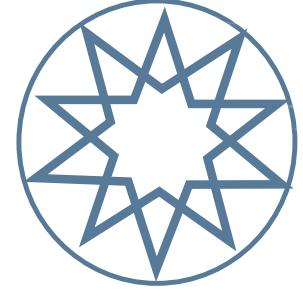
Volume 42

Number 5

Year 2024

**YTÜ**  
PRESS

[www.sigma.yildiz.edu.tr](http://www.sigma.yildiz.edu.tr)



Volume 42 Number 5 Year 2024 - October

#### EDITOR-IN-CHIEF

**Ahmet Selim DALKILIÇ**

Department of Mechanical Engineering, Yıldız Technical University, İstanbul, Turkey

#### ASSOCIATE EDITORS

**İhsan KAYA**

Department of Industrial Engineering, Yıldız Technical University, İstanbul, Turkey

**Nergis ARSU**

Department of Chemistry, Yıldız Technical University, İstanbul, Turkey

#### SECTION EDITORS

**Ali ERDOĞMUŞ**

Department of Chemistry, Yıldız Technical University, İstanbul, Turkey

**Alper YILMAZ**

Department of Bioengineering, Yıldız Technical University, İstanbul, Turkey

**Azmi Seyhun KIPÇAK**

Department of Chemical Engineering, Yıldız Technical University, İstanbul, Turkey

**Banu MANSUROĞLU**

Department of Molecular Biology and Genetics, Yıldız Technical University, İstanbul, Turkey

**Emel AKYOL**

Department of Chemical Engineering, Yıldız Technical University, İstanbul, Turkey

**Eyüp DEBİK**

Department of Environmental Engineering, Yıldız Technical University, İstanbul, Turkey

**Fatih AKYOL**

Department of Metallurgical and Materials Engineering, Yıldız Technical University, İstanbul, Turkey

**Gülhayat GÖLBAŞI ŞİMŞEK**

Department of Statistics, Yıldız Technical University, İstanbul, Turkey

**Hakan YILMAZER**

Department of Metallurgy and Malterials Engineering, Yıldız Technical University, İstanbul, Turkey

**Hasan KÖTEN**

Department of Mechanical Engineering, İstanbul Medeniyet University, İstanbul, Turkey

**Hayriye SUNDU PAMUK**

Department of Physics, Kocaeli University, Kocaeli, Turkey

**Mesut AKGÜN**

Department of Chemical Engineering, Yıldız Technical University, İstanbul, Turkey

**Metin TÜLÜ**

Department of Chemistry, Yıldız Technical University, İstanbul, Turkey

**Muhammet Kasım ŞENER**

Department of Chemistry, Yıldız Technical University, İstanbul, Turkey

**Müslüm ARICI**

Department of Mechanical Engineering, Kocaeli University, Kocaeli, Turkey

**Nader JAVANI**

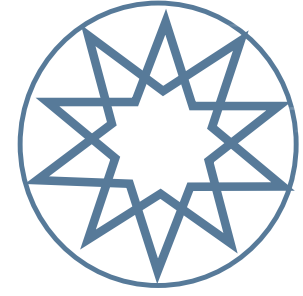
Department of Mechanical Engineering, Yıldız Technical University, İstanbul, Turkey

**Osman Nuri UÇAN**

Department of Electrical and Electronics Engineering, Altınbaş University, İstanbul, Turkey

**Ömer Said TOKER**

Department of Food Engineering, Yıldız Technical University, İstanbul, Turkey



**Volume 42 Number 5 Year 2024 - October**

**Necmiye Özlem ÜNVERDİ**

Department of Electronics and Communication  
Engineering, Yıldız Technical University, İstanbul, Turkey

**Selçuk ÇEBİ**

Department of Industrial Engineering, Yıldız Technical  
University, İstanbul, Turkey

**Sevil YÜCEL**

Department of Bioengineering, Yıldız Technical  
University, İstanbul, Turkey

**Vildan ÇETKİN**

Department of Mathematics, Kocaeli University,  
Kocaeli, Turkey

**Yasemin BUDAMA KILINÇ**

Department of Bioengineering, Yıldız Technical  
University, İstanbul, Turkey

**REGIONAL EDITORS**

**Abdelraheem Mahmoud ALY**

South Valley University, Egypt

**Abdullahi YUSUF**

Federal University Dutse, Nigeria;  
Biruni University İstanbul, Turkey

**Adem KILICMAN**

Department of Mathematics, University Putra, Malaysia

**Amin SHAHSAVAR**

Kermanshah University of Technology, Iran

**Chandramohan V.P.**

National Institute of Technology Warangal, India

**Gobinath RAVINDAN**

SR University, India

**Hijaz AHMAD**

University of Engineering and Technology Peshawar,  
Khyber Pakhtunkhwa, Pakistan

**Md. Sabir HOSSAIN**

Chittagong University of Engineering and Technology,  
Bangladesh

**Mohammad Reza SAFAEI**

Department of Civil and Environmental Engineering,  
Florida International University, USA

**Mostafa Safdari SHADLOO**

Insa of Rouen, France

**Muthu Poosan MOOPANAR**

Department of Mathematics, National Institute of  
Technology, Warangal, India

**Oscar CASTILLO**

Tijuana Institute of Technology, Mathematics Division,  
Mexico

**Pravin KATARE**

Marathwada Mitra Mandal's College of Engineering,  
India

**Ravindar KUMAR**

Lovely Professional University, India

**Sania QURESHI**

Department of Basic Sciences and Related Studies,  
Mehran University of Engineering and Technology,  
Pakistan

**Siamak HOSEINZADEH**

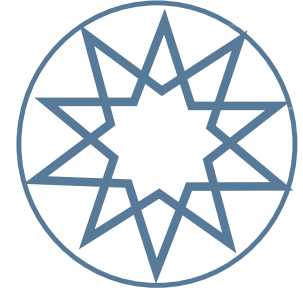
Department of Planning, Design, and Technology of  
Architecture, University of Roma, Italy

**Shengda ZENG**

School of Mathematics and Statistics, Yulin Normal  
University, Yulin, China;  
Faculty of Mathematics and Computer Science,  
Jagiellonian University in Krakow, Krakow, Poland

**Taha M. RABABAH**

Department of Nutrition and Food Technology, Jordan  
University of Science and Technology, Jordan



Volume 42 Number 5 Year 2024 - October

### ADVISORY EDITORS

**Bestami ÖZKAYA**

Department of Civil Engineering, Yıldız Technical University, İstanbul, Turkey

**Cengiz KAHRAMAN**

Department of Industrial Engineering, İstanbul Technical University, İstanbul, Turkey

**Erol TUTUMLUER**

Department of Civil Engineering, University of Illinois Urbana-CHampaign, USA

**Hari Mohan SRIVASTAVA**

Department of Mathematics and Statistics, University of Victoria, Canada

**Mohsen SHEIKHOLESLAMI**

Babol Noshirvani University of Technology, Iran

**Melike Elif BİLDİRİCİ**

Department of Economics, Yıldız Technical University, İstanbul, Turkey

**Somchai WONGWISES**

Department of Mechanical Engineering, King Mongkut's University of Technology, Thonburi, Thailand

**Umut Rifat TUZKAYA**

Department of Industrial Engineering, Yıldız Technical University, İstanbul, Turkey

**Zekai ŞEN**

İstanbul Medipol University, İstanbul, Turkey

**Zeynep IŞIK**

Department Civil Engineering, Yıldız Technical University, İstanbul, Turkey

### SECRETARY

**Senol BİLGİN**

Yıldız Technical University, İstanbul, Turkey

#### Abstracting and Indexing:

- Directory of Open Access Journals (DOAJ)
- EBSCO Host Online Research Databases
- Emerging Sources Citation Index (ESCI)
- Scopus
- MIAR
- Scilit
- OUCI
- Research4Life
- Ideal Online

**Journal Description:** The journal is supported by Yıldız Technical University officially, and is a blind peer-reviewed free open-access journal, published bimontly (February-April-June-August-October-December).

**Owner:** Yıldız Technical University

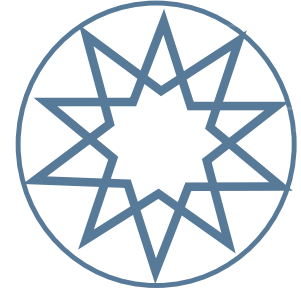
**Editor-in-Chief:** Ahmet Selim Dalkılıç

**Language of Publication:** English

**Frequency:** Bimontly (6 issues per year)

**Publication Type:** Online e-version

**Publisher:** Kare Publishing

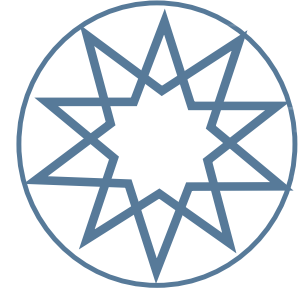


Volume 42 Number 5 Year 2024 - October

## CONTENTS

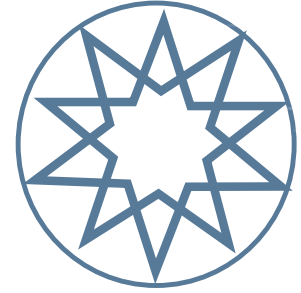
### Research Articles

- 1325** **Technical and economical comparison of hydraulic and traction elevators with VDI 2225 method**  
Ramazan KAYA, Cumhur Oktay AZELOĞLU
- 1336** **Variation of NPY and AGRP MRNA expression in Syrian hamsters according to feeding times**  
Pınar İNAN, Bülent GÜNDÜZ
- 1344** **Robust methods for detecting bad leverage point in logistic regression**  
Ebru GÜNDOĞAN AŞIK, Arzu ALTIN YAVUZ, Zafer KÜÇÜK
- 1357** **Ostracod (CRUSTACEA) biodiversity as pollution indicators in the cauvery river Tiruchirappalli**  
B. Dharani CHAKRAVARTHY, S. BALAMURUGAN
- 1367** **Robust power stabilizing control of a grid-connected inverter using linear matrix inequality**  
Panha SOTH, Sokleng NOUN, Heng TANG, Chanmoly OR, Sarot SRANG, Yahya DANAYIYEN, Chivon CHOEUING
- 1378** **Human lower-extremity movement classification based on biomechanical sensor data: Machine learning approach**  
Hacer KUDUZ, Fırat KAÇAR
- 1391** **A novel machine learning-based artificial intelligence approach for log analysis using blockchain technology**  
Rizwan Ur RAHMAN, Pavan KUMAR, Gaurav Pramod KACHARE, Meeraj Mahendra GAWDE, Tenzin TSUNDUE, Deepak Singh TOMAR
- 1410** **A comparative study on hybrid GA-PSO performance for stand-alone hybrid energy systems optimization**  
Aykut Fatih GÜVEN, Nuran YÖRÜKEREN
- 1439** **Some approximations and identities from special sequences for the vertices of suborbital graphs**  
İbrahim GÖKCAN, Ali Hikmet DEĞER, Ümmügülsün ÇAĞLAYAN



**Volume 42 Number 5 Year 2024 - October**

- 1448** **Cryptocurrency price prediction using GPR and SMOTE**  
Tuğçe GÖKÇEN, Alper ODABAŞ
- 1459** **A method for building a robust strategy map using mathematical programming considering different scenarios**  
Meghdad JAHROMI, Hassan TORABI
- 1469** **Exploring multilingual reviews for aspect-based sentiment analysis using Lexicon and BERT**  
Muhammad Rizwan Rashid RANA, Tariq ALI, Asif NAWAZ
- 1480** **A heteroscedastic regression model with the generalized normal distribution**  
Emine Nur ESKİN, Fatma Zehra DOĞRU
- 1490** **Treatment of textile wastewater in combined granular activated carbon-membrane bioreactor (GAC-MBR)**  
Emine Şule TECİRLİ, Kadir AKGÜN, Abdulkadir ÇAĞLAK, Hanife SARI ERKAN, Güleda ONKAL ENGİN
- 1500** **Reliability and availability analyses of an industrial system with two subsystems arranged in series-parallel**  
Anas Sani MAIHULLA, Ibrahim YUSUF, Michael Boon Chong KOO
- 1511** **Controlling of NaBH<sub>4</sub> hydrolysis by synthetic Ni-Co cited and MOFs supported novel catalyst and determination of kinetic parameters**  
Aybüke Ayşe ERTÜRK, Tugba AKKAS BOYNUEGRI, Metin GÜRÜ
- 1519** **Assessment of musculoskeletal disorders and mental workload among office workers in the automotive industry**  
Hilal ATICI ULUSU, Mustafa GENCER, Tülin GÜNDÜZ
- 1532** **A novel alternative algorithm to find all multiple solutions of general integer linear program**  
Kadriye ŞİMŞEK ALAN
- 1542** **Development and application of the truss method on masonry walls to determine the in-plane behavior: A parametric study**  
Yunus GÜNER, Ayhan NUHOĞLU
- 1555** **A sample application for scheduling search and rescue teams in an earthquake disaster**  
Elif AKDAŞ, Tamer EREN



**Volume 42 Number 5 Year 2024 - October**

- 1563** The evaluation of the effect of data balancing over the classification performances of ensemble of networks for the diabetic retinopathy  
Mothna Mezher AL-RUBAYE, Hamza Osman İLHAN
- 1575** A study on *I*-lacunary statistical convergence of multiset sequences  
Nihal DEMİR, Hafize GÜMÜŞ
- 1581** The ergonomic posture assessment by comparing REBA with RULA & OWAS: A case study in a gas springs factory  
Ömer Abdulaziz KORKMAZ, Muharrem ÜNVER
- 1604** Approximate solutions of the fractional Harry Dym equation  
Sevil ÇULHA ÜNAL
- 1612** Determination of radical scavenging activity, secondary metabolite amount, and toxicity of *Onopordum bracteatum* extracts  
Aytaj GASİMOVA, Ramazan MAMMADOV, Birsen ATLI, Mehlika ALPER
- 1621** Determination of stress magnification factor in Welded Joint by experimental and numerical analysis using ultra-high-strength steel  
Osman Bahadır ÖZDEN, Barış GÖKÇE
- 1628** Modeling and implementation of demand-side energy management system  
Abdulkadir GÖZÜOĞLU, Okan ÖZGÖNENEL, Cenk GEZEGİN
- 1646** Study on pedestrian crossing decision at the roundabouts  
Neeraj S. N, Vijay B.G., Abdullah AL-MANSOUR
- 1654** Contribution of artificial intelligence (ai) to construction project management processes: State of the art with scoping review method  
Hande ALADAĞ, İlkin GÜVEN, Osman BALLI
- 1670** Review Article  
Enhancing road safety through blackspots mitigative measures-A review  
Prasad MANOJ, Kotagi B PUNITH, Kerekoppa Chandrashekar MANJUNATH