

VOLUME: 7 ISSUE: 2  
E-ISSN 2636-8129

AUGUST 2024  
<http://saucis.sakarya.edu.tr/tr/>

**SAKARYA UNIVERSITY  
JOURNAL OF COMPUTER  
AND  
INFORMATION SCIENCES**



**SAKARYA  
ÜNİVERSİTESİ**

---

# The Owner on Behalf of Sakarya University

---

Prof. Dr. Hamza Al  
Sakarya University, Sakarya-Türkiye

---

## Editor in Chief

---

Ahmet Zengin  
Network and Communication, Computer System Software  
Sakarya University  
Sakarya - Türkiye  
azengin@sakarya.edu.tr

---

## Associated Editors

---

Hessam Sarjoughian  
Artificial Intelligence, Computer System Software  
Computer Software  
Arizona State University  
United States

Muhammed Fatih Adak  
Informatics and Computer Science, Machine Vision  
Big Data, Computer Software  
Sakarya University  
Sakarya - Türkiye

Muhammed Kotan  
Image Processing, Artificial Intelligence, Natural  
Language Processing  
Sakarya University  
Sakarya - Türkiye

Ünal Çavuşoğlu  
Information and Computer Sciences, Algorithms and  
Theory of Computation  
Sakarya University  
Sakarya - Türkiye

A F M Suaib Akhter  
Information Security Management, Network and  
Communication,  
Concurrent/Parallel Systems and Technologies  
Database Systems  
Sakarya Applied Sciences University  
Sakarya - Türkiye

Selman Hizal  
Information and Computer Sciences, Image Processing,  
Networking and Communications  
Sakarya Applied Sciences University  
Sakarya - Türkiye

Mustafa Akpinar  
Information and Computing Sciences, Information Systems  
Higher Collages Of Technology  
United Arab Emirates

---

## Editorial Board

---

Aref Yelghi  
Information and Computer Sciences  
Istanbul Ayvansaray University  
Istanbul - Türkiye

Kamal Z Zamli  
Information and Computer Sciences  
University of Malaysia Pahang  
Malaysia (Ump)

Priyadip Ray  
Decision Support and Group Support Systems  
Machine Learning  
Lawrence Livermore National Laboratory  
United States

Nejat Yumuşak  
Information and Computer Sciences, Pattern  
Recognition  
Sakarya University  
Sakarya - Türkiye

Ayhan İstanbullu  
Digital Processor Architectures, Digital Design  
Balıkesir University  
Balıkesir-Türkiye

Bahadir Karasulu  
Information and Computer Sciences, Image Processing  
Çanakkale Onsekiz Mart University  
Çanakkale - Türkiye

Cihan Karakuzu  
Information and Computing Sciences, Neural  
Networks, Machine Learning (Other)  
Bilecik Şeyh Edebali University  
Bilecik - Türkiye

İbrahim Türkoğlu  
Pattern Recognition, Bioinformatics, Artificial  
Intelligence, Embedded Systems  
Firat University  
Elazığ - Türkiye

Nuri Yilmazer  
Information and Computer Sciences  
Texas University, Kinsville  
Tx-United States

Resul Daş  
Software Engineering Department  
Firat University  
Elazığ-Türkiye

Okan Erkaymaz  
Department of Computer Engineering  
Ministry of National Defense  
Ankara - Türkiye

Ömer Hulusi Dede  
Ecology, Industrial Biotechnology, Ecological  
Applications  
Sakarya Applied Sciences University  
Sakarya - Türkiye

---

## **Editorial Assistants - Secretary**

---

Deniz Balta

Information and Computer Sciences, Knowledge  
Representation and Reasoning  
Sakarya University  
Sakarya - Türkiye

Gözde Yolcu Öztel

Information and Computer Sciences, Image Processing  
Artificial Intelligence  
Sakarya University  
Sakarya - Türkiye

İbrahim Delibaşoglu

Image Processing, Machine Learning, Artificial  
Intelligence, Computer Software  
Sakarya University  
Sakarya - Türkiye

Sümeyye Kaynak

Information and Computer Science, Deep Learning  
Sakarya University  
Sakarya - Türkiye

Fatma Akalın

Image Processing, Data Mining and Knowledge  
Discovery  
Sakarya University  
Sakarya - Türkiye

Nur Yasin Peker

Information and Computer Sciences, Image Processing  
Sakarya Applied Sciences University  
Sakarya - Türkiye

---

## **Language Editors**

---

A F M Suaiib Akhter

Information Security Management, Network and Communication  
Sakarya Applied Sciences University  
Sakarya - Türkiye

---

## **Layout Editor**

---

Mehmet Emin Çolak

Scientific Journals Coordinatorship  
Sakarya University  
Sakarya-Türkiye  
mehmetcolak@sakarya.edu.tr

Yakup Beriş

Scientific Journals Coordinatorship  
Sakarya University  
Sakarya-Türkiye  
yakupberis@sakarya.edu.tr

---

# Indexing

---



Applied Science &  
Technology Source

# Contents

## Research Article

- 1 Comparative Analysis of Machine Learning Techniques for Prediction of the Compressive Strength of Field Concrete  
*Ajibola Oyedele, Adekunle David, Ositola Osifeko, Abisola Olayiwola, Omobolaji Opafoala* . . . . . 127-137
- 2 The Importance of Rhythm Activity in Epilepsy EEG Signal Classification (An Educational Article)  
*Negin Melek* . . . . . 138-155
- 3 Prediction of Multivariate Chaotic Time Series using GRU, LSTM and RNN  
*Gülyeter Öztürk, Osman Eldoğan* . . . . . 156-172
- 4 Optimization Planning Techniques with Meta-Heuristic Algorithms in IoT: Performance and QoS Evaluation  
*Murat Koca, Isa Avcı* . . . . . 173-186
- 5 Distributed Task Allocation for UAV Swarms with Limited Communication  
*Mutullah Eşer, Asım Egemen Yılmaz* . . . . . 187-202
- 6 Network Forensics Analysis of Cyber Attacks Carried Out Over Wireless Networks Using Machine Learning Methods  
*İmran Kaçan, Batuhan Güll, Fatih Ertam* . . . . . 203-216
- 7 Classification of Solar Cells EL Images with Different Busbars Via Deep Learning Models  
*Miktat Aktaş, Ferdi Doğan, İbrahim Türkoğlu* . . . . . 217-226
- 8 Performance Assessment of Natural Survivor Method-Based Metaheuristic Optimizers in Global Optimization and Engineering Design Problems  
*Hüseyin Bakır* . . . . . 227-243
- 9 Performance Analysis of Open Source Cloud Computing Architectures  
*Mehmet Zahid Kuzan, Abdullah Sevin* . . . . . 244-252
- 10 Cigarette Detection in Images Based on YOLOv8  
*Yerniyaz Bakhytov, Cemil Öz* . . . . . 253-263
- 11 Detection and Analysis of Malicious Software Using Machine Learning Models  
*Ahmet Öztürk, Selman Hızal* . . . . . 264-276
- 12 Design and Implementation of Remote Lab PID Controller Experiment Based on IoT  
*Mohammed Eishorafa, Emin Güney, İhsan Pehlivan, Cüneyt Bayılmış* . . . . . 277-288
- 13 Evaluating Feature Selection Algorithms for Machine Learning-Based Musical Instrument Identification in Monophonic Recordings  
*İsmet Emre Yücel, Ulaş Yurtsever* . . . . . 289-301
- 14 Predictive Model for Incipient Faults in Oil-Filled Transformers  
*Michael Osajeh, Efosa Igodan, Linda Usiosefe* . . . . . 302-313
- 15 Investigation of Digital Calibration Certificate - Digital Test Report Sharing in Metrology Network  
*Erkan Danacı, Bülent Aydemir* . . . . . 314-324