

Ferhat Uçar

Associate Professor of Computer Engineering

Firat University · Dept. of Software Engineering · International Joint Program with Sam Houston State University, USA

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Research Interests & Expertise

Artificial Intelligence & Deep Learning: Deep Learning · Explainable AI (XAI) · Large Language Models (LLMs) · Retrieval-Augmented Generation (RAG) · AI Awareness & Literacy · Kolmogorov-Arnold Networks

Application Domains: Medical Image Analysis (peripheral blood cells, COVID-19 detection, glioma MRI) · Computational Drug Discovery

Methods: Convolutional Neural Networks · Transfer Learning · Bayesian Deep Learning · Hybrid Architectures · Extreme Learning Machines · LSTM-VAE

Academic Positions

- 2023 – present **Associate Professor, Department of Software Engineering**
Firat University, Elazığ, Turkey · International Joint Program with Sam Houston State University (SHSU), USA
- 2022 – 2023 **Assistant Professor, Department of Software Engineering**
Firat University, Elazığ, Turkey · International Joint Program with Sam Houston State University (SHSU), USA

Administrative & Editorial Responsibilities

- 2023 – 2026 **Deputy Director, Graduate School of Natural and Applied Sciences**
Firat University, Elazığ, Turkey
- 2022 – 2023 **Vice Dean, Technology Faculty**
Firat University, Elazığ, Turkey
- 2023 – 2026 **Editor-in-Chief, Turkish Journal of Science and Technology (TJST)**
DergiPark · Open-access, peer-reviewed, English-language journal
- 2023 – 2026 **Editor-in-Chief, Firat Üniversitesi Mühendislik Bilimleri Dergisi (MBD)**
DergiPark · Open-access, peer-reviewed, Turkish-language engineering journal

Education

- 2018 **Ph.D. in Machine Learning**
Firat University · Thesis: "Classification of power quality events using machine learning methods"
- 2012 **M.Sc. in AI in Control Systems**
Firat University · Thesis: "Compensation of harmonics and reactive power using shunt active power filter"

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H-Index

697

Total Citations

682

Citing Articles

24

WoS Publications

[Google Scholar Profile](#) · [Web of Science \(ResearcherID: V-8898-2018\)](#) · 111 verified peer reviews

Selected Publications

★ AI-focused work highlighted. Citation counts from Web of Science. Full list at the profile links above.

- [1] K k am,  .M. & U ar, F. (2026). BiT-HyMLPKANClassifier: A Hybrid Deep Learning Framework for Human Peripheral Blood Cell Classification Using Big Transfer Models and Kolmogorov-Arnold Networks. *Advanced Intelligent Systems*, 8(1). ★
- [2] Kati, N. & U ar, F. (2025). Investigation of prediction approaches for the design and performance analysis of supercapacitors with biomass-based activated carbon electrodes. *Journal of Energy Storage*, 133. [3 cit.] ★
- [3] Kutsal, M., Ucar, F. & Kati, N. (2024). Computational drug discovery on human immunodeficiency virus with a customized long short-term memory variational autoencoder deep-learning architecture. *CPT: Pharmacometrics & Systems Pharmacology*, 13(2), 308–316. [9 cit.] ★
- [4] Ucar, F. (2023). A Comprehensive Analysis of Smart Grid Stability Prediction along with Explainable Artificial Intelligence. *Symmetry*, 15(2). [16 cit.] ★
- [5] Kati, N. & Ucar, F. (2023). An Intelligent Model for Supercapacitors with a Graphene-Based Fractal Electrode to Investigate the Cyclic Voltammetry. *Fractal and Fractional*, 7(3). [9 cit.] ★
- [6] Ekici, S., Ucar, F., Dandil, B. & Arghandeh, R. (2021). Power quality event classification using optimized Bayesian convolutional neural networks. *Electrical Engineering*, 103(1), 67–77. [28 cit.] ★
- [7] Ucar, F. & Korkmaz, D. (2021). A novel ship classification network with cascade deep features for line-of-sight sea data. *Machine Vision and Applications*, 32(3). [16 cit.] ★
- [8] Ucar, F. & Korkmaz, D. (2020). COVIDiagnosis-Net: Deep Bayes-SqueezeNet based diagnosis of the coronavirus disease 2019 (COVID-19) from X-ray images. *Medical Hypotheses*, 140. [459 cit.] ★
- [9] Ucar, F. (2020). Deep Learning Approach to Cell Classification in Human Peripheral Blood. *Proc. 5th Int. Conf. on Computer Science and Engineering (UBMK)*, pp. 383–387. [14 cit.] ★
- [10] Ucar, F., Alcin, O. F., Dandil, B. & Ata, F. (2018). Power Quality Event Detection Using a Fast Extreme Learning Machine. *Energies*, 11(1). [40 cit.]

Funded Research Projects

Active

- 2026 – 2027 **[PI] Hybrid Multi-layer Peripheral Blood Cell Classification with Kolmogorov-Arnold Networks**
T B TAK 1002 · Project No: 225E020 · Firat University
- 2026 – 2027 **LLM-based Supercapacitor Literature Analysis System: RAG Technology & Intelligent Research Assistant**
T B TAK 1002 · Project No: 225M743 · Role: Researcher/Expert
- 2024 – 2026 **Post-disaster Damage Detection Training Platform Development**
T B TAK 1001 · Project No: 223M417 · Role: Researcher/Expert
- 2024 – 2027 **Perception Management Applications & Emotional Attachment in Disaster-Affected Schools**
T B TAK 1001 · Project No: 223K924 · Role: Researcher/Expert

Completed

- 2022 – 2023 **Biomass-based Activated Carbon Supercapacitor Design & AI-based Performance Analysis**
T B TAK 1002 · Project No: 122M793 · Role: Researcher/Expert

2022 – 2024 **Novel Solutions for Effective and Secure Storage of Glioma MRI Images**

TÜBİTAK International · Project No: 122E337 · Role: Researcher/Expert

International Scientific Networks

2025 – 2029 **Management Committee Member (Turkey) — COST Action CA24165**

CardioPharmaGENET: Network for Cardiovascular Pharmacogenomics and Precision Medicine · cost.eu/actions/CA24165

2020 – 2024 **Work Group Member — COST Action CA18206**

Glioma MRI: Novel MRI-Based Biomarkers for Brain Tumour Assessment

Teaching

Algorithms and Programming I & II

Firat University · International Joint Program with Sam Houston State University (SHSU)

Turkish & English sections

Introduction to Computer Science

English

Discrete Mathematics

English

Microprocessors and Programming

English

Entrepreneurship

Turkish

Capstone Project Supervision Final-year projects with emphasis on LLM agents, RAG pipelines, n8n workflow automation, and AI-awareness applications

Technical Skills

AI / ML Frameworks

PyTorch · TensorFlow · Keras · Scikit-learn

LLM & Agentic AI

LangChain · RAG pipelines · n8n · OpenAI / Anthropic APIs

Languages & Tools

Python · Java · C · C++ · Lisp · Dart (Flutter Dev.) · MATLAB · L^AT_EX / Overleaf · Coding Agents

Content & Dissemination

NotebookLM · Instagram Reels · Notion · Podcast · Google Apps Script

Languages

Turkish (native) · English (professional)