Ferhat Uçar

Associate Professor of Computer Engineering

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

fucar@firat.edu.tr | ORCID: 0000-0001-9366-6124 | Google Scholar | Web of Science | Elazığ, Turkey

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**

Fırat University, Elazığ, Turkey · International Joint Program with Sam Houston State University (SHSU), USA

2022 – 2023 **Assistant Professor, Department of Software Engineering**

Fırat 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**

Fırat University, Elazığ, Turkey

2022 – 2023 **Vice Dean, Technology Faculty**

Fırat 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, *Fırat 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 "*

Research Impact (Web of Science, March 2026)

10	697	682	24
H-Index	Total Citations	Citing Articles	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] Kökçam, Ö. M. & **Uçar, 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. & **Uçar, 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**

TÜBİTAK 1002 · Project No: 225E020 · Fırat University

2026 – 2027 **LLM-based Supercapacitor Literature Analysis System: RAG Technology & Intelligent Research Assistant**

TÜBİTAK 1002 · Project No: 225M743 · Role: Researcher/Expert

2024 – 2026 **Post-disaster Damage Detection Training Platform Development**

TÜBİTAK 1001 · Project No: 223M417 · Role: Researcher/Expert

2024 – 2027 **Perception Management Applications & Emotional Attachment in Disaster-Affected Schools**

TÜBİTAK 1001 · Project No: 223K924 · Role: Researcher/Expert

Completed

2022 – 2023 **Biomass-based Activated Carbon Supercapacitor Design & AI-based Performance Analysis**

TÜBİTAK 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 Turkish & English sections
Fırat University · International Joint Program with Sam Houston State University (SHSU)

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 · LaTeX / Overleaf · Coding Agents

Content & Dissemination

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

Languages

Turkish (native) · English (professional)