Fuat Arslan

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EDUCATION

Bilkent University   Ankara, Turkey
M.S. in Electrical and Electronics Engineering   *Sep 2023 – Jun 2026*
- CGPA: 4.00/4.00
- Advisor: Prof. Tolga Çukur

Bilkent University   Ankara, Turkey
B.S. in Electrical and Electronics Engineering   *Sep 2018 – Jul 2023*
- CGPA: 3.88/4.00

Bilkent University   Ankara, Turkey
Second Major in Physics (Terminated by Own Decision)   *Sep 2020 – Jul 2023*
- CGPA: 3.82/4.00

EXPERIENCE

Researcher   Aug 2022 – Jun 2024
Hacettepe University Faculty of Medicine   *Ankara, Turkey*
- Developed deep learning models for melanoma classification.
- Created a research-grade dermoscopic image dataset, enabling further dermatology AI studies.
- Built a web application for AI-assisted melanoma risk assessment, facilitating pilot clinical evaluations.

Undergraduate Researcher   May 2022 – Sep 2022
Bilkent University   *Ankara, Turkey*
- Designed and implemented a chatbot with internet search, custom text learning, and voice interaction capabilities under the supervision of Prof. Arnab Basu using **PyTorch**, **ParlAI**, and **transformers**.

Intern   Aug 2022 – Sep 2022
HAVELSAN   *Ankara, Turkey*
- Developed an AI-based real-time network intrusion detection system using **PyTorch**.

Candidate Engineer   Aug 2021 – Mar 2022
ULAK Haberleşme   *Ankara/Istanbul, Turkey*
- Contributed to 5G-NR R&D, designed PL with **Verilog**, and developed PS AMP software with **OpenAMP**.
- Utilized **freeRTOS**, bare-metal, and **embedded Linux** for AMP designs.

Intern   Jun 2021 – Aug 2021
ULAK Haberleşme   *Ankara, Turkey*
- Booted ZCU102 board with Linux using **Petalinux**, designed IP blocks with AXI4 and GPIO using **VHDL**, and developed control software with **Libmetal** in C/C++ using **Vitis**.

Undergraduate Researcher   Feb 2021 – Jun 2021
Bilkent University   *Ankara, Turkey*
- Developed a voltage control system for a coil to maintain desired current, under the supervision of Reza Babaloo and Ergin Atalar, implemented on VC707 Board using **VHDL** and **MatLab**.

SELECTED PROJECTS

Mathematical Analysis of Neural Network Optimization | *PyTorch*   Nov 2024 – Dec 2024
- Performed a mathematical study of GD, SGD, Newton's Method, and adaptive optimizers, deriving update rules and analyzing convergence properties.

AI in Medicine | *PyTorch*   Nov 2022 – May 2023
- Ranked 5th nationwide in Teknofest 2023 AI in Healthcare Competition with a breast cancer detection system for mammography images.

Visual Odometry Navigation | *Python, PyTorch*   Nov 2022 – Jun 2023
- Developed robot navigation integrating visual odometry, IMU, and GNSS; senior project in collaboration with **ROKETSAN**.

TEACHING EXPERIENCE

Head Teaching Assistant – EEE 202 Circuit Theory   Aug 2023 – Jun 2026
Bilkent University   *Ankara, Turkey*
- Led laboratory sessions, graded coursework, supervised projects, and coordinated a team of 14–16 TAs each semester.
- Prepared and updated lab materials, managed course administration.

Extracurricular Activity

President
Jan 2022 – Jul 2023

Bilkent Programming Club
Ankara, Turkey
- Managed and organized official affairs and events for the club.
- Conducted tutorials on **Machine Learning** and **VHDL**.

Technical Skills

Programming & Scripting: Python, MATLAB, VHDL, Verilog
Machine Learning & AI Frameworks: PyTorch, HuggingFace Transformers, MONAI
Hardware & Embedded Systems: Vivado, Simulink, Vitis, Petalinux, freeRTOS, OpenAMP, Libmetal
Languages: English (Proficient), Turkish (Native), German (Elementary)

Certificates

Official Kickboxing Sport License – Türkiye Kick Boks Federasyonu (2019-Present)
Official Wushu and Kung-Fu Sport License – Türkiye Wushu Kung-Fu Federasyonu (2019-Present)

Achievements

- **ISMRM Magna Cum Laude Merit Award** (2025) — Spotlight abstract at the International Society for Magnetic Resonance in Medicine Annual Meeting, Honolulu, USA.

- **Best Paper Award** — Bilkent Graduate Research Conference (2025).

- Ranked 5th nationwide in Teknofest 2023 AI in Healthcare Competition (Team Engineer Docs).

- Ranked 633rd among ∼2 million participants in the National University Entrance Exam (2018).

- Ranked 9th out of 231 in the Electrical and Electronics Engineering department (B.Sc.).

- Ranked 5th out of 46 in the Physics department (second major).

Publications

Journal Articles

- **F. Arslan**, B. Kabas, O. Dalmaz, M. Ozbey, and T. Çukur, "Self-Consistent Recursive Diffusion Bridge for Medical Image Translation," *Medical Image Analysis (MEDIA)*, 2025. [In press].

- V. A. Nezhad, G. Elmas, B. Kabas, **F. Arslan**, and T. Çukur, "Generative Autoregressive Transformers for Model-Agnostic Federated MRI Reconstruction," *arXiv preprint arXiv:2502.04521*, 2025. [Online]. Available: https://arxiv.org/abs/2502.04521.

- **F. Arslan**, B. Kabas, V. A. Nezhad, S. Ozturk, E. U. Saritas, and T. Çukur, "Physics-Driven Autoregressive State Space Models for Medical Image Reconstruction," *arXiv preprint arXiv:2412.09331*, 2025. [Online]. Available: https://arxiv.org/abs/2412.09331.

- O. F. Atli, B. Kabas, **F. Arslan**, M. Yurt, O. Dalmaz, and T. Çukur, "I2I-Mamba: Multi-modal Medical Image Synthesis via Selective State Space Modeling," *arXiv preprint arXiv:2405.14022*, 2024. [Online]. Available: https://arxiv.org/abs/2405.14022.

- **F. Arslan** and T. Arslan, "Development of an Artificial Intelligence-Based Diagnostic System Using Dermoscopic Images and Evaluation of the Diagnostic System's Place in Dermatology Residency," Hacettepe University, 2024.

Conference Papers

- **F. Arslan**, B. Kabas, O. Dalmaz, M. Ozbey, and T. Çukur, "A Self-Consistent Diffusion Schrödinger Bridge for Multi-Modal Medical Image Translation," *Proceedings of the International Society for Magnetic Resonance in Medicine (ISMRM)*, 2025.

- **F. Arslan**, M. B. Yılmaz, and T. Çukur, "Robust Brain Tumor Segmentation with Deep Residual Supervision and Mixed Precision Training," in *Proceedings of the IEEE 32nd Signal Processing and Communications Applications Conference (SIU)*, May 2024.

- M. U. Mirza, **F. Arslan**, and T. Çukur, "Super Resolution MRI via Upscaling Diffusion Bridges," in *Proceedings of the IEEE 32nd Signal Processing and Communications Applications Conference (SIU)*, May 2024.

- B. Kabas, **F. Arslan**, and T. Çukur, "Multi-Contrast MR Image Synthesis with a Brownian Diffusion Model," in *Proceedings of the IEEE 32nd Signal Processing and Communications Applications Conference (SIU)*, May 2024.

- V. A. Nezhad, G. Elmas, **F. Arslan**, B. Kabas, and T. Çukur, "Generalizable Deep MRI Reconstruction with Cross-Site Data Synthesis," in *Proceedings of the IEEE 32nd Signal Processing and Communications Applications Conference (SIU)*, May 2024.

Invited Talks & Presentations

- "Öğrenme Biçimleri: Klasikten Derine" — Presentation at *DUSEK* (Dermatoloji Uzmanlık Sonrası Eğitim Kurulu), session on Artificial Intelligence in Dermatology, 2025.