Mohammad Fathi

Kharazmi University

Department of Electrical & Computer Engineering

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Research Interests

- Machine Learning and Deep Learning
- Computational Neuroscience
- Graph Neural Networks
- Signal Processing and Neuroimaging Analysis

Education

Kharazmi University   Sep. 2021 – Sep. 2024

M.S. in Data Mining - GPA: 3.74 out of 4.0 (17.25/20) [Faculty GPA: 14.47 / 20]   *Tehran, Iran*

Advisor: Dr. Mir Mohsen Pedram

Thesis: Diagnosis of Mild Cognitive Impairment (MCI) using Graph Neural Networks Based on Functional Near-Infrared Spectroscopy (fNIRS) Data

Thesis Grade: 20/20

Shahed University   Sep. 2016 – Jul. 2021

B.S. in Computer Science - GPA 3.26 (15.30/20) [Last two years]   *Tehran, Iran*

Advisor: Dr. Shahriar Bijani

Academic/Research/Teaching Experiences

| **Research Assistant** | Acquiring fNIRS Data
Kharazmi University | **Sep. 2022 - Sep. 2024** |

- Developed preprocessing guidelines and prepared fNIRS data to support research at the Kharazmi Cognitive and Brain Science Lab.
- Acquired and preprocessed EEG and fNIRS data for brain-computer interface and neuroimaging studies..

| **Labratory Research Assistant** | Teaching How to work with fNIRS device
Kharazmi University | **Sep. 2024 - Nov. 2024** |

- Teaching master's students how to acquire data and work with an fNIRS device under the supervision of Dr. Mir Mohsen Pedram.

| **Teaching Assistant** | Machine Learning Course
Kharazmi University | **Oct. 2022 - Feb. 2023** |

- Delivered classroom instruction to students and designed homework assignments to reinforce learning objectives.
- Evaluated and graded student homework assignments, providing constructive feedback to support student growth and development.
- Consulted with students individually to address questions and concerns, promoting engagement and understanding of course material.

Private Tutor	Computer Science Courses - Undergraduate Level	**Oct. 2019 - Sep. 2020**
	High School Mathematics, and Physics	**Oct. 2019 - Sep. 2020**
	Music	**Sep. 2019 - Feb. 2020**
	Tehran, Iran	

- Taught high school mathematics and physics to prepare students for the National Universities Entrance Exam (Konkur).
- Tutored undergraduate Computer Science students in various courses including Database, Algorithm, and Theory of computation for approximately one year.
- Taught music and music production in high school.

Workshops and Seminars

AI in Action: From Smart Vehicles and Computer Vision to Neuroscience   Dec. 2024

Research Week at Kharazmi University   *Tehran, Iran*

-Presented on AI applications in neuroscience, focusing on Brain-Computer Interfaces (BCI), neuroimaging techniques, and cognitive research, with discussions on autonomous vehicles and computer vision.

Honors and Awards

- **Top Master Students**
  Ranked 2nd in the Master's Program in Data Mining

- **Full Tuition Waiver Scholarship**
  Shahed University of Tehran (2016–2021)

Publications

- **Work In Progress**
  M. Fathi, M. Faramarzi, M. Gholami, M.M. Pedram, "Classification of Healthy Controls versus Alzheimer's and Frontotemporal Dementia Using Temporal Graph Neural Networks: A Resting-State EEG Study"
  M. Fathi, M. Faramarzi, M. Gholami, M. Pakravan, "Graph Neural Networks with Explainability for Classifying Autism Spectrum Disorder in the ABIDE I Resting-State fMRI Dataset"

- **Under Review**
  M. Fathi, M. Faramarzi, M. Gholami, M.M. Pedram, "A Novel Hybrid Method Based on Deep Learning for Alzheimer's Disease Diagnosis" [Applied Intelligence]

  N. Alipour, M. Faramarzi, M. Gholami, **M. Fathi**, N. Deravi, "Predicting cognitive impairment and dementia in the Health and Retirement Study of America: A machine and deep learning approach" [Acta Neurologica Belgica]

Computer Skills

Programming Languages:	Python, Matlab, SQL, C++, C#
Frameworks:	PyTorch, PyG, PyG Temporal, numpy, pandas, Scikit-learn, Keras, TensorFlow
Neuroimaging Toolboxes:	EEGLAB (MATLAB), MNE (Python)
Data Visualization Tools:	Tableau, Matplotlib, Seaborn
Statistical Analysis:	Familiar with SPSS
Development Environments:	Google Colab, Jupyter Notebook, VS Code
Version Control:	Git, GitHub

Work Experience

Data Scientist *Atitarh System Saman*
Oct. 2024 – Aug. 2025

- Developed machine learning models for anomaly detection and predictive maintenance in water distribution networks.

- Cleaned and preprocessed large-scale sensor data, implementing data wrangling techniques to enhance model reliability.

- Applied data mining techniques to uncover hidden patterns and improve leakage detection accuracy.

- Built predictive models to estimate potential leakage points using time-series forecasting and deep learning algorithms.

- Collaborated with engineers and stakeholders to integrate AI-driven solutions into real-world water management systems.

Languages

English:	Full Professional Proficiency
Persian:	Native or Bilingual Proficiency

Test Scores

TOEFL Internet-Based Test: 105/120 **Sep 20, 2025**

Reading: 30, Listening: 30, Speaking: 21, Writing: 24

References

Dr. Mir Mohsen Pedram, Associate Professor of Electrical and Computer Engineering Faculty of Engineering, Kharazmi University, Tehran, Iran
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Dr. Mansooreh Pakravan, Assistant Professor of Electrical and Computer Engineering, Faculty of Engineering, Tarbiat Modares University, Tehran, Iran
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Dr. Meghdad Mirabi, Assistant Professor, Senior Researcher at the Systems Research Group, Faculty of Computer Science, Technical University of Darmstadt, Germany
Email: meghdad.mirabi@cs.tu-darmstadt.de

Dr. Manoochehr Kelarestaghi, Assistant Professor of Electrical and Computer Engineering Faculty of Engineering, Kharazmi University, Tehran, Iran
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* Please notify me before contacting references.