ARASH HAJISAFI

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EDUCATION

University of Southern California — Los Angeles, USA
Ph.D. in Computer Science — Jan 2022 – Dec 2025 (Expected)
M.Sc. in Computer Science — Jan 2022 – Aug 2024

Amirkabir University of Technology — Tehran, Iran
B.Sc. in Computer Engineering, GPA: 19.28/20 (3.97/4) — Sep 2017 – Sep 2021

TECHNICAL SKILLS

Programming Languages: Python, Java, JavaScript, C/C++, MATLAB

Machine Learning and Data Analysis: PyTorch (including PyTorch Geometric and Geometric Temporal), scikit-learn, pandas, NumPy, Matplotlib, Seaborn, Plotly

Web & Big Data Technologies: Flask, Streamlit, SQLAlchemy, Spark, Kafka

Database & DevOps: SQL (RDBMS: MySQL, PostgreSQL), Docker, Linux, Git, GitHub Actions

Cloud Computing: Google Cloud Platform (GCP)

RESEARCH INTERESTS

Graph Neural Networks, Transformers, Deep Learning, Spatiotemporal Forecasting, Time-Series Modeling

PUBLICATIONS

1. **A. Hajisafi**[*], M. D. Siampou[*], et al., "WaveGNN: Modeling Irregular Multivariate Time Series for Accurate Predictions," **In-submission**.
2. Y. Wölker[*], **A. Hajisafi**[*], et al., "Small Graph Is All You Need: DeepStateGNN for Scalable Traffic Forecasting," **In-submission**.
3. **A. Hajisafi**, H. Lin, et al., "Dynamic GNNs for Precise Seizure Detection and Classification from EEG Data," **PAKDD '24**, DOI:10.1007/978-981-97-2238-9_16 (2024).
4. **A. Hajisafi**, M. D. Siampou, et al., "Wearables for Health (W4H) Toolkit for Acquisition, Storage, Analysis and Visualization of Data from Various Wearable Devices," **ICDE '24**, DOI:10.1109/ICDE60146.2024.00419.
5. **A. Hajisafi**, H. Lin, et al., "Learning Dynamic Graphs from All Contextual Information for Accurate Point-of-Interest Visit Forecasting," **Published: SIGSPATIAL '23**, DOI:10.1145/3589132.3625567 (2023).
6. H. Nguyen, **A. Hajisafi**, et al., "An Evaluation of Time-Series Anomaly Detection in Computer Networks," International Conference on Information Networking (**ICOIN**), DOI:10.1109/ICOIN56518.2023.10049051 (2023).
7. S. Shaham, **A. Hajisafi**, et al., "Privacy and Fairness in Machine Learning: A Survey," **Accepted (IEEE Transactions on Artificial Intelligence)**, arXiv preprint, arXiv:2307.15838 (2023).

[*] Equal contribution

WORKING EXPERIENCE

University of Southern California – InfoLab — Los Angeles, USA
Graduate Research Assistant — Jan 2022 – Present
Projects:

Wearables for Health (W4H) Toolkit (video demonstration: https://youtu.be/67a8kuMjSAU)

- Led the development of the W4H Integrated Toolkit, an **open-source** toolkit centralizing both real-time and offline wearable data from various sources (e.g., Garmin, Apple Watch, Fitbit).
- Designed a scalable system architecture separating data engineering, analysis, and visualization.
- The toolkit comprises the following open-sourced tools:
  - **StreamSim**: Real-time data streaming simulator using **Python** and **Flask**.
  - **W4H ImportHub**: Integrates stored datasets with **Python**, **SQLAlchemy**, and **Streamlit**.
  - **pyGarminAPI**: **Python** library for interacting with the Garmin API.

- **Integrated Analytics Dashboard**: Core component for data extraction and analysis using **Streamlit**, **pandas**, **Flask**, **Spark**, and **Kafka**.
- Released the toolkit in two modes: a **Docker** image for local setup and a centralized version on USC clusters.

Accurate EEG Seizure Detection and Classification
- Designed and implemented a **GNN**-based model using **PyTorch** and **PyTorch Geometric** to dynamically model brain correlations using EEG signals.
- Utilized **pretrained LLMS** to enhance model performance, unveiling dynamic brain dependencies.

Learning Dynamic Graphs for Accurate Point-of-Interest Visit Forecasting
- Transformed the problem of predicting POI visits in the U.S. into a time-series forecasting task, leveraging multi-context correlations.
- Introduced BysGNN, a temporal graph neural network implemented using **PyTorch**.
- Utilized **pretrained LLMS** to optimize the model, achieving significant improvement in forecasting accuracy.

Mentoring and Training
- Trained and guided two undergraduate students on an academic project, enhancing their research capabilities and ensuring project success. Summer 2022

Gam Electronics Co. Tehran, Iran
Software R&D Intern July 2020 – Sep 2020
- Engineered automated business processes using **Python**, **Flask**, and **Selenium**, enhancing efficiency.
- Conducted unit and integration testing using **pytest** and **unittest** libraries in **Python**.
- Developed interactive web dashboards using **HTML**, **CSS**, and **JavaScript** for enhanced user experience.

MEDIA AND OUTREACH

New AI System Detects Rare Epileptic Seizures
USC Viterbi School of Engineering, June 4, 2024

New AI Tech Predicts Rare Epileptic Seizures
Advanced Science News, June 27, 2024

AWARDS AND HONORS

· Ranked Within the **Top 5%** of My Class in Amirkabir University of Technology 2021
· Recognized as a Scientific Talent by the National Elites Foundation of Iran 2020
· Received Full Tuition Waiver Scholarship from Amirkabir University of Technology 2017
· Achieved the **229**th Place Among 140,000 Applicants in the Iranian University Entrance Exam 2017
· Awarded the Certificate of Honor at the International Mathematical Kangaroo Contest 2016