ARASH HAJISAFI

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EDUCATION

University of Southern California — Los Angeles, USA
Ph.D. in Computer Science — Jan 2022 – Present

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)

WORKING EXPERIENCE

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

Projects:

Wearables for Health (W4H) Toolkit

- 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.

RESEARCH INTERESTS

Graph Neural Networks, Deep Learning, Spatio-Temporal Data Management and Forecasting

PUBLICATIONS

1. **A. Hajisafi**, H. Lin, et al., "Learning Dynamic Graphs from All Contextual Information for Accurate Point-of-Interest Visit Forecasting," **SIGSPATIAL '23**, arXiv preprint arXiv:2306.15927 (2023).
2. **A. Hajisafi**, M. D. Siampou, et al., "Wearables for Health (W4H) Toolkit for Acquisition, Storage, Analysis and Visualization of Data from Various Wearable Devices," **In-submission (ICDE '24)**.
3. S. Shaham, **A. Hajisafi**, et al., "Holistic Survey of Privacy and Fairness in Machine Learning," **In-submission (ACM Computing Surveys)**, arXiv preprint arXiv:2307.15838 (2023).
4. H. Nguyen, **A. Hajisafi**, et al., "An Evaluation of Time-Series Anomaly Detection in Computer Networks," In 2023 International Conference on Information Networking (ICOIN), pp. 104-109. IEEE, 2023.

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**$^{\text{th}}$ Place Among 140,000 Applicants in the Iranian University Entrance Exam 2017
· Awarded the Certificate of Honor at the International Mathematical Kangaroo Contest 2016