ARASH HAJISAFI

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EDUCATION

University of Southern California — Los Angeles, USA
Ph.D. in Computer Science — Jan 2022 – Present
Advisor: Prof. Cyrus Shahabi

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

RESEARCH INTERESTS

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

PUBLICATIONS

1. **A. Hajisafi**, H. Lin, S. Shaham, H. Hu, M. D. Siampou, Y. Chiang, C. Shahabi, "Learning Dynamic Graphs from All Contextual Information for Accurate Point-of-Interest Visit Forecasting," **In-submission**, arXiv preprint arXiv:2306.15927 (2023).
2. S. Shaham, **A. Hajisafi***, M. K. Quan*, D. C. Nguyen, B. Krishnamachari, C. Peris, G. Ghinita, C. Shahabi, P. N. Pathirana, "Holistic Survey of Privacy and Fairness in Machine Learning," **In-submission**, arXiv preprint arXiv:2307.15838 (2023).
3. H. Nguyen, **A. Hajisafi**, A. Abdoli, S. H. Kim, and C. Shahabi, "An Evaluation of Time-Series Anomaly Detection in Computer Networks," In 2023 International Conference on Information Networking (ICOIN), pp. 104-109. IEEE, 2023.

WORKING EXPERIENCE

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

W4H: Wearables for Health and Disease Knowledge

- Led the development of an open-source toolkit to centralize real-time wearable data from various sources, unifying them under a Geo-Referenced Multivariate Time-Series (GeoMTS) format, enhancing healthcare data management.
- Designed a layered system architecture to efficiently separate data engineering, analysis, and visualization.
- Utilized big data frameworks such as **Spark** and **Kafka** to meet scalability and reliability requirements.
- Created visualization dashboards for real-time and offline statistical comparison, enabling real-time outlier detection and comprehensive analysis.
- Contributed to open-source community by developing APIs for Garmin data access and a customizable tool for simulating real-time streaming.

Accurate EEG Seizure Detection and Classification

- Innovated a GNN-based deep learning model to dynamically model brain correlations across spatial, semantic, and temporal dimensions using EEG signals, resulting in a dynamic graph reflecting dependencies in the brain.
- Utilized the uncovered dynamic correlations in the brain for precise seizure classification, contributing to advancements in medical diagnostics.

Learning Dynamic Graphs from All Contextual Information for Accurate Point-of-Interest Visit Forecasting

- Formulated the problem of predicting hourly visits to Points of Interest (POIs) across the U.S. as a multivariate time-series forecasting task, recognizing the need to exploit multi-context correlations among POIs.
- Proposed Busyness Graph Neural Network (BysGNN), a temporal graph neural network uniquely designed to uncover underlying multi-context correlations between POIs for precise visit forecasting.
- Integrated all contextual information, including temporal, spatial, and semantic signals in BysGNN, achieving significant improvement in forecasting accuracy over existing state-of-the-art models in real-world datasets.

Gam Electronics Co. Tehran, Iran
Software R&D Intern July 2020 – Sep 2020

- Engineered and implemented sophisticated automated business processes, utilizing cutting-edge technologies and methodologies to enhance efficiency and accuracy.
- Translated high-level requirements into comprehensive functional specifications, devising detailed development plans that aligned with strategic objectives and technical constraints.
- Orchestrated and executed rigorous User Acceptance Testing (UAT), employing systematic testing strategies to identify and rectify errors, demonstrating a commitment to quality and continuous improvement.
- Conceptualized, designed, and developed intricate web forms in accordance with given specifications, leveraging modern web technologies and best practices to ensure compliance with business requirements.

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

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 and Big Data Technologies: Flask, Streamlit, SQLAlchemy, Spark, Kafka

Database, DevOps, and CI/CD: SQL (RDBMS: MySQL, PostgreSQL), Docker, Linux, Git, GitHub Actions

Cloud Computing: Google Cloud Platform (GCP)

Others: LaTeX