Arash Hajisafi | Curriculum Vitae

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Education

University of Southern California   **Los Angeles, USA**
Ph.D., *Computer Science*   *January 2022 – Present*
  Supervisor: Prof. Cyrus Shahabi

Amirkabir University of Technology   **Tehran, Iran**
Bachelor of Science, *Computer Engineering*   *September 2017 – September 2021*
  CGPA: 19.28/20 (3.97/4)
  Supervisor: Prof. Mohammad Mehdi Ebadzadeh
  Thesis: Detection and Correction of a Special Type of Bias in OLAP Queries

Related Coursework:

- Machine Learning
- Principles of Artificial Intelligence
- Computational Intelligence
- Data Mining
- Information Retrieval
- Applied Linear Algebra
- Advanced Programming
- Software Engineering (I) & (II)
- Software Testing
- Web Programming

Research Interests

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

Awards and Honors

2021: Ranked Within the Top 5% of My Class in Computer Engineering Department with a CGPA of 19.28 (out of 20), Amirkabir University of Technology

2017: Received Full Tuition Waiver Scholarship from Amirkabir University of Technology

2017: Achieved the Top 0.2% Place Among All Applicants in the Iranian University Entrance Exam (nearly 140000 applicants)

2016: Awarded the Certificate of Honor at the **International Mathematical Kangaroo Contest**

Experience

Research

Accurate Multivariate Time-Series Forecasting of POI Visits Numbers   **Los Angeles, USA**
PhD Research Assistant at InfoLab, USC   *January 2022 — Present*

- Building a state-of-the-art **GNN-based** forecasting model to predict the hourly number of visits to 500 most visited POIs in Houston
- More specifically, we are building our multivariate time-series forecasting model by applying Recurrent Neural Networks (**RNNs**) to capture the time dependencies within POIs and an **attention**-based mechanism to capture the inter-POI correlations. We further utilize **Graph Neural Networks** (GNNs) to learn new representations for POIs based on the derived intra- and inter-series correlations to be able to make accurate predictions

W4H: Wearables for Health and Disease Knowledge   **Los Angeles, USA**
PhD Research Assistant at InfoLab, USC   *January 2022 — Present*

- In this project, we are building an open-source toolkit to enable health facilities efficiently store, analyze, and visualize real-time wearable data from heterogeneous sources (e.g., Fitbit, Garmin, Apple Watch) under a unified data format that we are developing
- We are developing a layered system architecture to separate the data engineering, data analysis, and data visualization tasks
- We have utilized big data frameworks such as **Spark** and **Kafka** to meet the scalability and reliability requirements of our system

Industry

Gam Electronics Co.   **Tehran, Iran**

Software R&D Intern   *July 2020 – September 2020*

- Designing and building automated business processes
- Participating in the development of complex business processes
- Taking the high-level requirements and transforming them into functional specifications with detailed development plans
- Preparing and executing User Acceptance Testing (UAT) and developing improvement plans as well as taking accountability in fixing identified errors
- Creating Web Forms for the given specifications

Technical Skills

Programming
- Python
  - PyTorch
  - Scikit-Learn
  - Pandas
  - Seaborn
  - Matplotlib
  - Streamlit
  - NumPy
  - SQLAlchemy
  - PySpark
- Flask
- Java
  - Spring
  - Maven
- C/C++

Web Development
- HTML/CSS
- JavaScript
- Bootstrap 4

Big Data Technologies
- Spark
- Kafka

Miscellaneous
- SQL (MySQL/PostgreSQL)
- PostGIS
- Git
- LaTeX
- Linux
- OOP

Selected Projects

○ **Information Retrieval System for a Collection of 50,000 Persian News**
- Implemented in three phases, including building an inverted index, ranked-based processing of free-text queries, and implementation of clustering and classification algorithms

○ **Improved Sudoku Constraint Satisfaction Problem (CSP)**
- Solving the puzzle, in a manner that adjacent sub-grids hold different colors, using forward checking and backtracking as well as MRV and degree heuristics

○ **AI Card Game**
- Solving the card game using breadth-first, iterative deepening depth-first, and A* search strategies

○ **Solving Three NP-Complete Problems**
- Solving Steiner Tree Problem, the Egg-holder function's minimum finding problem and a CSP using genetic algorithms and Evolution Strategy

○ **Java Tank Game (JTanks)**
- A 2D tank game written in Java which features both multiplayer and single-player modes

○ **That's MyTable V2**
- Restaurant table booking and food reservation web application developed using Java, Spring MVC, Hibernate, and Maven

○ **Restaurant Management Database System**
- A database system with GUI for restaurant management using Python, Tkinter library and MySQL

○ **NetWolf**
- A Peer-to-Peer file sharing application implemented in Python

○ **Threads and Ticket Lock Implementation in Xv6**
- Implementing threads and ticket lock in Xv6's kernel

***Further details regarding the projects are available through** arashhs.github.io/#projects*