Mohammad Aminazadeh

B.Sc. in Computer Engineering

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Education

University of Isfahan *Isfahan, Iran*

B.Sc. in Computer Engineering (Information Technology) *Sept 2016 - Sept 2021*

- **GPA:** 3.84 (17.80 out of 20) for the last three years
- **Thesis Title:** Urban Segmentation and Analysis: Traffic Time Series Clustering and Weather Impact Analysis on Traffic Flows
- **Supervisor:** Dr. Fakhroddin Noorbehbahani
- **Relevant Coursework:** Final Thesis (19/20) - Advanced Programming (20/20) - Data Structures (19.80/20) - Algorithms Design (17.51/20) - Database Lab (20/20) - MATLAB Workshop (20/20) - Linear Algebra for ML (online)

Research Interests

Data/Graph Mining - Data Science - Deep Learning - Informatics - Human-Centered AI

Honors

- Ranked among the top B.Sc. students of computer engineering major (Faculty of Computer Engineering, University of Isfahan, Isfahan, Iran).
- Ranked among the top 10% of mathematics candidates in the National University Entrance Exam, achieving a position of 1,760 out of 165,000.
- Ranked among the top students of Mathematics in high school of "Isfahan University of Technology".

Publications (91 Citations)

Journal Articles

A systematic review of research on cheating in online exams from 2010 to 2021
Fakhroddin Noorbehbahani, Azadeh Mohammadi, Mohammad Aminazadeh
Journal of Education and Information Technologies (Mar. 2022). 2022

Conference Proceedings

City Intersection Clustering and Analysis Based on Traffic Time Series
Mohammad Aminazadeh, Fakhroddin Noorbehbahani
IEEE 12th International Conference on Computer and Knowledge Engineering (ICCKE), 2022, Mashhad, Iran

Business Models for the Internet of Things: An In-Depth Categorization, Design and Innovation Tools, Challenges, and Solutions (Accepted)
Fakhroddin Noorbehbahani, Mohammad Aminazadeh, Hooman Hoghooghi Esfahani, Soroush Bajoghli
IEEE 7th International Conference on Internet of Things and Applications, 2021, Isfahan, Iran

Projects

1) Urban Segmentation and Analysis: Traffic Time Series Clustering and Weather Impact Analysis on Traffic Flows *Isfahan, Iran*

University of Isfahan (B.Sc. Thesis) *Jan 2021 - Sep 2021*

- **Supervisor**: Dr. Fakhroddin Noorbehbahani
- **Technical Fields Involved**: Big Data Mining and Analytics - Time Series Clustering and Visualization - Pattern Recognition - Correlation Analysis
- Ensuring Robustness: Pre-processing 13 million records of text-based data including cleaning, aggregation, missing value estimation and noise mitigation.
- Clustering traffic time series using Euclidean K-Means to group intersections based on similar traffic behaviors.
- Investigating daily and seasonal traffic flow patterns through time series visualization.
- Correlation analysis between weather extreme conditions (Max/Min temperatures - Heavy Rain/Snow/Wind) and traffic flows by integrating weather and traffic data.

2) Time Series Prediction with Dynamic Time Warping Clustering *Isfahan, Iran*

University of Isfahan *Feb 2022 - May 2022*

- **Supervisor**: Dr. Fakhroddin Noorbehbahani
- **Technical Fields Involved**: Time Series Prediction - Time Series Clustering
- Predicting traffic time series by DTW clustering.
- Leading time series within the same DTW clusters are predictors of lagging time series.

3) Traffic Network Prediction and Analysis with Graph Convolutional Networks *Isfahan, Iran*

Ongoing Personal Project *Jun 2023 - Present*

- **Technical Fields Involved**: Graph Mining - Network Analysis - Traffic Prediction - Anomaly/Congestion Detection
- Applying a GCN model for traffic prediction in intersections (Nodes).
- Anomaly and congestion detection within different routes (Edges).
- **Node Features:**
- Traffic features: Average number of vehicles - Traffic variability (Standard Deviation
- Temporal features: Date - Day of the week - Time of the day
- Spatial features: Intersection coordinate(Lat and Long) - Proximity to key locations
- Weather features: Max temperature - Min temperature - Wind avg speed - Sunny hours - Last 24 hours rain
- Intersection features: Road types (highway/local street/alley) - Degree of centrality

4) Financial Data Extraction and Aggregation: Web Scraping using Selenium *Isfahan, Iran*

Personal Project *Jun 2022 - Aug 2022*

- **Technical Fields Involved**: Data Extraction - Feature Engineering - Data Aggregation and Cleaning - Statistical Analysis
- Extracting complete financial data of 26,600 public companies from web using Selenium, each comprising 356 distinct features.
- Performing feature engineering and statistical analysis on data.

5) Course Projects *Isfahan, Iran*

University of Isfahan

- Autonomous Maze Navigation System: Implementing an Agent for Solving Maze Puzzles (Artificial Intelligence Project)
- Implementing a Rule-based Agent to Survive in “Wumpus World” Game (Data Structures Project)
- Genetic Algorithm Implementation using MATLAB (MATLAB Workshop Project)
- Implementation of Fundamental Data Structures from Scratch (Advanced Programming Project)

Research Experiences

Research Assistant *Isfahan, Iran*

University of Isfahan *Feb 2021 - Present*

- **Supervisor**: Dr. Fakhroddin Noorbehbahani
- Department of Computer Engineering

Skills

Programming Languages	Python , R, SQL
Libraries	PyTorch, NetworkX, Scikit-learn, Pandas, NumPy, Selenium, TS-learn
Data Analytic Tools	Tableau, Excel
Soft Skills	Critical Thinking, Creative, Fast Learner, Management and Teamwork

Language Proficiency

English	IELTS Band Score 7.5 (Listening 8.5 - Reading 7.5 - Writing 7 - Speaking 6.5)
Persian	Native proficiency

References

- **Referee 1:** Dr. Fakhroddin Noorbehbahani
  Affiliation: Assistant Professor at the University of Isfahan
  Email: noorbehbahani@eng.ui.ac.ir
- **Referee 2:** Dr. Azadeh Mohammadi
  Affiliation: Lecture in Data Science at the University of Salford (Former Assistant Professor at the University of Isfahan)
  Emails: az.mohammadi@eng.ui.ac.ir - mohammadi1@salford.ac.uk
  Gmail: azade.mohammadi@gmail.com
- **Referee 3:** Dr. Kamal Jamshidi
  Affiliation: Professor at the University of Isfahan
  Email: jamshidi@eng.ui.ac.ir