Hamed Vaheb

Isfahan, Iran | 20 September 1995
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Research Interests

Data Science, Machine Learning, Deep Learning, Neural Networks, Time Series Forecasting, Time Series Analysis, Social Network Analysis, Natural Language Processing

Education

M.S., Financial Mathematics — July 2020
Amirkabir University of Technology (AUT) — Tehran, Iran
Thesis: "Asset Price Forecasting using Recurrent Neural Networks"
Advisor: Asst. Prof. Erfan Salavati
GPA: 18.41/20 (4.0/4.0), Class Rank: 2

B.S., Mathematics and its Applications — June 2017
Isfahan University of Technology (IUT) — Isfahan, Iran
Thesis: "On Decomposing Systems of Polynomial Equations with Finitely Many Solutions"
Advisor: Assoc. Prof. Amir Hashemi
GPA: 16.38/20 (3.38/4.0), Class Rank: 4

Skills

Programming	Proficient:	`Python`, `C`, `R`, LaTeX
	Basic:	`SQL`, `HTML`, `CSS`, `JavaScript`, `Lisp`
Software	IDEs:	`Pycharm`, `Spyder`, `RStudio`
	Tools:	`Maple`, `Matlab`, `Gams`, `Git`, `Docker`, `Gimp`
	Platforms:	`Linux` and `UNIX`
	Libraries:	`Scipy`, `Numpy`, `Pandas`, `Stats`, `Matplotlib`, `Plotly`, `Scikit-learn`, `Keras`

Certificates

- Guided Tour of Machine Learning in Finance, New York University - Coursera — November 2018
- Introduction to Philosophy, University of Edinburgh - Coursera — December 2018
- Fundamentals of Machine Learning in Finance, New York University - Coursera — January 2020
- Social Psychology, Wesleyan University - Coursera — September 2020
- Introduction to Data Science in Python, University of Michigan - Coursera — November 2020
- Applied Plotting, Charting & Data Representation in Python, University of Michigan — January 2021
- Computer Science for Artificial Intelligence Professional Certificate, Harvard University - edX
  - CS50's Introduction to Computer Science — Ongoing
  - CS50's Introduction to Artificial Intelligence with Python — Ongoing
- Applied Machine Learning in Python, Michigan University - Coursera — Ongoing

Academic Projects

Bachelor

Bachelor of Science Thesis 2016-2017
Title: "On Decomposing Systems of Polynomial Equations with Finitely Many Solutions"
Professor: Amir Hashemi
- Elaborated and implemented Möller's algorithm to solve a system of polynomial equations

Master

Master of Science Thesis 2018-2020
Title: "Asset Price Forecasting using Recurrent Neural Networks"
Professor: Erfan Salavati
- Forecast, analyzed, and visualized two S&P stocks using LSTM and ARIMA
- Elaborated on the framework on which neural networks are based by proving theorems

Special Topics in Financial Mathematics 2018
Professor: Farnaz Hooshmand Khaligh
- Solved financial resource allocation and optimization problems, e.g., Markovitz in `Gams`

Coursera

Machine Learning in Finance
Courses: Guided Tour of Machine Learning in Finance
Fundamentals of Machine Learning in Finance

1. **Euclidean Distance** 2018
   - Computed, analyzed, and visualized Euclidean distance between sampled points
2. **Regression** 2018
   - Applied linear and Tobit regression, visualized the latter, and reported loss
3. **Bank Failure** 2018
   - Modeled and predicted bank failures based on *CAMELS*, using logit and random forest
4. **Unsupervised Learning** 2018
   - Constructed Eigen-portfolio using PCA and developed simple trading strategy
   - Visualized multi-dimensional data using t-SNE

Applied Data Science with Python
Courses: Introduction to Data Science in Python
Applied Plotting, Charting & Data Representation in Python

1. **RegEx** 2020
   - Extracted information from a text dataset, based on emerging patterns in strings
2. **Pandas and Stats** 2020
   - Provided analysis, statistical testing, and summary of real-world datasets, e.g., CDC immunizations and vaccines, major sport leagues, and countries' energy indicators
3. **Matplotlib** 2021
   - Evaluated visualizations using Alberto Cairo and Edward Tufte's theories and principles
   - Visualized datasets and exhibited meaningful patterns through representations

edX

Computer Science
Course: CS50's Introduction to Computer Science

1. **C:** Luhn Algorithm Scrabble Readability Caesar's Cipher Runoff Election 2021
   WAV Volume Image Filter Recover JPEGs Inheritence Spell-checker
2. **SQL** Ongoing
   - Data processing, working with databases
3. **HTML** Ongoing
   - Web development using HTML, CSS, and JavaScript

Languages

- **English:** Fluent — **TOEFL** Score: 112 (**R**: 29, **L**: 27, **S**: 28, **W**: 28)
- **Persian:** Native — **German:** Beginner — **Japanese:** Beginner

Teaching Experience

Teaching Assistant of Stochastic Processes (Graduate Course) Spring 2018
Professor: Erfan Salavati (Amirkabir University of Technology)

- Functioned as a liaison between the professor and students by providing weekly handouts, additional contents and sessions that enhanced exam preparedness
- Resolved problems encountered by students both inside and outside of class
- Implemented and presented some of the course's methods and algorithms in `Matlab`

Awards and Honors

- Ranked within top ***3%*** among 5000 participants in Iranian University Entrance Exam for graduate school
- Received national undergraduate and graduate full scholarships

References

- **Dr. Erfan Salavati**
  Assistant Professor of Mathematics — Telephone: +98 21 645 456 61
  Department of Mathematics and Computer Science — Email: `erfan.salavati@aut.ac.ir`
  Amirkabir University of Technology
  No. 350, Hafez Ave, Valiasr Square, Tehran, Iran 1591634311
- **Dr. Amir Hashemi**
  Associate Professor of Mathematics — Telephone: +98 313 391 36 35
  Department of Mathematical Sciences — Email: `amir.hashemi@cc.iut.ac.ir`
  Isfahan University of Technology
  Khomeyni Shahr Isfahan, Iran