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 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 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` ⍣

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

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
- **Persian:** Native

TOEFL Score: 112 (**R**: 29, **L**: 27, **S**: 28, **W**: 28)

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
  Department of Mathematics and Computer Science
  Amirkabir University of Technology
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