

Amir Masoud Sefidian

MACHINE LEARNING ENGINEER

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Education

M.Sc. in Computer Engineering

2015–2017

SHAHID RAJAEI UNIVERSITY · GPA: 4.0/4.0 (19.34/20) · RANKED 1st AMONG ALL M.Sc. STUDENTS.

Tehran, Iran

- Thesis: “Improving missing value estimation and inconsistencies detection using data partitioning techniques” (Grade: Excellent), Supervisor: Dr. Negin Daneshpour.
- **Research Interests:** Data Science, Machine Learning, Deep Learning, Reinforcement Learning, Computer Vision.

B.Sc. in Computer Engineering

2011–2015

SHAHID RAJAEI UNIVERSITY · GPA: 3.96/4.0 (19.15/20) · RANKED 1st AMONG ALL B.Sc. STUDENTS.

Tehran, Iran

- Thesis: “Designing an online consultation system” (Grade: 20/20), Supervisor: Dr. Hamid Reza Shayegh.

Publications

- 2020** Sefidian, Amir Masoud, and Daneshpour, Negin (2020). “Estimating missing data using novel correlation maximization based methods”. *Applied Soft Computing*, 91, 106249.
- 2019** Sefidian, Amir Masoud, and Daneshpour, Negin (2019). “Missing value imputation using a novel grey based fuzzy c-means, mutual information based feature selection, and regression model”. *Expert Systems with Applications*, 115, 68-94.
- 2018** Sefidian, Amir Masoud, and Daneshpour, Negin (2018). “Applying regression models on subsets with high correlations for a better numeric missing values imputation”. *Tabriz Journal of Electrical Engineering*, 48(3), 1187-1200 (in Persian).
- 2017** Sefidian, Amir Masoud, and Daneshpour, Negin (2017). “Using clustering and a hybrid method to fill the numeric missing values”. *Iranian Journal of Electrical and Computer Engineering (IJECE)*, 15(3), 233-242 (in Persian).

Work Experience

Machine Learning Engineer · Eveince (formerly ParticleB)

Aug 2020–May 2022

- Worked on different components of an AI-based Algorithmic Trading System:
 - Reduced the runtime of the walk-forward optimization process by **83%** by developing a **walk-forward optimization framework for algorithmic trading strategies on cloud architecture**. Tools: Apache Airflow, Docker Swarm, MinIO, PostgreSQL, Ansible, Optuna.
 - Implemented a parameter optimization service that periodically finds optimal parameters for the algorithmic trading engine. Tools: Apache Airflow, Docker, MinIO, PostgreSQL, InfluxDB, Grafana, Optuna.
 - Contributed to developing a **Backtesting Framework** that provides various tools for implementing and testing trading strategies such as fetching data, extracting features, training predictive ML models, allocating assets, executing orders, and evaluating portfolio performance.
 - Refactored, optimized, and integrated fragmented codes into a Python package used in different services.
- Devised and developed FIDIBO Recommendation System (digital platform for Ebooks, Audiobooks, and Podcasts):
 - Helping **3.5M+** users discover personalized items by developing content-based, collaborative filtering, and hybrid recommendation models.
 - Utilized Airflow to build data preparation, embedding generation, batch recommendation prediction, and post-processing pipelines.
 - Enhanced offline evaluation metrics **NDCG@5**, **MAP@5**, and **Coverage** by **50%**, **33%**, and **150%**, respectively.
 - Conducted online evaluations:
 - A/B testing to measure the effect of different recommendations on business metrics. Improved **Click-Through Rate (CTR)** by **22%** compared to the baseline that recommends popular items.
 - Funnel analysis to trace how users interact with real-time recommendations during their journey through the application. Boosted the **Conversion Rate** for *Complete Purchase* and *Add Item to Favorites* actions by **14%** and **8%**, respectively.
 - Performed comprehensive Exploratory Data Analysis (EDA) to understand and summarize underlying data and provide informative insights for business stakeholders using visualization and quantitative methods.
 - Created interactive recommendation evaluation and exploration dashboards using Plotly Dash.
 - Launched a service to assign a set of categories for a new item using NLP models.

PYTHON Developer (Machine Learning, Data Science, Web) · Freelancer

Jan 2014–Aug 2020

- Designed and implemented an AI-powered audio source separation (vocals/instruments) web application:
 - Enabled users to easily upload and separate a song into high-quality audio stems in less than a minute using deep learning instead of time-consuming and imperfect conventional methods. Tools: Deep U-Nets, PyTorch, Flask, Django, PostgreSQL.
- Developed a system that gives insights about metrics of an organization by performing analytical tasks such as prediction, segmentation, outlier detection, and metric importance analysis using ML algorithms. Tools: Apache Kafka, Redis, Docker.
- Built different AI-based services using PyTorch:
 - **Automatic Image Captioning** service by training an Encoder(CNN)-Decoder(LSTM) network on the MS COCO dataset.
 - **Facial Keypoint Detection** service that recognizes locations of 68 facial landmarks in an image using deep CNNs.
 - **Sentiment Analysis** service for Amazon customer reviews dataset using deep RNNs. Achieved **91.7%** accuracy on the test dataset.
 - **Energy Consumption Prediction** service using GRU/LSTM networks.
- Designed and launched a web-based (Django) appointments scheduling, accounting, and management system for a consultation institute:
 - Automated the laborious paper-based system and helped staff efficiently manage **40k+** appointments, **9k+** transactions, and **4k+** users.
- Built a **2D Landmark Detection and Robot Tracking tool using Graph SLAM (Simultaneous Localization and Mapping)** algorithm that creates a map and locates landmarks of an environment using sensor and motion data gathered by a vehicle.

C/C++ Developer

2007–2011

KOSARAN HIGH SCHOOL ROBOTICS/PROGRAMMING TEAM

- Developed C/C++ codes to program AVR Micro-controllers for rescue robots.

Academic Experience

Researcher

2015–2020

COMPUTER SCIENCE R&D LABORATORY, FACULTY OF COMPUTER ENGINEERING, SHAHID RAJAEI UNIVERSITY

- Conducted research in the field of data preprocessing, especially the missing values imputation problem, using machine learning techniques
- Proposed and developed three novel missing value imputation approaches

Teaching Assistant

2016–2018

FACULTY OF COMPUTER ENGINEERING, SHAHID RAJAEI UNIVERSITY

- “Database” (Undergraduate) · “Data Mining” and “Decision Support Systems” (Graduate) · Instructor: Dr. Negin Daneshpour.

Reviewer

- International Journal of Uncertainty, Fuzziness, and Knowledge-Based Systems (IJUFKS)
- International Journal of Information Technology, and Decision Making (IJITDM)

Skills

General Skills: Machine Learning, Data Analysis, Deep Learning, Data Wrangling, Data Visualization, Predictive Modeling

Programming Languages:

- **Proficient in Python:** Machine Learning and Data Science (Pandas, NumPy, Scikit-Learn, PyTorch, TensorFlow, Plotly) · Web (Django, Flask)
- **Familiar with:** SQL, C++, Java, HTML, CSS, JavaScript

Tools and Technologies: Docker, Apache Airflow, MinIO S3, Grafana, Git, Apache Kafka, PySpark MLlib

Databases: PostgreSQL, MySQL, InfluxDB, Redis, Elasticsearch

Honors & Awards

2018-2019 Best researcher of Shahid Rajaei University award.

2017 Recognized as a National Elite by Iran’s National Elites Foundation (INEF).

2015–2017 **Ranked 1st** among all M.Sc. Computer Engineering students in all semesters of studying M.Sc.

2015 Received direct admission to Shahid Rajaei University M.Sc. program as an elite student who achieved the highest GPA.

2011–2015 **Ranked 1st** among all Computer Engineering students in all (eight) semesters of studying B.Sc.

2011–2015 Awarded Faculty of Computer and Electrical Engineering prize and scholarship as an exceptional talent student for four consecutive years.

2011 Ranked within the top 1% among more than 464,000 applicants in B.Sc. National Universities Entrance Exam, Iran.

Nov 2009 Qualified for the final round of *Khawrazmi National Robotics Competitions - Rescue League* (Ranked **8th** in the final stage), K. N. Toosi University of Technology, Tehran, Iran.

Apr 2009 Participated as a member of Kosaran High School Robotics Team in **4th International RoboCup Iran Open Competitions**, Qazvin Azad University, Qazvin, Iran.

Feb 2009 Participated as a member of Kosaran High School Programming Team in *Iranian High School Students Programming (C++) Competitions*, Sharif University of Technology, Tehran, Iran.