Amirali Rayegan

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Machine Learning Researcher & PhD Student with expertise in optimization and software engineering. Passionate about applying AI to real-world challenges through efficient algorithms, interpretable models, and data-driven decision-making.

Work Experience

Graduate Research Assistant , Raleigh-NC , 2024-Now

- Submitted a paper to the ***Journal of Systems and Software*** (under review), introducing EZR, a framework for label-efficient/interpretable SE optimization. Achieving on-par or superior results to SOTA methods(e.g. LGBM, NN, SVR, RF) while reducing labeling cost by **91% on average**, and compressed feature spaces by over **90%** in large datasets while retaining ~80% of the referenced optimum performance.

Graduate Teaching Assistant (Software Engineering Course), Raleigh-NC , 2024-Now

- Held weekly office hours and support for debugging and problem-solving to reinforce course principles and improve student comprehension. Also, graded assignments and exams for 200+ students and offered detailed feedback to enhance understanding and learning.
- Instructed computer science summer camps for high school students on NCSU campus (Summer 2024).

Undergraduate Research Assistant, Tehran-Iran , 2021-2022

- Conducted research on the impact of Ethereum's transition from PoW to PoS, which served as my bachelor's thesis.
- Applied various machine learning models(e.g. ARIMA, SVM, RNN, LSTM, Bi-LSTM) to predict U.S. stock prices, leading to the publication of the paper "A Comparative Study of Machine Learning Techniques for Stock Price Prediction, 2022."

Head of High School Programming Teachers Team, Tehran-Iran , 2020-2022

- Managed the development of a 3-year Python programming curriculum, equipping over 300 students with basic programming skills.
- Led a team of 10+ educators to create and publish lectures, assignments, and exams, resulting in the establishment of a curriculum adopted by other schools.
- Taught algorithms and Python programming, led coding workshops, and mentored over 250 students, with several securing Python internships at top tech companies, showcasing practical skills gained.

Director of Samcode competitions, Tehran-Iran , 2021-2022

- Led a startup organizing coding competitions for high school students, successfully managing 3 events with over 150 participants each.
- Developed business strategies, secured over $8K in sponsorships, and led a team to deliver real-world programming challenges, fostering strong engagement with the tech community. Ensuring effective communication with stakeholders.

Business Analyst (Consult Your Community, volunteer job), NC State Branch, 2024-2025

- Analyzed financial transactions for Weird Production, creating cost and revenue stream reports using QuickBooks.
- Assessed cloud security compliance of cloud-based services for Trupacta; earned the **CYC Best Engagement Award**.

Member of "Eco-nance" Sponsorship Team (volunteer job), Tehran-Iran, 2021-2022

- Collaborated with the sponsorship team to secure $4K by negotiating with 7 fintech companies for a student-led event on financial markets and trading.

Skills

Technical Skills	Python (Proficient), SQL (Competent), C++ (Competent)
Libraries	TensorFlow, Keras, PyTorch, Scikit-learn, pandas, NumPy, Matplotlib, Seaborn
Database	MySQL, Elasticsearch, MongoDB, MariaDB, PostgreSQL , Redis, Apache Kafka, Neo4j Database, Kibana
Tools	QuickBooks, Excel, Jupyter Notebook

Education

PhD In Computer Science: North Carolina State University - GPA: 4/4, Raleigh-NC , 2024-Now

- Two-time recipient, NCSU College of Engineering **Graduate Merit Based Award** (2024 & 2025).

BSC In Computer Engineering (IT Major): University of Tehran - GPA: 3.62/4, Tehran-Iran , 2018-2023

Related Projects

Artificial Intelligence : Implemented A-Star and genetic algorithms to optimize pathfinding in obstacle-filled environments.

Customer Sentiment Analysis (NLP): Developed a model with 92% accuracy to analyze feedback for an e-commerce platform.

Predictive Analytics for Stock Prices: Published comparative study analyzing machine learning models for stock price prediction, achieving 85% accuracy.

Neural Network: Designed a model to analyze CT scans, identifying COVID-19 CT-scan cases with over 90% accuracy.

Data Collection & Prediction: Conducted web scraping on a car-selling platform, stored the data in MariaDB, and implemented decision tree-based predictive models to accurately predict car prices.