Amin Ravanbakhsh

Machine Learning Engineer/Researcher

Status: Canadian Domestic Applicant
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Highlights of Qualifications

- Advanced my proficiency in machine learning engineering and cybersecurity by developing AI-based security solutions and performance-boosting systems at BlackBerry.
- Developed proficiency in Natural Language Processing and Large Language Models (LLMs) through the Automated Scientific Discovery project, focusing on symbolic regression with AI algorithms.
- Enhanced Big Data analytics expertise in Spark and Databricks technologies as a Data Scientist during my internship at BlackBerry.
- Developed comprehensive skills in deep learning, machine learning, and statistics through research projects and specialized coursework.
- Enhanced skills in data analysis and visualization through machine learning projects and symbolic regression research, employing Python, PyTorch, and TensorFlow to derive actionable insights from complex datasets.
- Honed robust problem-solving capabilities by achieving **Gold Medal in International Physics Olympiad** in 2017.
- Acquired exceptional teaching and communication skills through multiple teaching assistantships in various courses and years of experience in teaching for Olympiad.

Education

University of Waterloo May. 2023 - Now
Master of Science in Computer Science

Sharif University of Technology Sep. 2017 - Jul. 2022
Bachelor of Science in Computer Engineering, GPA = 17.4/20

Young Scholars Club Jun. 2016 - Jul. 2017
Member of Iran's Physics Olympiad team

Honors and Awards

International Physics Olympiad (IPHO) Gold Medalist Jul. 2017
Iran's National Physics Olympiad Gold Medalist Jul. 2016

Work Experience

MISP BlackBerry
Machine Learning Software Developer *Jun. 2024 - Now*

- Developed an AI-based End-to-End Cybersecurity Platform prototype to identify and analyze adversarial techniques, providing broad overview of events to enhance security defenses.
- Integrated the Malware Information Sharing Platform (MISP) project as a knowledge set along with Retrieval-Augmented Generation (RAG), Large Language Models, and Search Engine Indexing to identify cyber attacks.
- Collaborated with the Threat Hunting team as a Machine Learning Engineer.

OneAlert BlackBerry
Machine Learning Software Developer *Jan. 2024 - Jun. 2024*

- Enhanced Cylance AI, Cybersecurity End-to-End platform, by advancement of performance in Clustering group of adversarial attacks.

- Leveraged Data Bricks as a Big Data technology to boost threat detection and hunting, providing insights that strengthened security and informed effective response strategies.

Research Experience

Automated Scientific Discovery University of Waterloo
Graduate Research Assistant *Jan. 2023 - Now*

- Developing a reasoning-based Symbolic Regression tool that leverages Large Language Models along metadata and axioms as a knowledge set to identify mathematical equations describing tabular datasets.
- Utilizing and advancing Symbolic GPT to identify interpretable equations from Physics datasets under the mentorship of Professor Ali Ghodsi, driving significant progress in the field of symbolic regression.

Deep Bayesian Neural Networks Sharif University of Technology
Undergraduate Research Assistant *Sep. 2021 - Jun. 2022*

- Employed Bayesian Inference in conjunction with Thompson sampling to address the Multi-armed Bandit problem through Reinforcement Learning.
- My research involved a comprehensive survey of Bayesian algorithms to determine the most suitable algorithm for designing a recommendation system based on industry-specific data.

Concept Drift Adaptive Systems for Federated Learning McGill University
Undergraduate Research Assistant *Jun. 2021 - Apr. 2022*

- Developed a robust system resistant to unexpected data changes (Concept Drift) by utilizing Attentive Aggregation within Federated Learning, with applications in the Internet of Vehicles.
- Conducted empirical tests on the attentive model as part of the research team.

Skills

Theoretical Expertise: Optimizaiton, Stochastic Processes, Reinforcement Learning, Quantom Mechanics

Programming Languages: Python, C++, C, Java, SQL, Shell Scripting

Machine Learning Frameworks: PySpark, PyTorch, TensorFlow, Keras, Scikit-Learn

Technologies: Git, Docker, Databricks, MongoDB, AWS, Azure

Operating Systems: Linux based systems

Languages: English (TOEFL:97), Persian (Native)

Teaching – Teaching Assisting

CE 401717: Machine Learning (Graduate course) Spring 2022, Fall 2021
Conducted tutorial sessions for over 50 students, enhancing their understanding of machine learning concepts and applications.

CE 40951.5: Intelligent Analysis of Biomedical Images (Graduate course) Spring 2022
Designed and graded practical and theoretical assignments for over 20 students.

CE 40417: Artificial Intelligence Fall 2021
Led tutorial sessions for over 100 students, facilitating deeper engagement with artificial intelligence principles and techniques.

CE 40181: Probability and Statistics Fall 2020
Conducted tutorial sessions and designed course notebooks for over 80 students, clarifying complex statistical theories and methodologies.

Physics Olympiad Teacher 2017 - 2023
Taught advance concept of physics in several top-ranking high schools of Iran.