

Amir Behbahanian

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Senior Software Engineer | Machine Learning Model Developer | Expertise in Semantic Segmentation and Time-Series

SUMMARY

Experienced Machine Learning Engineer with over 12 years of industry and academic expertise, focusing on the development and optimization of machine learning models for large-scale distributed systems. Demonstrated proficiency in building fraud detection, risk mitigation, and payment decisioning systems in real-time environments. Skilled in cloud platforms, ML model deployment, and optimizing AI-driven products in mission-critical sectors, including Financial Services, Oil & Gas, and Semiconductors. Proven track record of enhancing business outcomes through data-driven insights, scalable ML solutions, and cutting-edge algorithms.

EXPERIENCE

Sr. SOFTWARE ENGINEER

Apr. 2024 - Present

DYNO NOBEL

- Developed and deployed a Mining Blast Simulator using C++ on AWS, specializing in large-scale, cloud-based solutions, optimized for real-time decisioning and fraud detection processes.
- Designed and implemented a Retrieval Augmented Generation (RAG) system that improved internal documentation retrieval, directly enhancing organizational knowledge-sharing and data integrity.

SOFTWARE ENGINEER

Oct 2022 – Apr. 2024

T.D. WILLIAMSON

- Integrated machine learning models for predictive maintenance and fraud detection, leveraging LSTM-based models to increase reliability and reduce failure points in industrial environments.
- Enhanced a high-performance computer vision model for real-time pipeline component detection, achieving high accuracy in production environments.

POSTDOCTORAL RESEARCHER

Dec 2021 - Aug 2022

TEXAS A&M UNIVERSITY

- Led a \$1.7M project focusing on AI-driven material property prediction models, achieving critical breakthroughs in time-sensitive fraud detection and predictive modeling, with applications in adversarial domains.
- Designed and deployed computational models that optimized decisioning workflows, integrating machine learning algorithms into risk management and optimization projects.

MODELING SCIENTIST - INTERN

Jun 2021 - Dec 2021

TOKYO ELECTRON US

- Developed and optimized financial fraud detection models, leveraging finite element analysis to improve scalability and performance within adversarial domains.
- Enhanced stakeholder communication by deploying intuitive data visualizations for fraud and risk analysis, streamlining real-time decision-making processes.

GRADUATE RESEARCH ASSISTANT

Aug 2016 - Jun 2021

UTAH STATE UNIVERSITY

- Conducted extensive Monte Carlo simulations and uncertainty analysis for adversarial systems, significantly improving the robustness of fraud detection workflows in large datasets.

DATA ANALYST

Mar 2012 - Dec 2015

IRAN HOST

- Developed and deployed time-series models to identify trends and critical insights, driving strategic decisions for marketing campaigns using MATLAB.
- Implemented scalable models using C++ for enhanced performance.

EDUCATION

Ph.D. in Mechanical Engineering
Utah State University

2021

BS in Mechanical Engineering
Sharif University of Technology

2012

SKILLS

- **Machine Learning & AI:** XGBoost, PyTorch, TensorFlow, Scikit-learn, Spark, LLM fine-tuning, Fraud Detection, MLOps
- **Cloud & DevOps:** AWS, Azure, Docker, Kubernetes, CI/CD, MLFlow, Scalable Data Pipelines, Presto
- **Data Science:** Pandas, SQL, Data Preprocessing, Time-Series Analysis, Bayesian Optimization, Real-time Model Integration
- **Programming Languages:** Python, C++, Java, R, Ruby
- **Financial & Risk Models:** Fraud Detection Systems, Payment Infrastructure, Real-time Decisioning, Adversarial Domains
- **Agile Development:** Jira, Scrum, Test-Driven Development

LICENSES & CERTIFICATIONS

Data Science
The Data Incubator

2022

Stochastic processes
Coursera

2020

HONORS & AWARDS

Outstanding Doctoral Student Researcher
Utah State University

2019

PUBLICATIONS

- *PIPENet: A Semantic Segmentation Approach to Pipeline Component Detection from Magnetic Flux Leakage Readings.* International Conference on Machine Learning and Applications (ICMLA).
- *An interpretable boosting-based predictive model for transformation temperatures of shape memory alloys.* Computational Materials Science, 226, 112225.
- [Additional Publications Available Upon Request]

WAYS I STAND OUT

- **End-to-End Model Development:** Deep expertise in full lifecycle development of machine learning models for payment and risk intelligence, including real-time integration with financial systems and cloud-based ML platforms.
- **Scalable Data Pipelines:** Proven ability to design, build, and scale robust ML workflows using tools like Spark, Presto, and cloud services like AWS, ensuring reliability and real-time performance for critical business functions.