Amir Behbahanian

amir.behbahanian@gmail.com | GitHub Portfolio: https://amirbehbahanian.github.io | glimzai.com

Senior Software Engineer | Machine Learning & Distributed Systems Expert

Innovative software engineer with 12+ years of experience designing and scaling large-scale distributed systems, machine learning pipelines, and simulation-driven AI solutions. Proven track record of delivering mission-critical software in high-performance environments (manufacturing, mining, energy, aerospace). Expert at bridging machine learning research and production systems with strong background in physics-based modeling, real-time data systems, and full-stack development.

Experience

Software Engineer

Blue Origin | June 2025 – Present

- Building a multimodal AI-based manufacturing automation platform, combining text and image generation to streamline work order creation.
- Integrated physics-based simulations into AI pipelines, embedding domain-specific knowledge into work order generation.

Senior Software Engineer

Dyno Nobel | Salt Lake City, UT | Apr. 2024 – June 2025

- Designed and deployed a cloud-based mining blast simulator (C++), enabling real-time decision-making across distributed environments.
- Implemented a Retrieval-Augmented Generation (RAG) system for internal documentation retrieval, significantly reducing engineering search time and boosting operational efficiency.

Software Engineer

T.D. Williamson | Oct. 2022 – Apr. 2024

- Developed distributed predictive maintenance systems with LSTM-based models, detecting sensor failures early and reducing downtime.
- Delivered real-time computer vision models for pipeline component detection, achieving high accuracy in production conditions.

Postdoctoral Researcher

Texas A&M University | Dec. 2021 – Aug. 2022

- Directed a $1.7M AI integration project, embedding ML into large-scale simulation-driven workflows for predictive modeling and optimization.
- Engineered scalable distributed simulation systems, accelerating computational workflows and decision-making.

Modeling Scientist Intern

Tokyo Electron US | Jun. 2021 – Dec. 2021

- Built finite element models for chemical reaction simulations, augmenting with ML-based signal processing.
- Produced data visualizations in Python (NumPy, Pandas, Matplotlib) to support engineering decisions.

Graduate Research Assistant
Utah State University | Aug. 2016 – Jun. 2021

- Enhanced HPC workflows with parallelized Python (multiprocessing), boosting simulation throughput.
- Applied Monte Carlo simulations and uncertainty analysis to material science modeling.

Data Analyst
Iran Host | Mar. 2012 – Dec. 2015

- Applied time-series analysis (Fourier transforms) for trend detection and seasonality removal.
- Delivered statistical models (MATLAB, C++) to guide marketing strategy and campaign optimization.

Projects

GlimzAI – AI-Powered News Summarization Platform
Website: glimzai.com

- Designed and deployed a full-stack web application that ingests daily news and provides AI-driven summaries across multiple domains (politics, technology, business, science, etc.).
- Built backend using FastAPI + AWS Lambda + RDS, with React frontend hosted on AWS S3 + CloudFront.
- Integrated large language models for text summarization, improving information accessibility for users.
- Implemented CI/CD and containerized services with Docker for scalable cloud deployment.

Education

Ph.D., Mechanical Engineering | Utah State University, 2021

B.S., Mechanical Engineering | Sharif University of Technology, 2012

Skills
Programming: Python, C++
Distributed Systems & Cloud: AWS (EC2, Lambda, S3), Docker, PySpark, HPC
Machine Learning & AI: PyTorch, XGBoost, LSTMs, RAG, NLP, Time-Series Analysis, Computer Vision
Engineering Expertise: Physics-based modeling, Finite Element Methods, Uncertainty Quantification
Software Engineering: API Development, Microservices, CI/CD, TDD
Collaboration: Agile/Scrum, Stakeholder Communication, Technical Leadership

Publications (Selected)
PIPENet: A Semantic Segmentation Approach to Pipeline Component Detection from Magnetic Flux Leakage Readings. ICMLA 2023.

An Interpretable Boosting-Based Predictive Model for Transformation Temperatures of Shape Memory Alloys. Computational Materials Science, 2023.