

## Description

Highly skilled AI Research Scientist with 4+ years of experience designing, developing, and deploying ML solutions. Skilled in Python, C++, SQL, and parallel/distributed computing, with publications in leading journals.

## Work Experience

- Jan 2025-Present **Artificial Intelligence Engineer, Pascale AI**
- Designed an end-to-end machine learning pipeline for enabling data-driven decision making.
  - Automated ETL workflows from Instagram/Facebook APIs and integrated pipelines with AWS (Amplify, Lambda, S3, DynamoDB) for seamless data flow.
  - Replaced Amazon Rekognition with free pretrained models, reducing inference costs by 20%.
  - Built a personalized predictive decision-making pipeline using ZenML + MLflow + ViT, deployed on AWS Batch/EC2 with automated monitoring, fine-tuning, and retraining; cut compute costs by 20%.
- May 2021 - Jan 2025 **Artificial Intelligence Engineer, Apsy**
- Designed a DSPy + OpenAI API app-generation platform (function calling, tool use, prompt optimization automation) used by 75 customers; reduced manual workload for 80 employees by 60%.
  - Implemented quantization (8-bit/4-bit), mixed-precision, and batch/throughput optimizations, reducing LLM computational costs by 20%.
  - Helped scaling seed stage startup from 5 to more than 100 employees.
- Jan 2024-Jan 2025 **Artificial Intelligence Engineer, Lighthouse Regulatory Consulting Group**
- Built a Deep Reinforcement Learning solution with POMDPs for real-time sensor-driven decision making, reducing risk and uncertainty.
  - Developed fine-tuning jobs with Mixture-of-Experts (MoE) and RAG pipelines to improve information retrieval and decision making in health care industry.
- Aug 2023-Jan 2024 **Tech Lead of Engineering Team, Katz Graduate School of Business - University of Pittsburgh**
- Developed deep learning pipelines for anomaly detection and predictive maintenance using IoT devices, boosting system efficiency by 30% and reducing system downtime by 25%.
  - Led a five-person cross-functional engineering and analytics team.
- Aug 2021-Jan 2024 **P.h.D Research Assistant, University of Pittsburgh**
- Designed an explainable (Kernel-SHAP + LIME) double-agent actor-critic Deep Reinforcement Learning-based control algorithm for replacing manual control strategies resulting in a 50% cost reduction in nuclear power plant operations and maintenance.
  - Leveraged Kalman filter, sensor fusion, and Vision Transformer (ViT) to estimate a robot's state, to improve autonomous decision-making.

## Education

- M.S., Mechanical Engineering, University of Pittsburgh 2021-2023
- M.S., Computer Science, Rowan University 2019-2021
- B.S., Computer Science, Shiraz University 2013-2017

## Publications

Mahsa Raeisinezhad, et al. "Explainable, Deep Reinforcement Learning-Based Decision Making for Operations and Maintenance." NUCLEAR TECHNOLOGY

Mahsa Raeisinezhad, et al. "Design Optimization of a Pneumatic Soft Robotic Actuator Using Model-Based Optimization and Deep Reinforcement Learning" Frontiers in Robotics and AI

Mahsa Raeisinezhad, et al. "Intelligent Soft Robotic Pad for Pressure Injury Prevention" IEEE

## Technical Skills

- Softwares/Tools NLP, MLOps, ZenML, MLflow, XAI, Spacy, CoreNLP, NLTK, TensorFlow, PyTorch, Hugging Face, GPT, BERT, LLama, DeepSeek, Mistral, QLoRA, LoRA, Agentic AI, Zero-Shot & Meta Learning, RLHF, GANs, DPO, QCML, YOLO, vision Transformer, R-CNN, DINOv2, Optuna, LLaVA, NVIDIA GPUs (cuDNN, TensorRT), Docker, VectorDBs: FAISS, Pinecone, DynamoDB.
- Certificate Artificial Intelligence on Microsoft Azure (Coursera)