Mahsa Raeisinezhad

Description

Highly skilled Artificial Intelligence Research Scientist with over 4 years of experience in application design, development, testing, and deployment. Expert at translating program requirements into reliable, cutting-edge technical solutions using Python and other programming languages with a strong background in parallel and distributed computing. Published in leading journals, demonstrating a strong track record in developing AI-driven solutions.

WORK EXPERIENCE

May 2021 - Present — **Artificial Intelligence Research Scientist**, *Apsy*
- Developed core product to automate app creation for 75 paying customers using various AI models and functions to reduce manual effort of 80 employees by 60%.
- Optimized LLM pipeline training workloads, reducing computational costs by 20%.
- Helped scaling seed stage startup from 5 to more than 100 employees.

Jan 2024-April 2025 — **Artificial Intelligence Research Scientist**, *Lighthouse Regulatory Consulting Group*
- Developed a deep reinforcement learning algorithm using Partially Observable Markov Decision Processes (POMDP) for sequential decision making with real-time sensor signals to reduce uncertainty and risk.
- Developed and executed fine-tuning jobs alongside mixture of experts (MoE) and RAG pipelines for information retrieval, significantly enhancing text comprehension, decision-making, and overall accuracy.

Aug 2023-Mar 2024 — **Tech Lead of Engineering Team**, *Sloan Lubricating Systems*
- 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-Aug 2024 — **P.h.D Research Assistant**, *University of Pittsburgh*
- Designed an explainable (Kernel-SHAP) double-agent actor-critic Deep Reinforcement Learning-based control algorithm for replacing manual control strategies with automated AI-based 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, refining noisy sensor data for reliable output and improved autonomous decision-making.

Aug 2019-Aug 2021 — **Graduate Research Assistant**, *Rowan University*
- Automated the optimization process for various pneumatic soft robotic actuators' performance by creating a vision pipeline using Faster R-CNN, physics-based optimization, and deep reinforcement learning. Complemented by experimental validation and finite element analysis (FEA).
- Using Computer Vision techniques, developed real-time image processing and object detection pipeline.

Education

- Master of Science, Mechanical Engineering, University of Pittsburgh (2021 - 2023)
- Master of Science, Computer Science, Rowan University (2019 - 2021)
- Bachelor of Science, Computer Science, Shiraz University (2013 - 2017)

Publications & Certifications

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

Certification: Artificial Intelligence on Microsoft Azure (Coursera) - Apr 2025

TECHNICAL SKILLS

Softwares/Tools — NLP, MLOps, Spacy, CoreNLP, NLTK, TensorFlow, PyTorch, Hugging Face, GPT, BERT, Vision-Language Models, GANs, RAG, YOLO, Faster R-CNN, vision Transformer, transformers, Docker, Bayesian, Zero-Shot & Meta Learning, Reinforcement Learning with Human Feedback, Quantum Cognitive Machine Learning, DPO, Optuna, LLaVA, Unstructured, Dspy, Kubernetes, AzureML, AWS, NVIDIA GPUs (cuDNN, TensorRT), VectorDBs: FAISS, ChromaDB, DynamoDB.

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