

RESUME SUMMARY

Results-driven machine learning scientist with a PhD in AI/ML, specializing in generative AI, deep learning, and multi-modal learning. Skilled in building robust, scalable models that seek to address real-world problems.

TECHNICAL EXPERTISE

- **Generative Modeling and Foundation Model Adaptation:** Fine-tuned diffusion models, GANs, and VAEs for low-data generalization and domain adaptation across complex datasets.
- **ML for Imaging and Structured Data:** Developed and optimized deep learning models (CNNs, GNNs, transformers) for imaging, biological signals, and spatio-temporal structured prediction tasks.
- **Deep Learning Frameworks:** Proficient in Python, PyTorch, Scikit-learn, Hugging Face Transformers, and CUDA for scalable model development, efficient training, and distributed workflows.
- **Reproducibility and ML Infrastructure:** Built modular ML pipelines with CI/CD (GitHub Actions, Docker), enabling reproducible research, scalable deployment, and production-grade experimentation.
- **Applied Research and Collaboration:** Collaborated with interdisciplinary teams to deliver actionable ML insights, integrating imaging, time-series, and large-scale scientific data sources.

SKILLS

Machine Learning and AI: Generative modeling (diffusion, VAE), deep learning (CNNs, GNNs), probabilistic modeling, multi-modal learning, structured prediction.

Foundation Models and LLMs: Fine-tuning, adaptation, and retrieval-augmented generation (RAG) system design.

Programming and Frameworks: Python, PyTorch, TensorFlow, Scikit-learn, XGBoost, Hugging Face Transformers, Numpy, Pandas, CUDA.

ML Deployment: CI/CD workflows (GitHub Actions), Docker, Databricks, high-performance computing (HPC) environments.

Data Analysis and Visualization: Statistical feature extraction, exploratory data analysis, Matplotlib, Seaborn.

WORK EXPERIENCE

Geometric Media Lab - AI/ML Research Assistant	01/21 - Current
<ul style="list-style-type: none">• Developed and fine-tuned diffusion-based generative model for large-scale imaging data, improving robustness and generalization on sparse unseen datasets by 97% with minimal data requirements.• Designed a lightweight multi-modal VAE framework that leveraged spatio-temporal features for 3D-to-1D translation of biological sensor signals, outperforming state-of-the-art methods by 15%.• Built a modular RAG system for document-based question answering using local language models and scalable vector search pipelines, implemented and deployed entirely within Databricks Community Edition.• Applied graph neural networks (GNNs) to structured scientific data, improving predictive accuracy by 10% in relational modeling tasks.• Maintained reproducible ML workflows with version control (Git/GitHub Actions) and high-performance computing (HPC) environments to support scalable R&D.	
Lawrence Livermore National Laboratory, Livermore CA - Computing Intern	05/23 - 08/23, 05/22 - 08/22
<ul style="list-style-type: none">• Fine-tuned a GAN-based foundational model for satellite imagery segmentation, improving precision on sparse environmental datasets by 10%.• Built graph neural networks for structured prediction in complex scientific systems, outperforming baselines and enabling latent space modeling to support scientific discovery.• Applied augmentation and regularization techniques to optimize model performance with limited labeled data, reducing data dependency by 30%.• Collaborated with physicists and domain experts to translate model outputs into actionable scientific insights, influencing experimental design and hypothesis generation.	

EDUCATION

PhD in Electrical Engineering (AI/ML)

Arizona State University

Duration: 01/21 - 04/25

GPA: 4.0

M.S in Electrical Engineering (Signal Processing)

Arizona State University

Duration: 01/18 - 12/20

GPA: 3.34

PROJECTS

Resume Screener AI (Docker Deployed)

- Built an NLP-based resume screening application integrating information retrieval and LLM techniques to evaluate candidate-job fit.
- Developed modular Python APIs, containerized the application using Docker, and deployed it with CI/CD pipelines for scalable use.
- Focused on end-to-end ML deployment best practices, including system architecture design, reproducibility, and production readiness.

Histopathology Image Classification

- Designed and trained deep learning models (CNNs, attention-based architectures) for large-scale histopathology slide classification.
- Achieved 98% prediction accuracy on a dataset of approximately 387,000 high-resolution image patches.
- Developed patch-level feature extraction pipelines to improve slide-level cancer prediction from sparse imaging data.
- Implemented scalable PyTorch workflows with reproducible training and evaluation pipelines for imaging tasks.

PUBLICATIONS & SUBMISSIONS

- “Adapting Blackbox Generative Models via Inversion”, Challenges in Deployable Generative AI Workshop, ICML 2023.
- Under review: “Geometry Preserving Loss Functions Promote Improved Adaptation of Blackbox Generative Models”, Machine Intelligent Research Journal.
- Under review: “Unmasking Correlations in Nuclear Cross Sections with Graph Neural Networks”, PRX (Physical Review X Journal).
- Under Review: “Ground Reaction Force Estimation via Time-aware Knowledge Distillation”, IEEE Internet of Things Journal.

AWARDS

- Ira A Fulton Schools of Engineering IMPACT award for excellence in contributions made to Fulton Schools of Engineering.
- Ira A Fulton Engineering Graduate Fellowship in recognition of extraordinary academic achievements.