David Geddam

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Portfolio, LinkedIn, GitHub

Education

Bob Jones University — Greenville, SC

Bachelor of Science in Computer Science — *Expected graduation: May 2027*

Papers

Automation of Adversarial Red Teaming through LLM Based Multi-Agent Systems *Jan. 2026*

Preprint · [Paper] [Code] *ResearchGate*

- Proposed **SafeAgent**, an autonomous multi-agent framework using **GPT-5-mini** to red-team frontier models.
- Identified a **7.5% safety alignment gap** in GPT-4o-mini regarding disinformation campaigns vs. technical threats.

Experience

Lovable — New York City Metropolitan Area

Campus Leader — *01/2026 – present*

- Selected to represent AI software development platform, managing partnerships, and organizing AI-assisted development hackathons.

Independent Research — New York City Metropolitan Area

Research Assistant — *12/2025 – present*

- Supervisor: Sumanth Ratna. Kandavalli (ratna@nyu.edu).

Projects

Predictive Maintenance Pipeline for Wind Turbines | *PyTorch, VAEs, Docker* January 2026

- Built a Zero-Shot Domain Generalization system to detect failures in wind turbines without access to labeled failure data. Implemented a VAE with a reparameterized latent space to learn context of healthy turbine dynamics (P proportional to v^3), forcing the model to reconstruct original input. Optimized a high-dimensional pipeline (4,755 temporal features) for constrained Cloud GPU infrastructure. Solved bottlenecks by implementing float32 precision, feature pruning based on volatility analysis, reducing memory footprint by 50 percent. Achieved 60-day precursor detection for a catastrophic failure. The model identified failures via Reconstruction Error spikes (60 MSE vs 1.7 threshold) months before the actual breakdown.

BibleGPT | *Python, PyTorch, LoRA, Cursor* December 2025

- Fine-tuned Google's gemma model using PEFT with LoRA techniques on a custom dataset to generate biblically-styled text, implementing a context-aware system that dynamically injects scriptural context (Book/Chapter) for high-accuracy responses to biblical questions. Deployed the model through a full-stack application with FastAPI backend serving real-time inference and a responsive frontend UI, built using AI-assisted development techniques. Finally submitted to Google DeepMind's vibe coding hacakathon conducted on kaggle.

Tiny Siri - Edge-Optimized Intent Classification | *Python, PyTorch, Transformers, Streamlit* November 2025

- Built a voice intent classifier by fine-tuning DistilBERT with a custom data augmentation pipeline, achieving 97 percent test accuracy and deploying it via Hugging Face Spaces and Streamlit. Optimized the model for on-device deployment using PyTorch dynamic quantization, reducing memory footprint by 48 percent (255MB → 132MB) while maintaining full precision.

Medical diagnosis with Hybrid Vision Transformers | *PyTorch, CNNs, Transformers* October 2025

- Built a deep learning pipeline using a hybrid MobileNetV2 + Transformer architecture with self-attention mechanisms to classify brain dementia types and lung cancer malignancies, achieving 98 percent and 95 percent test accuracy respectively. Also used the Transformer's spatial feature processing to identify localized malignant patterns, with Grad-CAM heatmaps providing explainability.

Skills

Programming: Python, PyTorch, Scikit-learn, Pandas, NumPy, Matplotlib, Docker, Git, CI/CD, Cursor