MILI PATEL

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EDUCATION

University of North Texas **Denton, USA**

Master of Science in Computer Science *Aug 2024 – May 2026*

GPA 3.625/4.0 | Distinguished Student of the Year 2024/25 | Thesis: DF-OOD: Real-Only Deepfake Detection via Confidence Dynamics Under Perturbations (Defended Apr 2026)

Coursework: Big Data & Data Science, Software Engineering, Real-Time Operating Systems, Data Visualization, Database Fundamentals, Wireless Networks, Fundamentals of Artificial Intelligence, Automata Theory

Nirma University **Gujarat, IND**

Bachelor of Technology in Computer Science and Engineering *July 2020 – May 2024*

Vice President @ ACES (Association of Computer Engineering Students)

PUBLICATIONS

Patel, M. & Rattani, A. "DF-OOD: Real-Only Deepfake Detection via Confidence Dynamics under Perturbations," *IEEE 20th Int'l Conf. on Automatic Face and Gesture Recognition (FG 2026)*. ResearchGate

Patel et al. "AI for Coronary Artery Disease Diagnosis," *Springer Archives of Computational Methods in Engineering*, 2025. Springer

SKILLS & TECHNOLOGIES

Programming Languages: Python, Java, C++, JavaScript/TypeScript, SQL, Bash, HTML, CSS, React, Next.js, REST APIs

Data Structures & Algorithms: Strong proficiency in algorithms, object-oriented programming, system design, problem-solving

Machine Learning & AI: PyTorch, TensorFlow, Scikit-Learn, Transformers, CNNs, GenAI, LangChain, LangGraph, RAG, OpenAI & Anthropic APIs, Hugging Face, Fine-Tuning (LoRA/QLoRA), Prompt Engineering, NLTK, NumPy, Pandas, Matplotlib

Version Control & Cloud: AWS (Certified AI Practitioner), Docker, GitHub Actions (CI/CD), Distributed Systems, GPU DDP, Linux, Git, Code Reviews

Big Data & Databases: PostgreSQL, MySQL, MongoDB, FAISS, ChromaDB, Semantic Search, Vector Databases

WORK EXPERIENCE

Space Applications Centre (SAC), ISRO **Ahmedabad, IND**

Research & Development Intern *Jan 2024 – May 2024*

- Independently designed, developed, and tested an end-to-end control software system and operator GUI for a 6-legged Hexapod robotic platform as sole developer, owning the full stack from embedded communication layer to user interface
- Engineered a Master-Slave communication protocol across multiple Raspberry Pi controllers to enable synchronized actuation of 6 independent leg assemblies, eliminating drift between distributed motion nodes
- Integrated an Inverse Kinematics algorithm into the GUI to translate operator-level pose commands (body position, orientation) into per-joint servo angles in real time for intuitive high-level robot control

Vas Ventures Pvt. Ltd. (CallAstro) **Remote**

Software Development Intern *Jun 2023 – Jul 2023*

- Reduced manual operational effort by 80% by building a Tkinter-based Python GUI that automated bulk WhatsApp outreach with input validation and failure handling, replacing a repetitive manual workflow with a one-click tool
- Achieved 85% accuracy on a marriage-status classifier for the CallAstro product, owning the full ML pipeline: web scraping, feature engineering, model training, and held-out evaluation
- Automated regression testing with Selenium end-to-end tests integrated into CI/CD, catching UI regressions earlier in the release cycle and improving deployment confidence for the production application

PROJECTS

DF-OOD: Deepfake Detection via Out-of-Distribution Methods (M.S. Thesis) *2024 – Present*

- Designed a novel OOD detection framework trained on real images only, achieving AUROC 99.12% on DF40 and 95.53% avg across FaceForensics++ via energy-based scoring with ODIN perturbation — **accepted at IEEE FG 2026**
- Built GPU-distributed PyTorch pipelines (DDP + FP16 mixed precision) processing 100K+ images across 8 datasets and 9 ablation configurations; improved generalization to unseen deepfake generators by reframing detection as one-class learning

RAG-Powered AI Educational Platform *2025*

- Architected an end-to-end Retrieval-Augmented Generation pipeline (document intake → semantic chunking → embedding → FAISS indexing → grounded LLM response) with citation-based answering to minimize hallucination on internal evaluation set
- Engineered full-stack solution with async FastAPI backend serving OpenAI + Anthropic APIs, Next.js/TypeScript frontend, and PostgreSQL persistence; deployed on AWS with Docker + CI/CD pipelines, shipping releases 70% faster
- Instrumented evaluation workflows measuring retrieval precision, answer-groundedness, and hallucination rate to ensure factual consistency in production AI responses. Live Site