Sai Krishna Reddy Mareddy

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Education

University of North Carolina at Charlotte — Charlotte, NC
M.S. in Computer Engineering | GPA: 3.87/4.0 — *2023 – 2025*
- **Thesis:** Learning Deception and Counter-Deception Strategies in Adversarial Settings

JNTUH College of Engineering — Hyderabad, India
B.Tech in Electronics and Communication Engineering | GPA: 8.3/10.0 — *2019 – 2023*

Industrial Experience

Lowe's Companies
Machine Learning Researcher — *May 2024 – Dec 2024*
- Worked on people tracking and activity recognition using machine learning models and LLMs to enhance retail analytics.
- Built scalable MLOps pipelines for model deployment and monitoring.
- Researched and implemented state-of-the-art multi-camera tracking and customer behavior analysis models.

Honeywell
Embedded Software Engineer — *Feb 2023 – July 2023*
- Developed AI-powered robotic arm on Jetson Nano for cockpit testing with real-time gesture recognition.
- Built a CNN-based text-to-speech system improving clarity and naturalness.
- Automated system testing with Python scripts, reducing manual effort by 67%.

The Sparks Foundation
Data Science Intern — *July 2020 – Aug 2022*
- Performed analytics on financial datasets for loan default and fraud detection.
- Built ensemble models (Random Forest, XGBoost) with a 15% lift in recall.
- Designed ETL pipelines for ingesting multi-source data with effective cleaning.

Academic Research Experience

Controls Optimization Autonomy and Robotics Lab — Charlotte, NC
Research Assistant — *Dec 2024 – Present*
- Developed reinforcement learning models in adversarial settings with deceptive agents.
- Designed RL simulations with obstacles to evaluate multi-agent behaviors.
- Conducted performance analysis and reward tuning to enhance policy learning.

University of North Carolina at Charlotte — Charlotte, NC
Research Assistant — *Jan 2024 – May 2024*
- Researched multi-camera object tracking and activity analysis in retail settings.
- Integrated models like CLIP, Transformers, and LLMs for re-identification.
- Enhanced tracking accuracy using state-aware and spatio-temporal ReID models.

SPIRE Laboratory
Research Intern — *May 2022 – Dec 2022*
- Processed and extracted features from audio data for speaker classification.
- Built deep learning models to identify age, dialect, and other characteristics.
- Assisted large-scale audio data collection and real-time surveys.

Technical Skills

Languages: Python, C++, SQL, Scala, Rust, Bash, RISC-V
ML Frameworks: PyTorch, TensorFlow, Keras, Scikit-learn
MLOps/Cloud: Docker, Kubeflow, MLflow, AWS SageMaker, DVC, Kubernetes, Airflow
Big Data: Spark, Hadoop, Kafka, Snowflake
Tools: OpenCV, FAISS, NumPy, Pandas, Grafana, PostgreSQL
Embedded Systems: MSP430, UART, I2C, RISC-V, RTOS, Linux Kernel

Awards & Certifications

Silver Medal - NeurIPS 2024 - Lux AI Season 3
Winner - BTL StarTech Challenge 2023
Verizon Merit Scholarship - IIT Madras
Top 0.1% Telangana State Merit Scholarship
MLOps Specialization (DeepLearning.AI), Advanced Python (CutShort), Python Data Structures (UMich)

Publications

"Estimating Vehicle Speed on Roadways Using RNNs and Transformers: A Video-based Approach" **[Link]**
"Wireless Charging Through Wi-Fi Router," IRJMETS, Nov 2022 **[Link]**
"Big Data Intrusion Detection Using Random Forest," IRJMETS, Nov 2022 **[Link]**

Projects

Vehicle Speed Estimation Using RNNs and Transformers GitHub

· Estimated vehicle speeds from videos using LSTM and Transformer-based temporal models. *(Python, PyTorch, OpenCV)*

Vision-Language Models for Customer Behavior Analysis

· Analyzed behavior using CLIP and Transformer-based multi-camera models. *(CLIP, Transformers, Re-ID)*

Retrieval-Augmented Generation (RAG) for Question Answering GitHub

· Built a RAG QA system with T5 and FAISS, integrated with MLflow and Kubeflow. *(Transformers, FAISS, MLflow, Kubeflow)*

Brain Tumor Classification using CNN GitHub

· Classified MRI scans using convolutional neural networks. *(CNN, PyTorch, Medical Imaging)*

Age Prediction from Voice Data GitHub

· Predicted speaker age groups using extracted audio features. *(Audio Processing, MFCCs, ML Models)*

Two-Player Tic-Tac-Toe on MSP430

· Developed embedded Tic-Tac-Toe game with LEDs, LCD, and buzzer. *(MSP430, Embedded C, UART, I2C)*

Automation of Cockpit Testing Using Jetson Nano Project Details

· Built Jetson Nano-powered robotic tester with CNN-based gesture detection. *(Jetson Nano, CNN, Grafana)*

Multi-Core Processor Simulation with Cache Coherence

· Simulated 4-core processor with MESI protocol and directory-based coherence. *(C++, RISC-V)*

Assistive Device for Visually Impaired Using Face Recognition

· Designed facial recognition system with audio feedback for blind users. *(Raspberry Pi, OpenCV, LBPH)*

Learning Deception in Adversarial Multi-Agent RL

· Trained agents on deception/counter-deception in competitive settings. *(Reinforcement Learning, Game Theory, Python)*

Facial Emotion Based Song Recommendation System Project Details

· Suggested songs based on facial mood recognition via CNN. *(FER-2013, CNN, Computer Vision)*