

SASHANK VARMA RUDRARAJU

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EXPERIENCE

HTC Global Services, Machine Learning Engineer

January 2024 - Present

- Designed and validated a multimodal RAG system (pgvector + LangChain) for natural-language document discovery across 1,000+ documents; defined and tracked retrieval success using a gold-question set, achieving 95% first-query resolution and reducing discovery time 40% across 10+ teams.
- Architected a GenAI call-center QA auditor (WhisperX + GPT-4o + DSPy) with human-in-the-loop scoring; improved agreement from ~0.55–0.60 to ~0.75–0.85 Cohen's κ , scaled to 10K+ calls/month, enforced timestamp evidence, and delivered \$100K/year QA savings while surfacing ~70% more complaint root causes.
- Developed a statistical anomaly detection pipeline for NPDS poison control data on 9M+ records in AWS SageMaker, modeling expected baselines across daily/weekly/monthly seasonality and flagging 3-week-early emerging substance signals versus traditional surveillance.
- Led development of a custom document field-detection and extraction pipeline for 2M+ historical genealogy records, training Faster R-CNN to localize key entities with ~90% bounding-box accuracy; reduced manual review 40% and productized a reusable framework that cut delivery time for similar archival digitization projects 40%.
- Mentored 3 interns on evaluation design and reproducible experimentation, improving iteration velocity 20% and retraining cadence from weekly to daily.

HTC Global Services, Machine Learning Engineer Intern

September 2023 - December 2023

- Built and deployed ARIMA/SARIMA forecasts for inventory shrinkage across 50+ retail categories, improving loss prevention and reducing shrinkage 15% (~\$200K/year) adopted across 8 locations.
- Streamlined video dataset creation by integrating YOLOv8 auto pre-labeling into the annotation workflow, increasing labeling throughput 50%, cutting dataset preparation time 30%, and reducing cost through human-in-the-loop correction.

Technocolabs Softwares, Data Science Intern

May 2021 - July 2021

- Built a loan default prediction model using Random Forest, achieving 86% accuracy (+6% vs baseline); deployed a real-time scoring API that reduced loan processing time 35% and helped prevent ~\$200K in potential defaults.

EDUCATION

Boston University

Master of Science in Computer Science, GPA: 3.97/4.00

Boston, MA

January 2024

National Institute of Technology, Warangal

Bachelor of Technology in Metallurgical and Materials Engineering, GPA: 3.50/4.00

Warangal, Telangana

July 2018 - May 2022

PROJECTS

Multi-Tenant GenAI Schema Translation Agent [\[link\]](#)

October 2025 - November 2025

- Built a query translation engine that converts natural-language requests \rightarrow canonical SQL \rightarrow tenant-specific SQL across 6+ heterogeneous schemas, achieving 98% successful execution on a benchmark of complex queries.
- Implemented a self-correcting validation loop (schema-aware column extraction + retry/regeneration) that prevented hallucinated columns/joins from reaching execution. Added deterministic field-mapping cache + fast-path rewrites, cutting translation latency by ~95% for repeat query patterns and stabilizing outputs for high-frequency analytics.

Prediction of Mechanical Properties of high entropy using machine learning [\[link\]](#)

August 2021 - May 2023

- Spearheaded a research project on high entropy alloys, conducting extensive data collection, cleaning, and visualization. Generated insights that aided in material selection, potentially reducing R&D costs by 20%.
- Crafted and refined predictive models (including ensemble methods) to accurately predict hardness values. Achieved high model performance ($R^2 = 0.931$, RMSLE = 0.029), expediting development of alloys by 30%.

SKILLS

- Programming Languages:** Python, SQL, R, Java, C++, JavaScript
- Data Science, ML & GenAI:** Experimental design, hypothesis testing, time-series analysis, anomaly detection, supervised learning (classification/regression), clustering, NLP/NER, computer vision (object detection), RAG, LLM evaluation, DSPy
- Tools & Frameworks:** Pandas, NumPy, Dask, PyArrow, scikit-learn, LangChain, WhisperX, Detectron2, Flask, PostgreSQL (pgvector), MongoDB
- Cloud & Certifications:** AWS (2x Certified), Azure ML, Docker, Git, Databricks, Jira

AWARDS AND CO-CURRICULARS

- Recipient of the Institute Merit Scholarship at NIT Warangal, recognized as among the top 5% of students.