Pavan Srivathsa Ramesh
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Education

University of Southern California, Los Angeles, CA Jan 2025 - Dec 2026
Master of Science in Computer Science *GPA: 3.53/4.0*

Dr. Ambedkar Institute of Technology, Bangalore, India Aug 2016 - Aug 2020
Bachelor of Technology in Computer Science

Skills

Languages: Python, R, SQL, C++, C, JavaScript, Java, React, HTML
Data Science / ML Frameworks: PyTorch, TensorFlow, Keras, scikit-learn, Hugging Face Transformers, Pandas, NumPy, linear regression, classification trees, time series forecasting, Tableau, PowerBI, Hive, Spark
MLOps / DevOps: MLflow, Git, FastAPI, Flask, ONNX Runtime, TensorRT, Airflow, GitHub Actions, Jenkins
Cloud/Big Data: GCP (Vertex AI, BigQuery, Cloud Functions, Pub/Sub), Azure (Azure ML, Data Factory, Databricks, ADLS Gen2), AWS (SageMaker, Lambda, Glue, Redshift), Hadoop
NLP: Natural Language Processing, Text Classification, Named Entity Recognition (NER), Question Answering, Information Retrieval, Text Summarization, Topic Modeling, Semantic Similarity, Sentiment Analysis
Generative AI: GitHub Copilot, Prompt Engineering, LangChain, RAG, LLM inferencing, AI Evaluation (BLEU, ROUGE, F1, model interpretability)

Experience

Research Intern Sep 2025 - Present
University of Southern California *Los Angeles, CA*

- Built and tuned a GCN-based **Graph Neural Network** (GNN) for **Fraud Detection** on a Heterogeneous Graph, with targeted node/edge feature engineering and class-weighting for **imbalance**.
- Delivered **AUC-ROC 0.88** on a held-out set; added **Explainable AI** via GNNExplainer to surface influential subgraphs/features.

AI Engineer Sep 2024 - Dec 2024
BlackBuckInsights *Bangalore, India*

- Built an agentic **Text-to-SQL** chatbot for supply-chain PO self-service in Cisco Webex, using function calling and structured outputs to generate **BigQuery** queries with schema-aware **guardrails**.
- **Scaled** to 1,000+ concurrent users with **1 s latency**; added observability **(OpenTelemetry)** and automated CI/CD.

Data Scientist Nov 2021 - Aug 2024
Koantek *Bangalore, India*

- Led a team of 4 to design statistical **forecasting models** (SARIMAX, Prophet) with **9.1% MAPE**, incorporating A/B tests to evaluate feature impact and automated **retraining** via **Azure MLOps**; applied **SHAP** values to ensure **interpretability** of feature contributions and delivered insights through an interactive **Power BI** dashboard.
- Initiated internal **R&D** on **low-rank LLM fine-tuning (QLoRA, PEFT)**, optimizing memory footprint by 60% on consumer-grade GPUs and enabling deployment of 13B+ parameter models in **resource-constrained** settings; recognized with the **Data Science Innovators Award.**
- Devised a retrainable **sentiment and propensity modeling** pipeline using XLNet, RoBERTa, and DistilBERT for multi-class **sentiment classification** and **Logistic Regression** (baseline, interpretable) with **Gradient Boosted Trees** (XGBoost/LightGBM) for propensity prediction; achieved **89% F1 score** and enabled continuous updates with new data.
- Deployed a virtual try-on system on Databricks, combining **Mask R-CNN** for apparel segmentation with StyleGAN conditioned on abstract art to generate stylized clothing; trimmed mock-up time by 99%.

Projects

GenAI Chatbot | LangChain Agents, LLaMA 3 70B, Databricks, SQL

- Implemented a r**etrieval-augmented generation (RAG)** chatbot with **LangChain** agents and custom tools on **Databricks**, using a routing agent to answer questions from PDFs, SQL databases, and URLs with context-aware responses.
- Enhanced accuracy and reduced response time by **22%** through **prompt design** and data-flow optimization.

Glaucoma Segmentation

- Researched segmentation of optic disc and optic cup by evaluating **CLAHE-enhanced** Vanilla, Residual, and Attention **U-Nets**; improved **DICE** score from 71% to 81% and applied **Grad-CAM** to deliver interpretable model outputs, enabling transparent and trustworthy clinical decision support.