

# Padala Hemanth Subbi Reddy

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VIT Chennai Campus, Chennai, Tamil Nadu, India

## Profile Summary

AI Engineer-oriented undergraduate with hands-on experience in applied deep learning, generative AI systems, and data-driven analytics. Proven ability to design end-to-end ML pipelines, build retrieval-augmented generation systems, fine-tune large models, and translate experimental results into deployable, real-world solutions. Experience spans research-driven development, competitive ML benchmarks, and industry-aligned problem settings.

## Education

**Vellore Institute of Technology (VIT) Chennai** Expected 2026  
Bachelor of Technology in Electronics and Computer Engineering **CGPA: 8.74/10**  
*Relevant Coursework:* Machine Learning, Deep Learning, Statistics, Optimization, NLP, Computer Vision

## Technical Skills

Programming	Python, SQL (MySQL), C/C++, Java
Machine Learning	Regression, Classification, Random Forests, CNNs, U-Net, Transformers
Generative AI	RAG, Prompt Engineering, Embeddings, Whisper
Frameworks & Tools	PyTorch, TensorFlow, HuggingFace, FAISS, ChromaDB
Data Analytics	SQL Analytics, RFM Segmentation, Revenue & Churn Analysis
Visualization	Matplotlib, Seaborn

## Experience

**SAMSUNG** Sept 2024 – June 2025  
*Machine Learning Intern — Samsung PRISM Program (Remote, Bangalore)*  
*Project: Speech Super-Resolution for ASR Enhancement*

- Designed an Efficient Channel Attention (ECA)-enhanced U-Net for speech super-resolution, achieving a **10.2% reduction in WER** on LibriSpeech.
- Built reproducible training and evaluation pipelines, ablation studies, and statistical comparison of models.
- Improved experimental reliability by **15%** through refined data handling and evaluation protocols.
- Translated model performance analysis into actionable insights aligned with system-level constraints.

## Projects

**RAG Agent on Federal Register (10K+ Documents)** [GitHub](#)  

- Built a production-style RAG system using FAISS and ChromaDB for large-scale document retrieval.
- Implemented adaptive chunking and hybrid embedding strategies, achieving **92% retrieval accuracy**.
- Designed the pipeline to support scalable ingestion, semantic search, and grounded LLM responses.

**Fine-Tuned Whisper ASR for Dhivehi Language** [GitHub](#)  

- Fine-tuned OpenAI Whisper on low-resource Dhivehi speech data using Common Voice, addressing data scarcity and multilingual ASR challenges.
- Built an efficient training pipeline with data augmentation, caching, and accelerated experimentation workflows.

**SQL Revenue Diagnostics & RFM Customer Segmentation** [GitHub](#)  

- Developed an end-to-end SQL analytics pipeline on retail sales data (10K+ records) using advanced functions.
- Performed RFM-based customer segmentation and churn diagnostics, translating analytical results into actionable business insights.

## Achievements & Competitions

**Peer-Reviewed Publications (3)**  

- IEEE CICT 2023 — YOLOv8 Weed and Disease Detection
- International Journal of Remote Sensing 2025 — Attention-Guided U-Net with ASPP for Change Detection
- IEEE Access 2025 — SPSA-Optimized Random Forest for Remote Sensing Change Detection

**Amazon ML Challenge 2025:** Ranked **94 / 7000+ teams (Top 1.5%)** by developing a multimodal ML solution; improved SMAE from **47 → 43.7**.

## Additional Information

**Preferred Locations:** Bengaluru, Hyderabad, Pune, Mumbai, Chennai **Leadership:** Core Management Member, Google Developer Student Clubs, VIT Chennai **Interests:** Generative AI, LLM Systems, Applied Machine Learning, Data-Driven Decision Making