RAM PRAKHYATH ANNAMAREDDY

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OBJECTIVE

Computer Science student with a strong interest in backend and cloud-based application development, supported by hands-on academic and self-learning projects.

EDUCATION

PES University (2023-27), Bangalore, India
BTech. – Computer Science & Engineering **(CGPA : 7.90)**

Certifications :

- Next.js 13: Your Odyssey into Full Stack Mastery – Awarded Distinction Certificate. [PESU-IO]
- OS Fundamentals and Linux – Awarded Distinction Certificate. [PESU-IO]

EXPERIENCE

Summer Intern - *CoDMAV (Centre of Data Modelling, Analytics and Visualization), PES University [July 2025 - August 2025]*

CuraMate : AI-Powered Doctor Portal *[Tech Stack: React.js, FastAPI, PyTorch + scikit-learn (ML), Gemini (LLM)]*

- Developed a multimodal AI-powered doctor portal enabling medical triage, symptom clarification, and real-time prescription generation.
- Implemented PDF-based patient report parsing to extract demographic and medical history data, persisting post-diagnosis records to support end-to-end digital workflows from appointment booking to medication tracking.

SKILLS

Languages	:	Python, Java, C, JavaScript
Databases	:	SQL, Redis, Neo4j
Technologies	:	Linux (Arch, Debian)
Frameworks & Libraries	:	React, Node.js, Express.js
Tools	:	Git, GitHub, Docker, Vim, Postman, Jira, AWS (foundational)

PROJECTS

1. **A real-time collaborative P2P markdown editor *[Tech Stack: Next.js, Y.js, Tiptap, IndexedDB, WebRTC, WebSockets]***
   - Working on building a collaborative real-time markdown editor on top of TipTap (based on ProseMirror).
   - Integrating Y.js for Conflict-free Replicated Data Type (CRDT) based state management.
   - Implemented peer-to-peer collaboration using a signaling server for connection setup and state synchronization.
   - Implementing “offline-first functionality”, to store changes locally in IndexedDB and merging them upon reconnection.

2. **Multitasking Assistant *[Tech Stack: Python, Vosk, Llama-3, Edge-TTS, AsyncIO, mpg123]***
   - Developed a voice activated desktop assistant for Linux that performs real-time speech recognition, natural-language reasoning, and task automation
   - Integrated Vosk for wake-word detection and speech-to-text processing, coupled with Llama 3 running locally via Ollama for on-device natural-language understanding.
   - Implemented a fully asynchronous TTS streaming pipeline using Microsoft Edge-TTS and mpg123 for low latency audio playback.
   - Enabled system-level automation, and application control through a modular command engine. Optimized for zero-UI, terminal-based usage which is ideal for low-resource or headless systems.

3. **Efficient Knowledge Graph Retrieval for LLMs using Graph Partitioning**
   - Designing an efficient KG-RAG pipeline to improve LLM reasoning by combining semantic graph partitioning, ANN-based retrieval, and GNN inference.
   - Analyzing limitations of global GNN training on large knowledge graphs and proposing subgraph-level retrieval to reduce latency and noise.
   - Conducted an extensive literature survey on Louvain, Leiden partitioning, KG-RAG, GNN-RAG, and hybrid semantic search techniques.
   - Evaluated large-scale knowledge graphs (Wikidata-5M, DBpedia, ConceptNet) and justified dataset selection based on semantic richness and scalability.
   - Currently implementing a hybrid retrieval pipeline integrating graph embeddings, ANN search, and pre-trained

GNN + LLM models.

ACHIEVEMENTS & HACKATHONS

- Took part in Hacknight 7 (2025), a hackathon held by ACM PESUECC in which 100+ students took part and placed 6th in the leaderboard.
- Grabbed the 2nd prize at Heal-O-Code 2.0, an overnight hackathon held on 28th and 29th March 2025 by the Centre of Data Modelling, Analytics and Visualization (CoDMAV) & WEAL of PES University, Electronic City Campus.
- Took part in Override 23', a hackathon held by Google Developer Student Club (GDSC) & placed in the top 10 teams.