Pasupuleti Charan Kumar

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Education

Kalasalingam Academy of Research and Education — Kadapa, AP
Bachelor of Engineering in Computer Science — *Aug. 2022 – May 2026*

Narayana Junior College — Kadapa, AP
Intermediate in MPC Stream — *June. 2020 – May 2022*

Technical Skills

Languages: Python, SQL, JavaScript, HTML/CSS
Frameworks: React.js, Node.js, Streamlit, fastAPI
NLP LLM:: LangChain, RAG Pipelines, LLaMA,
Machine Learning, Deep Learning: TensorFlow, Pytorch, Scikit Learn, LangGraph
Generative AI: Diffusion Models, GANs, Transformers
Developer Tools: Git, Docker, Google Cloud Platform, VS Code
Libraries: pandas, NumPy, Matplotlib

Experience

NIT-Surathkal | *Research Intern* — May 2025 – August 2025

- Designed a novel hybrid quantum machine learning architecture for social media security
- Developed an end-to-end QML pipeline along with classical SOTA preprocessing layer.
- Built and curated a large-scale, custom multimodal dataset to train and evaluate the model.
- Implemented quantum-based fusion methodology for multimodal feature processing, achieving dimensionality optimization while preserving interpretability.

Projects

Ruby - AI Voice Assistant | *Python, Flask, LangChain, Groq LLaMA-3*

- Developed a voice-enabled AI assistant capable of handling conversational queries and automation tasks.
- Implemented document-based RAG systems for contextual question answering.
- Designed backend services for voice command processing and AI response generation.

Live Video Transcriber | *Python, OpenCV, Google Speech-to-Text API*

- Built a real-time speech-to-text transcription system using live video streams.
- Implemented a multithreaded architecture for parallel audio and video processing.
- Achieved low-latency transcription suitable for real-time captions and accessibility solutions.

AI Surveillance Monitoring System | *YOLOv8, FastAPI, ChromaDB, Gemini AI*

- Developed an AI-powered surveillance system to detect objects and suspicious activities in real time.
- Integrated YOLOv8 object detection models with FastAPI backend services.
- Implemented RAG pipelines using vector databases to generate automated incident summaries.
- Built REST APIs and monitoring interfaces for security event tracking.

AI NewsReel Generator | *Python, NLP, Text Summarization, TTS, Video Processing*

- Built an automated pipeline to generate AI-narrated short videos from trending news articles.
- Applied NLP-based summarization and text-to-speech systems for content generation.
- Produced shareable news reels with subtitles and voice narration.

Movie Ticket Booking System | *Python*

- Developed a ticket booking application with seat selection and booking confirmation workflow.

- Implemented backend logic for managing ticket reservations and user interactions.

AI Meeting Assistant | *Python, Whisper, LangChain, RAG, Google Calendar API, Slack API*

- Built an LLM-powered meeting assistant to record, transcribe, and summarize meetings automatically.
- Implemented RAG pipelines enabling contextual question answering from meeting transcripts.
- Integrated Slack and Google Calendar APIs to automate scheduling, reminders, and notifications.
- Designed backend pipelines for automated summarization and intelligent information retrieval.

Publications

Development of an Energy Prediction Model for Home Appliances Using Random Forest Algorithm | IEEE INDICON 2025, NIT Rourkela
Achieved 97.8% R^2 and 98.8% prediction accuracy using Random Forest models. Compared performance with LSTM and Gradient Boosting algorithms, focusing on energy optimization for smart home systems.

Extracurricular Activities

IIT Madras Shaastra Hackathon | (Top 50 Teams)
Developed a smart hospital assistance system ("Helpling Hospital") to improve patient support and workflow

Kalasalingam ACM Hackathon | Finalist
Built a Generative AI model to convert images into structured text.