

# Nimmaraboina Sai Kumar

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## Objective

Aspiring Software Engineer with hands-on experience in full-stack development and AI/ML, focused on building scalable, data-driven applications. Seeking to contribute to innovative, intelligent, and sustainable software solutions through strong engineering and collaboration skills.

## Education

**Amrita Vishwa Vidyapeetham, Coimbatore, India**

[Sept 2022–Jul 2026]

*Bachelor of Technology in Computer Science*

**CGPA: 6.66**

**Harvest Public Secondary School, Khammam, India**

[Aug 2020–Apr 2022]

MPC (+1, +2)

**CGPA: 8.0**

## Research

- **A Data-Driven Approach to Predicting Rear-End Collisions Through Traffic Insights** [🔗]  
*Python, SUMO, LSTM, SVM, Random Forest*
  - Built a SUMO-based simulation to generate realistic traffic data and rear-end collision scenarios.
  - Evaluated ML and deep learning models on imbalanced traffic data using precision, recall, and F1-score.
  - Achieved up to 0.91 F1-score with LSTM by leveraging time-series traffic features, demonstrating effective prediction of rare accident events for intelligent transportation systems.
- **A Dual-Layer Sybil Attack Detection Framework for RSU-less VANETs Using Machine Learning and Proof-of-Location** [🔗]  
*Python, SUMO, Veins, Machine Learning, Proof-of-Location*
  - Developed a decentralized dual-layer Sybil attack detection framework for RSU-less VANETs using ML-based anomaly detection on SUMO–Veins mobility and communication features.
  - Strengthened identity verification with Proof-of-Location using RSSI-based witness validation, achieving ROC–AUC above 0.98.

## Projects

- **GenAI Legal Docs Simplifier** [🔗]  
*Python, Flask, NLP, LangChain, Docker*
  - Developed a generative-AI platform to simplify complex legal documents into readable summaries while preserving citations, using NLP pipelines and prompt-engineering techniques for context-aware simplification.
  - Built a full-stack Flask application and containerized the system using Docker for scalable deployment.
- **Tourism Recommendation System** [🔗]  
*Node.js, MySQL, React.js, Express.js*
  - Designed a personalized tourism recommendation platform with category-wise discovery and user profiles.
  - Integrated booking, cancellation, and review features using RESTful APIs and MySQL.
- **Rubik's Cube 3D Solver** [🔗]  
*Three.js, JavaScript*
  - Developed an interactive 3D Rubik's Cube simulation supporting dynamic cube sizes (up to 100×100).
  - Implemented layer-specific movements, solving path replay, and mouse-driven rotations.
- **Customer Support AI System** [🔗]  
*Python, FastAPI, SQLite, OpenAI APIs*
  - Developed an AI-powered customer support backend using FastAPI and OpenAI for intent extraction, issue summarization, and automated response generation.
  - Implemented a modular ticket-management system with SQLite and integrated automated email notifications for streamlined customer communication.

## Technical Skills

- **Areas of Interest:** Machine Learning, Generative AI, Agentic AI, Research
- **Programming Languages:** Python, C, C++, Java, SQL, Scala, Go, Haskell
- **Web & Backend Development:** HTML5, CSS3, JavaScript, Node.js, React.js, REST APIs, Streamlit, FastAPI
- **Machine Learning & AI:** Scikit-learn, TensorFlow, LSTM, SVM, Random Forest, Linear Regression, Feature Engineering, Model Evaluation
- **RAG & LLM Tools:** LangChain, LangChain-OpenAI, OpenAI API, Vector Databases, Prompt Engineering, Embedding-based Retrieval
- **Databases:** MySQL, SQLite, PHP
- **Tools & Platforms:** Git, GitHub, Docker, Jenkins, SonarQube, Jupyter Notebook, Linux, AWS

## Extracurricular Activities

- **Research Presentation:** A Data-Driven Approach to Predicting Rear-End Collisions Through Traffic Insights., A Dual-Layer Sybil Attack Detection Framework for RSU-less VANETs Using Machine Learning and Proof-of-Location
- **NSS Coordinator Activities:** 999 Challenge Yoga Event, NSS Camp
- **Hackathons:** Gen AI Exchange Hackathon, SprintFour Innovation Hackathon 2025
- **Competitive Coding:** Active participant in HackerRank and LeetCode contests, improving algorithmic and analytical skills.