Sanjay Thangavel

+91 7812821319 sanjaytmhr@gmail.com GitHub

A student of computer science who is very interested in making software that is useful and easy to use. Through coursework and hands-on experience, I am proficient with fundamentals of programming, data structures, and system design. Excited to learn, solve real-world problems, and help software development teams.

EDUCATION

Bachelor of Technology - Computer Science and Engineering Aug 2023 - Present
Amrita Vishwa Vidyapeetham Coimbatore, Tamil Nadu

PROJECTS

VitalRoute
Emergency Vehicle Priority Routing Platform
- Designed a hybrid Edge–Fog Computing architecture **(Guardian Flow)** integrating reactive path clearing and predictive optimal route scheduling to minimize emergency-vehicle delays.
- Built the **Instant Edge Reflex module** using **YOLOv8** for real-time EV recognition via AI cameras, enabling immediate **Green Corridor** activation at intersections from the Edge layer.
- Engineered the **Intelligent Fog Swarm** applying computational intelligence for **Priority Task Scheduling** of conflicting EVs and coordinating a multi-intersection Green Wave through an optimized path-finding algorithm (Fog layer).

Pothole Detection System
Digital Image Processing
- Developed an automated pothole detection pipeline using grayscale conversion, **Gaussian smoothing**, **adaptive thresholding**, and advanced **morphological operations** to segment road defects.
- Implemented contour extraction and area-based filtering with **OpenCV** to accurately localize potholes under challenging lighting and shadow conditions, improving robustness of detection.
- Optimized the system for computational efficiency, demonstrating reliable performance for real-time or edge-deployable infrastructure monitoring applications.

AI PDF Reader App – Phase 1
AI-Powered Reading Assistant
- Developed a mobile app concept that extracts user-selected text from PDF documents.
- Integrated an **AI-powered feature** that provides instant word or sentence meanings to enhance reading comprehension.
- Designed the system with a focus on accessibility, helping users understand complex text quickly.
- Planned a lightweight **UI/UX flow** to make PDF reading more interactive and intelligent.

ACADEMIC ACHIEVEMENTS

- Completed structured training in programming languages such as Python, C, Java, and SQL.
- Successfully completed multiple mini-projects as part of semester coursework, showcasing problem-solving and implementation skills.
- Engaged in self-driven learning beyond classroom topics, exploring advanced concepts in AI, cloud, and system architecture.

SKILLS

Language: Python, SQL, C, Java, HTML

Problem Solving: Data structures, Algorithms and Logical Thinking.

Frontend Development: React.js, Next.js, HTML/CSS

Areas of Interest: App Development, System Design, Competitive Programming.