Omkara Anjaneya Kumar Ratnala

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Portfolio | LinkedIn | GitHub

Summary

Highly motivated Computer Science Engineering student with a passion for AI, robotics, and software systems. Skilled in developing real-time applications integrating software and hardware, with proven success in national tech competitions, IEEE publication, and design patents. Demonstrated ability to deliver innovative, functional solutions through projects in facial recognition, autonomous robotics, and sustainable tech.

Education

B.Tech in Computer Science Engineering, Kalasalingam Academy of Research and Education (2022–2026). **CGPA: 8.07**

Class XII (MPC), Tirumala Educational Institutions (2020–2022) **92.7%**

10th Standard (SSC), Montessori's English Medium School (2019–2020) **95.3%**

Technical Skills

Languages: Python, C, C++, HTML, CSS, JavaScript

Frameworks & Libraries: OpenCV, face_recognition

Databases: MongoDB, Firebase, Supabase

Tools & Platforms: Git, GitHub, VS Code, Google Colab, Jupyter Notebooks, Power BI

Concepts: Generative AI, OOPS, OS, DBMS, DSA, Software Design, Statistics

Projects

- **Green Guardian GO (Reverse Vending Machine)**
  Designed a smart recycling machine using YOLOv8 ONNX, Raspberry Pi, and MongoDB. Detected and accepted plastic bottles in real-time, rewarding users via gamified mobile app. Promoted eco-friendly habits with a robust user interface and automated hardware control.
- **Dual-Mode Robotic Arm**
  Built an autonomous robotic arm capable of switching between manual joystick control and AI-driven pick-and-place tasks. Integrated sensors, motor control, and vision systems to handle real-time decisions. Recognized at national robotics competitions.
- **Smart Attendance System with MongoDB**
  Implemented facial recognition-based attendance using OpenCV and the face_recognition library. Replaced manual logging with a real-time system integrated with MongoDB for data tracking and fraud prevention.
- **Stair Water Bottle**
  Concept ualized and prototyped a uniquely shaped bottle with a stair-step grip design, enhancing ergonomics and storage. Awarded design patent.

Achievements

- Finalist (Top 10 of 500+) – Ground Reality, Launchpad '25, E-Cell, BITS Pilani Hyderabad
- 1st Place – RAS Project Showcase for Dual-Mode Robotic Arm
- Design Patents (2): Stair Bottle and Laptop Stand
- **IEEE Publication:** "IoT Enabled Device-to-Device Communication for Smart City Application," ICICNIS 2024 – 10.1109/ICICNIS64247.2024.10823329
- **IEEE Publication:** "Dual-Mode Robotic Arm for Manufacturing Industries," ICCRTEE2025-10.1109ICCRTEE64519.2025.11053040

Strengths

•Analytical and creative problem solver

•Strong teamwork and leadership

•Highly Adaptable and goal driven

•Passionate about innovation and impact