

# Sanugondla Vijay Kumar

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## Career Objective

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A passionate Embedded Systems Engineer with expertise in Embedded C, RTOS, Device Drivers, and Communication Protocols. Strong foundation in microcontroller programming, real-time systems, and hardware-software integration. Enthusiastic about developing efficient embedded solutions, optimizing performance, and contributing to innovations in IoT, automotive, and industrial automation.

## Education

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- **PG Diploma in Embedded Systems and Design** – CDAC Hyderabad (Aug 2024 - Feb 2025)
- **B.Tech in Electronics & Communication Engineering** –GITAM Deemed University, Bangalore (2018 - 2022)
- **Intermediate (10+2)** – Sri Chaitanya Junior College, Kurnool (2016 - 2018)
- **SSC (10th)** – Sri Guru Raja EM School, Nandyal (2015 - 2016)

## Technical Skills

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- **Languages:** C, Embedded C, Python, C++
- **Concepts:** Data Structures, RTOS, Device Drivers, Microcontrollers
- **OS:** Linux, Embedded Linux, FreeRTOS
- **Protocols:** UART, I2C, SPI, CAN
- **Tools:** STM32Cube IDE, Keil, Arduino IDE, Git, GCC, GDB

## Relevant Coursework and Research Areas

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- Embedded System Architecture & Real-Time Operating Systems (RTOS)
- Device Driver Development & Low-Level Programming
- IoT Communication Protocols & Wireless Sensor Networks
- Automotive Embedded Systems & CAN Bus Implementation

## Certifications

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- Introduction to the Internet of Things and Embedded Systems @ Platform-Coursera
- IoT Boot Camp @ CharIoT (Edge Computing and Sensor Networks)
- Introduction to Electrons @ Coursera

## Internships

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- At AARK IC Technologies, I gained hands-on experience in Static RAM Design and Synthesis during my internship.

## Projects

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- **SMART TRAFFIC LIGHTS CONTROL FOR EMERGENCY VEHICLES**

- **Protocols:** UART, SPI, LORA
- **Tools used:** Arduino IDE

- **Description:**

Designed and implemented a real-time embedded system using ESP32 to optimize emergency vehicle movement through intelligent traffic signal control and remote monitoring. Integrated EM-18 RFID readers for vehicle identification and LoRa modules for low-power, long-range wireless communication between emergency vehicles and traffic signals. Developed custom logic to detect approaching emergency vehicles via RFID authentication, dynamically altering traffic lights to prioritize safe and uninterrupted passage. Incorporated a web-based interface for real-time visualization of traffic signal states and emergency response activities, enabling remote traffic management and system diagnostics. Focused on ensuring system reliability, low-latency communication, and safety-critical decision-making to improve emergency response times in dynamic urban environments.

- **SMART METAL DETECTION AND AUTOMATED ACCESS CONTROL SYSTEM USING IOT**

- **Protocols:** MQTT
- **Tools used:** Arduino IDE, ThingSpeak

- **Description:**

Designed and developed a real-time embedded system using ESP32 for intelligent metal detection and automated access control. Integrated KY-036 metal sensor for identifying metallic objects, laser sensor for object counting, and a relay module for door actuation based on detection status. Implemented audio-visual alerting via buzzer and RGB LED and enabled remote control using the Blynk mobile application. Sensor data and system status were published to ThingSpeak cloud using the MQTT protocol for real-time monitoring and analytics. Focused on improving security, reliability, and user-friendly remote access through IoT connectivity.

- **BIDIRECTIONAL VISITOR COUNTER WITH AUTOMATIC LIGHT CONTROL SYSTEM USING ARDUINO**

- **Protocols:** UART, I2C
- **Tools used:** Arduino IDE

- **Description:**

This project creates a Bidirectional Visitor Counter with an Automatic Light Control System using an Arduino Nano. It uses two Infrared (IR) sensors to detect visitors entering and exiting a room. The system displays the total number of visitors on an LCD or OLED display. It also controls a light: when the room is empty, the light turns off, and when at least one person is inside, the light turns on automatically. This system is useful for places like malls, offices, or parking areas to monitor people flow and manage lighting efficiently.

## Soft Skills

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- Problem-solving, Teamwork, Adaptability, Leadership, Communication

## Personal Details

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- **DOB:** 18 JUNE 2000   **Nationality:** Indian   **Gender:** Male
- **Languages:** Telugu, English, Hindi
- **Hobbies:** Learning technologies, Outdoor games

## Declaration

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I hereby declare that the information furnished above is true to the best of my knowledge.

Date:

Place:

SANUGONDLA VIJAY KUMAR