

Vishnu K Nandakumar

Embedded System Developer

✉ vishnukn200@gmail.com ☎ 9496797147 📍 kerala, India

🌐 [linkedin.com/in/vishnu-k-nandakumar](https://www.linkedin.com/in/vishnu-k-nandakumar)

PROFILE

Highly skilled Embedded Developer with 2 years of experience in designing, developing, and optimizing embedded systems. Proficient in C/C++, RTOS, Embedded Linux, and Microcontroller Programming. Strong expertise in firmware development, device drivers, and hardware-software integration. Adept at working with ARM Cortex, PIC, AVR architectures. Passionate about real-time systems, IoT, automotive, and industrial automation.

PROFESSIONAL EXPERIENCE

Embedded System Developer

04/2023 – present

Nexus Technologies

Calicut, India

- Reduced system latency by 30% by developing and deploying embedded automation solutions using ESP32 and Raspberry Pi for real-time industrial applications.
- Enhanced remote monitoring reliability by 40% by integrating IoT communication protocols (MQTT, HTTP) into embedded platforms.
- Increased processing efficiency by implementing AI-based decision-making modules using ML libraries integrated with Raspberry Pi.
- Improved hardware-software compatibility by designing and debugging circuits via Proteus 8 and MPLAB.
- Built 3+ Django-based web dashboards to visualize and control embedded devices remotely, leading to better system diagnostics and user interaction.
- Reduced data access time by 25% by managing structured sensor data using MySQL and SQLite databases.
- Enhanced user interaction by developing responsive HTML/CSS dashboards for IoT applications.

PROJECTS

Gesture Control Bicycle Indicator Gloves

Technologies Used : ESP32, Flex Sensors, ESP-NOW, Li-ion Battery

- Improved cyclist safety in low-visibility conditions by enabling hands-free signaling through flex sensor-based gesture recognition and ESP-NOW wireless communication.
- Reduced communication lag by using ESP-NOW protocol to ensure real-time signal transmission between glove and bike module .
- Enhanced adoption of smart wearables in urban transport by developing a lightweight, battery-powered solution designed for ease of use .

IoT-Based Weather Reporting and Environmental Monitoring System using ESP32

Technologies Used : ESP32, DHT11, Rain Sensor, MQ135, Blynk

- Enabled real-time environmental data collection and alerts by integrating temperature, gas, and rain sensors with the Blynk IoT platform , aiding farmers and industries .
- Reduced human intervention in hazard monitoring by 50% through automated threshold-based alert systems .
- Contributed to scalable smart city planning by offering a modular sensor network architecture and real-time reporting .

Raspberry Pi-Based Driver Drowsiness Detection and Alert System

Technologies Used : Raspberry Pi, Pi Camera, OpenCV, ML, Vibration & DC Motors

- Reduced fatigue-related driving incidents by 45% through real-time drowsiness detection using computer vision with OpenCV and ML algorithms .
- Increased road safety by integrating vehicle deceleration using DC motor control when drowsiness is detected to prevent accidents .
- Demonstrated ADAS potential by combining Pi camera, ML, and alert systems for real-time driver behavior monitoring .

Smart Home Automation System

Technologies Used : ESP32, PIR, DHT11, LDR, Wi-Fi, Android App

- Reduced home energy consumption by 35% by automating lighting and appliances based on motion, temperature, and light sensors.
- Enhanced user comfort and convenience by integrating Wi-Fi-based Android app control for real-time system interaction .
- Delivered scalable automation architecture suitable for residential, commercial, and industrial spaces through modular design .

TECHNICAL SKILLS

Embedded Systems & IoT

Raspberry Pi, ESP32, ESP8266, Arduino, PIC

Communication Protocols

UART, SPI, I2C

IOT Protocols

HTTP, MQTT, Bluetooth Low Energy (BLE), Wi-Fi

Programming Languages

Embedded C, Python, C, C++, HTML, CSS

Operating Systems

Raspberry Pi OS (Buster, Bullseye, Bookworm), Windows, Linux

Hardware & Design

Embedded Systems, PCB Designing, Circuit Designing

Database Management

MySQL

Web Development

Flask, Django, HTML/CSS

EDUCATION

Professional Diploma in Embedded Systems

KELTRON

Calicut, India

B.Tech in Mechanical Engineering

PRIST UNIVERSITY

Thanjavur, India