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Vaibhav Kawade

Embedded R&D Engineer

GitHub
LinkedIn
Portfolio

Embedded Systems and IoT Developer with hands-on experience designing and programming real-time systems using STM32, ESP32, and Raspberry Pi. Proficient in Embedded C, RTOS, and PCB design (Altium, KiCAD). Adept at microcontroller-based system development, hardware-software integration, and debugging. Seeking to contribute to cutting-edge embedded and IoT projects in a dynamic engineering team.

Skills

Programming Languages	C, Embedded C, C++, Python
Embedded Platforms	STM32 (HAL/LL, CubeIDE), ESP32, AVR, ARM Cortex-M, Raspberry Pi, **NXP i.MX 8M Plus**
Communication Protocols	UART, I2C, SPI, CAN, USB, BLE, MQTT, TCP/IP Stack
Embedded Linux & RTOS	Yocto Project, U-Boot, Device Trees, Linux Kernel, FreeRTOS
Tools & IDEs	STM32CubeIDE, Keil, MPLAB, Git, GitHub, Proteus, VS Code
Hardware & Testing	PCB Testing, Thermal Profiling, Altium Designer, KiCAD, 2–4 Layer PCB Layout, EMI/EMC Basics
Simulation & Modeling	MATLAB/Simulink, Fusion 360
Soft Skills	Problem-Solving, Analytical Thinking, Teamwork, Communication, Time Management

Internships & Experience

Embedded R&D Engineer **June 2025 — Present**
Omnidya Tech LLP *Ahmedabad*

- Building and maintaining embedded firmware and custom Linux images using the **Yocto Project** for the **NXP i.MX8M Plus (MIMX8ML8CVNKZAB)** SoC, powering AI-driven **fleet safety dashcam systems** for real-time driver behavior analysis and critical event detection.
- Performing system-level validation to ensure hardware reliability and performance under demanding automotive and fleet operation environments.
- Developing MQTT-based communication protocols for real-time telemetry, remote diagnostics, and cloud integration in connected vehicle and fleet monitoring platforms.

Embedded System Design Intern **June 2025 — Present**
Omnidya Tech LLP *Ahmedabad*

- Built and optimized embedded firmware on the **NXP i.MX8M Plus (MIMX8ML8CVNKZAB)** platform using the **Yocto Project** and **FreeRTOS**, powering AI-driven fleet safety dashcam systems.
- Recreated and updated **schematics**, performed **BOM cost optimization**, and validated hardware through PCB bring-up, thermal profiling, and stress testing.
- Developed and tested **firmware builds for newer hardware revisions**, ensuring system stability and long-term maintainability.
- Designed and integrated a **user-interactive dashboard and companion application** for real-time fleet monitoring, driver alerts, and performance analytics.

Electronics and Telecommunication Engineering Intern **June 2024 — July 2024**
Central Railway *Pune*

- Maintained **Linux-based Driver Display Units (DDUs)** and analyzed power electronics systems, including **SCR kits**, rectifiers, and traction systems.
- Conducted testing and calibration of meters (**speedometers, ammeters, voltmeters**) and assisted in R&D for power control and diagnostics.

Industrial Trainee **Aug 2021 — Sept 2021**
Sumago Infotech Pvt. Ltd *Pune*

- Gained practical training in **Automotive and Electric Vehicle (EV) systems**, powertrain components, and fault diagnosis.

Projects

Portable Bilingual Language Translator Using Raspberry Pi Zero **Jan 2025 — May 2025**

- Implemented **speech-to-text** and **text-to-speech** conversion for real-time translation.
- Utilized **Google Translate API** and **Deep Learning models** for accurate multilingual translation.
- Designed a user-friendly interface with **LCD display** and **push-button selection** for language switching.

Autonomous Pathfinding: Drone and Rover System with Real-Time Video Processing on Raspberry Pi 5 **Aug 2024 — Dec 2024**

- Developed an **autonomous pathfinding system** using a **drone** for aerial footage and a **rover** for real-time path detection.
- Processed video data on **Raspberry Pi 5** to identify and navigate paths autonomously.
- Used machine learning to optimize drone-routed path guidance.

IoT-Based Automated Bottle Filling and Capping System with CAN Integration **Aug 2023 — Dec 2024**

- Designed an **IoT-based automated bottle filling and capping system** with **Raspberry Pi**.
- Integrated **CAN protocol** for efficient device communication and real-time performance.
- Reduced manual intervention, enhancing **accuracy** with **Python** and **Embedded C programming**.

Face Recognition Based Attendance System Using ESP32 CAM **May 2023 — Jun 2023**

- Implemented a **face recognition attendance system** with **ESP32 CAM**.
- Integrated algorithms for high-accuracy recognition and real-time database updates.

Education

MIT Academy of Engineering **2022 — 2025**

Bachelor of Technology in Electronics and Telecommunication Engineering — CGPA: 7.68/10 *Pune, Maharashtra*

Coursework: Embedded Systems, Digital Signal Processing, VLSI Design, Communication Networks, Electric Vehicle.

Government Polytechnic, Dharashiv **2019 — 2022**

Diploma in Electronics and Communication Engineering — CGPA: 9.05/10 *Dharashiv, Maharashtra*

Activities

Team Lead, TechnoPHILIA'24 **2024**

- Led a national project competition with over **320 participants** in collaboration with **ISA Pune Section** and **IEEE Student Branch**.

President, Spark Club **2023 — 2025**

- Organized hands-on sessions on **Embedded Systems**, **IoT**, and **PCB Design**.

Cultural Head, Government Polytechnic, Dharashiv **2019 — 2022**

- Managed and led multiple college-level cultural festivals and events.

Certifications

- **Altium Designer Certification – Altium Education** *Apr 2025*
- **Embedded C Programming with STM32 Microcontroller – Udemy**
- **Mastering RTOS: FreeRTOS & STM32Fx – Udemy**
- **NPTEL - Internet of Things** *Aggregate: 72/100*
- **VLSI System On Chip Design - Overview – Maven Silicon** *Mar 23, 2025*