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Vaibhav Kawade

E&TC Engineer

GitHub
LinkedIn
Portfolio

A motivated Electronics and Telecommunication Engineering undergraduate with a strong foundation in Embedded Systems, IoT, and Machine Learning. I aim to leverage my technical expertise and hands-on project experience to develop innovative solutions in real-time systems, autonomous technologies, and advanced hardware-software integrations. Passionate about creating impactful technology and collaborating in dynamic engineering environments.

Skills

Programming Languages	C, C++, Python, PLC Programming
Tools & Platforms	MATLAB, Embedded Linux, FreeRTOS, Altium, KiCAD, Keil, Fusion 360, MPLAB IDE, GitHub Version Control Systems (Git), Raspberry Pi, STM32, ESP32, ARM
Frameworks & Libraries	Machine Learning Libraries (TensorFlow, OpenCV), IoT Frameworks, Communication Protocols (MQTT, UART, I2C, SPI, CAN) AI in Robotics
Soft Skills	Team Leadership, Problem-Solving, Communication, Time Management, Critical Thinking

Work Experience

Embedded System Developer **July 2024 — Sept 2024**
Eduskills-AICTE MICROCHIP *Virtual Internship*

- Developed embedded systems with **C/C++** and **PIC microcontrollers**, using **MPLAB IDE** for design and communication protocol testing (**UART, I2C, SPI**).
- Designed and tested digital circuits, optimizing performance using simulation tools for efficient hardware-software integration.

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*

- Completed industrial training on **Automotive and Electric Vehicle (EV) systems**, gaining experience with EV components and troubleshooting.

Projects

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.
- Enhanced navigation accuracy through **computer vision** and **machine learning**.

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**.

Weapon Detection and Alert System **Jul 2024 — Nov 2024**

- Developed a **real-time weapon detection system** with **Raspberry Pi**, **OpenCV**, and **machine learning**.
- Implemented an **alert system** for security notifications via email/SMS.

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 **2021 — 2025**
Bachelor of Technology in Electronics and Telecommunication Engineering — CGPA: 7.39/10 *Pune, Maharashtra*
Coursework: Embedded Systems, Digital Signal Processing, VLSI Design, Communication Networks.

Government Polytechnic, Dharashiv **2019 — 2022**
Diploma in Electronics and Communication Engineering — 86% *Dharashiv, Maharashtra*

Activities

Team Lead, TechnoPHILIA'24 **2024**

- Led TechnoPHILIA'24, a national-level project competition with **320 participants** from **45 colleges**, in collaboration with **ISA Pune Section** and **IEEE Student Branch**.
- Managed logistics and sessions, earning recognition for leadership.

President, Spark Club **2023 — Present**

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

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

- Led and organized college cultural events, managing teams and promoting creativity.

Certifications

- **NPTEL - Introduction to IoT** *Aggregate: 72/100*
  - **Key Skills:** Internet of Things (IoT), Network Protocols, Sensor Integration, Embedded Systems for IoT, IoT Architecture and Design, Wireless Communication Protocols, Data Acquisition and Analysis, IoT Security Fundamentals, Introduction to Packet Tracer
- **Embedded C Programming with STM32 Microcontroller (Udemy)**
  - **Key Skills:** Embedded C programming, STM32 ARM Cortex-M4, Debugging Techniques, Bitwise Operations, Memory-Mapped Registers, Peripheral Interfacing, Hardware-Software Integration
  - **Tools & Technologies:** STM32CubeIDE, ARM Cortex-M4 architecture
- **Mastering RTOS: Hands-on FreeRTOS and STM32Fx with Debugging (Udemy)**
  - **Key Skills:** Real-Time Operating System (RTOS), FreeRTOS, STM32Fx Microcontroller, Debugging Embedded Systems, Task Management, Inter-Process Communication (IPC), Timer and Interrupt Handling
  - **Tools & Technologies:** STM32CubeIDE, FreeRTOS, STM32Fx Microcontroller
  - **Focus:** Practical experience in configuring and debugging FreeRTOS for STM32Fx, task management, using semaphores, queues, and managing real-time priorities for embedded applications