MUHAMMAD ARSHAQ

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SUMMARY

Embedded Systems & IoT Engineer with hands-on experience in firmware development, hardware design, embedded C, and microcontroller-based product development. Skilled in **Arduino, PIC, ESP8266,ESP32, Raspberry Pi,STM32,** sensor integration, **OpenCPU (Quectel M66)**, IoT, communication protocols (**HTTP,UART,SPI,I2C,MQTT, TCP/IP**) and end-to-end prototype building. Passionate about developing reliable embedded solutions and optimizing performance. Seeking opportunities in Embedded Firmware, IoT, Electronics Hardware, and R&D roles.

EXPERIENCE

Embedded Operations Engineer - SinroRobotics Pvt Ltd. **Dec 2025-Mar2026**

- **Developed and deployed ESP32-based embedded systems with sensor integration, RS485 communication, and multi-interface connectivity (Wi-Fi, GSM)**
- **Built Raspberry Pi gateway solutions with Flask-based interfaces for data aggregation, configuration, and remote monitoring**
- **Worked on GSM modules (AT commands) and robust serial communication handling for reliable field-level connectivity**
- **Debugged custom PCB and power-related issues, improving ADC stability, system reliability, and overall performance**
- Implemented **OTA firmware update mechanisms**
- Designed data logging and persistent configuration systems
- Contributed to production deployment / field installations
- Performed PCB prototyping, including precise **soldering** and **desoldering** of components for **testing, rework, and hardware validation**

Embedded Trainer - SinroRobotics Pvt Ltd. **Sept 2025-Dec2025**

- **Training students in C, Embedded C, Arduino, ESP microcontrollers, IOT and basic robotics.**
- **Supported in developing project-based learning content for IoT and embedded systems.**
- **Managed students at various institutions .**

Production Operator - SFO Technologies Pvt.Ltd **May 2025 - Aug-2025**

Firmware Developer Intern - Otome Innovative Solutions Pvt.Ltd **Aug 2024-Sept 2025**

- **Developed and tested embedded firmware in the OpenCPU platform for IoT devices, focusing on reliable connectivity and performance.**
- **Assisted in API integration, debugging, and troubleshooting to ensure smooth hardware–software communication.**
- **Gained hands-on experience in embedded systems development, including firmware optimization, testing, and deployment.**
- **Worked with communication protocols (e.g., UART, TCP/IP, MQTT) within the OpenCPU environment to enable real-time data transfer.**

Innovation and Enterprenuership Development Centre(IEDC) - KMEA **2022-2025**

- **Chief Finance Officer(CFO)**
- **IPR and Research Lead**
- **Operations Team Member**

INTERNSHIPS

Keltron Knowledge Centre (Embedded Systems & IoT) **Aug 2025 - Jan 2025**

- Completed hands-on training in **Embedded Systems, PIC, and STM32,** including embedded C programming and real-time debugging.
- Designed and tested drivers for **GPIO, ADC, UART, timers, and sensor** modules.
- Worked on IoT prototypes using ESP8266, MQTT, and cloud integration.
- Gained practical experience in PCB design using KiCad/Proteus and hardware troubleshooting.
- Familiarised Communication Protocols **SPI,I2C,UART.**
- Familiarised with Datasheet reading .

Southern Railway (Ernakulam South),Signals and Telecommunications **22nd–28th July 2024**

- Learned telecommunicationnetworksusedinrailwayoperationsandgainedhands-on experience with signaling systems for operational safety.

ACADEMIC PROJECTS

Plant Disease Detection using Vision Transformers (ViT) **2025**

- **Developed a deep learning model using Vision Transformers (ViT)** to classify rice leaf diseases, achieving 99.58% test accuracy by optimizing dataset preprocessing and transformations.
- Implemented an automated pipeline for dataset splitting and real-time inference using Python, OpenCV, and Raspberry Pi, enabling efficient plant health monitoring.

RC Boat for Competition at IIT Madras **2024**

Arduino Based Smart Parking System **2024**

- Developed a smart parking system using Arduino UNO, with real-time slot updates and a demo app for slot booking via MIT App Inventor.

Smart Dustbin using Arduino UNO **2023**

- Designed an automated dustbin using sensors to detect human presence, enabling hands-free lid operation.

Smart Home Automation Device **2022**

- Developed a home automation system using Node MCU (ESP-8266) to control appliances via a mobile app or by voice assistants like Google Assistant.

SKILLS

Programming Languages - C,Python,Embedded C

Hardware- STM32,ARM M Cortex,PIC microcontroller,Arduino, Raspberry Pi, Node MCU (ESP-8266), IoT Sensor Integration,Soldering and Desoldering .

Tools & Technologies- Mathlab, LTSpice,CST Studio Version, Circuit &Antenna Designing,Arduino-IDE, MIT App Inventor,Proteus,MPLAB,VS-Code,STMCUBE IDE,Kikad,Adafruit IO,IFTTT.

Office Software- Microsoft Excel ,Microsoft Word ,PowerPoint ,Airtable , Canva Figma

Soft Skills- Problem-Solving, Time Management, Project and Operation Manegment, Communication, Leadership Skills

EDUCATION

B.Tech in Electronics and Communication Engineering

KMEA ENGINEERING COLLEGE - APj KTU University

ADDITIONAL INFORMATION

Languages: English, Malayalam, Hindi

Achievements

- **Paper titled "AUTOMOBILE SLOT BOOKING AND PARKING SYSTEM USING ESP8266"** accepted for the 8th International Conference on I- SMAC (IoT in Social, Mobile, Analytics and Cloud) in 2024.
- YIP final round contestant for the funding of project "**Home Automation Device using IOT**"