

VIGNESHWARAN D

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EXECUTIVE SUMMARY

Embedded engineer with hands-on experience contributing to end-to-end development of IoT-based products, from concept and prototyping to validation and field-ready product. Strong exposure to real-world product use cases, system integration and cross-team collaboration, with a clear interest in building scalable, production-grade IoT solutions.

EDUCATION

B.E - ECE – CGPA : 8.14/10 St. Joseph's Institute of Technology	August 2021- April 2025
HSC - 88.76% - Sri Sankara Matric Higher Secondary School	April-2021
SSLC - 83.4 % - Sri Sankara Matric Higher Secondary School	April-2019

EXPERIENCES

Embedded Engineer **Aug -2025 - Present**
Gemicates Technologies - IIT-Madras Research Park

- Responsible for end-to-end development and validation of home automation products — smart relays, Wi-Fi repeater, AC dimmer , RGB controller and energy-metering features for smart relays/plugs — including firmware bring-up, functional testing and POC demos.
- Implemented device communication and switch/control flows using Wi-Fi, BLE, Z-Wave and MQTT/HTTP stacks to enable remote control, telemetry and cloud integration.
- Integrated RS-485/Modbus PLC data in firmware and delivered a PLC → MQTT industrial gateway POC using an AM335x Linux board, Integrated Modbus SDK and Paho MQTT for reliable field to cloud telemetry.
- Produced comprehensive technical documentation, maintained version-controlled codebases and test reports (Git + POC documents), enabling reproducible test results.

Embedded Engineer Intern **Dec- 2024 - May-2025**
Automios Technologies – Entrepreneur in residence - IIT-Madras

- Contributed to development and testing of embedded prototypes for an AI-enabled digital signage product, supporting system integration and performance validation.

Embedded Engineer Intern **Jun -2024 – Nov 2024**
Flynet Technologies – Chennai

- Supported UAV and IoT-based embedded prototypes in assembly, testing, and functional validation.
- Collaborated with R&D team to troubleshoot issues and assist in field-level deployment and evaluation.

TECHNICAL SKILLS

Firmware: C / Embedded C, C++, Python, Bash , ADC sampling, PWM, GPIO, timers and DMA, FreeRTOS.

Platform /Toolchain : STM32CubeIDE (Cortex-M), (ESP-IDF), AM335x-Embedded Linux , KiCAD.

Protocols : UART/ RS232/ RS485, Modbus[RTU], I2C, SPI, MQTT /HTTP, Wi-Fi, BLE, Z-Wave , LoRA, GSM & GNSS[GPS]

Version Control : Git (GitHub)

Hardware & Testing : Hardware design (Schematic + Layout), PCB bring-up and verification, power-measurement integration, functional & load testing, prototyping & debugging.

Processes & Delivery : firmware flashing/versioning workflows, POC validation, technical documentation.

PROJECTS

- **STM32- Based Custom Development Board using KiCad-V8** **Jan 2024**
 - Designed an STM32-based development board with SPI, UART, GPIOs, bootloader support, and
 - USB-C PD modules using KiCad V8 for embedded applications.
- **Ultra Wide Band (UWB) Based Source Localization - Research Project** **May -2023**
 - Using ESP32 with UWB Module and IMU Sensor BN0055 to get the 9axialInformation
 - Built an Navigation System in Unity3D and Localized an Object that
 - Produces Better Accuracy in Less than 50 M without GPS.

ACHIEVEMENTS AND AWARDS

- **AI DYNAMICA – Idea Ignite - Winner** - RMK College of Engineering **Feb - 2024**
- **VISAI 14th International Project Expo –Veltech University** Selected in Top 10 Teams **Feb – 2024**
- **Q'QUEST – Paper-D- Fiesta – Winner** – CEG & TVS Quality Assurance cell **Jan – 2024**
- **MAKE-A-THON - 24 HOURS HARDWARE HACKATHON - 1st Position -** **Apr - 2024**

CERTIFICATIONS AND COURSES

- **Cambridge English Business English Certification** - Prelims CEFR - B1 Level **Sep - 2023**
- **IOT Foundation Certification Assessment** - Infosys Springboard **May -2023**
- **Introduction to the Internet of Things** - NPTEL - Elite + Silver Certification **May -2023**
- **Embedded Systems Design with ARM Cortex M4** - NPTEL - Elite Certificate **Dec –2022**

EXTRACURRICULAR ACTIVITIES

- **Member, Innovation Hardware Club:** Involved in hardware prototyping, technical discussions, and hands-on activities related to embedded systems and robotics.
- **Representative, IEEE Design Club (Student Branch):** Supported design initiatives and assisted in organizing technical events and workshops.
- **Student Mentor, IoT Section – AICTE Idea Lab:** Guided students on IoT basics and project development through hands-on mentoring.
- **Mentor for Junior ECE Students:** Helped juniors learn robotics concepts and embedded systems fundamentals.
- **Creative Skills:** Interested in designing technical posters and presentations for effective communication.