

Harshvardhan R

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EDUCATION

- **Vellore Institute of Technology, Chennai**

Bachelor of Technology in Electronics and Computer Engineering

2022 – Present

CGPA: 9.23

- **Senior Secondary Education (CBSE)**

Central Board of Secondary Education

2022

Percentage: 89.8

EXPERIENCE

- **Embedded Systems Trainee (Cohort 3) – Infineon Technologies**

Sep 2025 – Dec 2025

- Completed a rigorous, industry-grade embedded systems training program conducted by Infineon engineers, focused on **bare-metal** firmware development
- Developed embedded bare-metal firmware for an **ARM Cortex-M0+** microcontroller (Infineon PSoC 4100S Plus), implementing **GPIO, TCPWM timers, PWM, SAR ADC**, and **interrupt handling** at register level
- Built and debugged the complete firmware stack by designing **startup code, linker scripts, and Makefile-based builds** using the **GCC toolchain**, and debugging with **GDB** and **OpenOCD** to analyze memory maps, stack usage, and interrupt execution flow

- **Embedded Systems Intern – DRDO (Gun Health Monitoring System)**

May 2025 – Jun 2025

- Developed real-time embedded firmware for acquisition and diagnostics of weapon subsystem signals
- Implemented low-level embedded firmware on the **NXP MPC5674F** using **S32 Design Studio**, configuring **eQADC, DMA-driven eSCI (UART), FlexCAN, PIT timers, system clocks, NVSRAM, and interrupt service routines** for deterministic multi-channel data acquisition
- Verified **interrupt timing** and **ADC sampling behavior** by instrumenting firmware with GPIO toggles and validating delays via **oscilloscope**-based signal probing

PROJECTS

- **Auto Street Lamp Control System – Infineon Hackathon (3rd Place)**

Dec 2025

GitHub: <https://github.com/hrssas/Infineon-Hackathon>

- Engineered **LDR**-based illumination control with progressive activation of **9 LEDs** for day-night simulation
- Designed a **multi-rate bare-metal firmware** on the **PSoC 4100S Plus** by leveraging dual **TCPWM timers** to decouple **ADC sampling (1 kHz)** from **LED control updates (100 Hz)**, with interrupt-driven control and deterministic clock configuration

- **Bare-Metal Analog Joystick**

Dec 2025

GitHub: <https://github.com/hrssas/psoc4100sPlus-baremetal-analog-joystick>

- Implemented a **game controller** by converting potentiometer position into discrete LEFT/RIGHT control commands and transmitting them to a PC game over **UART**
- Designed a **timer-driven** bare-metal firmware on the **Infineon PSoC 4100S Plus**, configuring **SAR ADC, TCPWM interrupts, GPIO routing, and SCB UART** via register-level programming

- **Wearable Fitness Watch**

Jan 2025 – May 2025

GitHub: <https://github.com/hrssas/SmartFitnessWatch>

- Built and programmed an **ESP32**-based embedded fitness tracker for heart-rate monitoring, step counting, and workout tracking
- Integrated **MPU6050 IMU** and **MAX30102** heart-rate sensor; engineered **dynamic threshold calibration**, significantly improving motion-detection consistency and repetition-count reliability

CERTIFICATIONS

- **Etalvis Certifications:** C Programming Foundation, Electronics Foundation, Embedded Hardware, Embedded Software (GPIO, Controller), Microprocessors Internals, ARM Foundation

Certificates: Drive Link

ACHIEVEMENTS

- **3rd Place** - Infineon Embedded Systems Hackathon

Sep. 2025 - Dec. 2025

- **Top-5 Finalist out of 1000+ teams** at DVCon India 2025

Feb. 2025 - Aug. 2025

TECHNICAL SKILLS

Embedded Systems: Embedded C, bare-metal firmware, ARM Cortex-M, GPIO, NVIC, interrupts, timers (TCPWM, PIT), PWM, ADC (SAR ADC, eQADC), DMA, UART, SPI, I2C, CAN

Programming: C, Embedded C, C++

Tools: GCC toolchain, linker scripts, GDB, OpenOCD, S32 Design Studio, Git, Linux