Harshvardhan R

LinkedIn: https://www.linkedin.com/in/harshvardhan-r
Email: rharshvardhan96@gmail.com
GitHub: https://github.com/hrsas
Mobile: +91 8248102400

Education

- **Vellore Institute of Technology, Chennai** *2022 – Present*
  Bachelor of Technology in Electronics and Computer Engineering *CGPA: 9.23*
- **Senior Secondary Education (CBSE)** *2022*
  Central Board of Secondary Education *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 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/hrsas/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/hrsas/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/hrsas/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: Bare-metal firmware, ARM Cortex-M, GPIO, NVIC, interrupts, timers (TCPWM, PIT), PWM, ADC (SAR ADC, eQADC), DMA, UART, SPI, I2C, CAN
Programming: C, C++, Embedded C
Tools: GCC toolchain, linker scripts, GDB, OpenOCD, S32 Design Studio, Git, Linux