Thamaraimanalan M

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Summary

Final-year Electronics and Communication Engineering student with passion for Linux, Embedded Systems and Device Drivers. Proficient in C programming, Python, and Shell scripting with hands-on experience in Qt application development at FOSSEE, IIT Bombay.

Education

Government College of Technology — Coimbatore, India
Bachelor of Engineering in Electronics and Communication; CGPA: 7.9/10 — *2022 – 2026*

Experience

Project Intern — Feb 2025 – Jun 2025
FOSSEE, IIT Bombay — *Remote*

- Developed and optimized a cross-platform GUI for OpenModelica using **Qt** and **Python**, improving simulation performance.
- Participated in code reviews and collaborated with the core team to ensure software quality and usability.
- Authored technical documentation for developed modules to support maintenance and troubleshooting.

Projects

Embedded Linux Kernel & Device Driver Development — *C, ARM64, QEMU*

- Cross-compiled Linux Kernel 6.6 for ARM64 on QEMU, engineering a minimal rootfs and custom init process in C.
- Developed Loadable Kernel Modules (LKM) using procfs to interface between kernel and user space.

Sensor Management System — *C, Data Structures*

- Implemented low-level C modules focusing on Pointers, Data Structures, and Algorithms.
- Designed a Sensor Management System using Structures and file handling.

Universal-Android-Debloater — *C++, Qt, ADB*

- Built a cross-platform GUI written in **Qt** and **C++** using ADB to debloat non-rooted Android devices.
- Designed the application to improve device privacy, security, and battery life.

Project Eye — *Raspberry Pi 5, Edge-AI*

- Built an assistive wearable on Raspberry Pi 5, utilizing its ARM Cortex-A microprocessor for real-time edge-AI processing.
- Integrated camera modules and processed video streams on a constrained Embedded Linux environment.

Technical Skills

Languages: C, C++, Python, Bash Scripting, RISC-V Assembly
Embedded Internals: Linux Kernel, Device Drivers, RTOS Concepts, Rootfs
Domain Knowledge: Image Processing, LTE Architecture, WLAN (802.11), Multiple Access Techniques
Protocols: I2C, SPI, UART, TCP/IP, UDP
Tools & Simulation: Git, Docker, QEMU, GDB, Cisco Packet Tracer, NETSIM
Hardware: ARM Cortex M, ARM64, Raspberry Pi 5, Hailo AI Accelerator
Frameworks: Qt, PyQt6, OpenCV

Achievements & Certifications

Coursework: Embedded Systems & Linux Kernel | *By Google Developers* — Ongoing
3rd Place, Global Coding Competition | *Qt-Athon* — 2024
Regional Finalist | *NXP AIM (Artificial Intelligence in Mobility)* — 2025
Shortlisted | *TechForSociety Hackathon by Siemens* — 2025

Languages

English: Fluent — **Tamil:** Native