I Viswanath

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Education

National Institute of Technology, Trichy — Tamil Nadu, India
Bachelor of Technology in Computer Science and Engineering — *2020 – 2024*

Open Source Contributions

Linux Foundation – Linux Kernel Bug Fixing Mentorship (Fall) — Remote
Mentee — *September 2025 – Present*

- Upstreamed 6+ patches to the Linux kernel across `net`, `i2c`, and `mm`, including Syzkaller-identified bugs.
- Authored 3 bug fixes in the `net` subsystem, 2 of which were backported to stable releases (`GitHub`).
- One of these fixes addressed a race in a Ethernet-over-usb driver where `set_rx_mode()` could restart the TX queue while `start_xmit()` was processing another transmit request which led to a double urb submission bug (`GitHub`).
- Currently implementing a maintainer-proposed redesign of the core network operation `ndo_set_rx_mode()` in `net/core` to address long-standing concurrency and I/O safety limitations.
- The redesign separates RX config read from hardware writes, enabling deferred, non-blocking I/O and paving the way for standardized network driver behavior (`GitHub`).
- Maintaining a public repository documenting all upstream patches, backports, and design discussions (`GitHub`).

Experience

Centre for Development of Telematics (C-DOT) — Bengaluru, India
Software Engineer — *August 2024 – Present*

- Adapted platform drivers to enable the embedded software stack to run on the x86 architecture selected for the product, overcoming vendor ACPI configuration limitations.
- Handled `I2C` and `GPIO` interactions in the application stack to support board configuration and system diagnostics.
- Developed a custom device driver for a critical component enabling essential router functionality.
- Re-architected the system monitoring stack to improve modularity, readability, and maintainability, simplifying support for future router platforms.

Arcesium — Bengaluru, India
Summer Intern — *May 2023 – July 2023*

- Developed a new web architecture using Spring Boot and Kotlin, enhancing performance and reliability of the integration subsystem.
- Implemented direct database access for plain queries and integrated a secret vault mechanism to ensure secure handling of customer data.
- Optimized API performance, achieving a **3.5× reduction** in average response time.

Projects

Game Boy Emulator (GGBE) *C++, SDL2* — Personal Project

- Implemented a cycle-accurate CPU core and hardware subsystems for the original Nintendo Game Boy in C++.
- Integrated `SDL2` for real-time graphics and input handling.
- Validated correctness and timing accuracy using open-source test ROMs and homebrew benchmarks.
- `GitHub Repository`

Skills

Programming: C, C++, Embedded C, Python, Shell Scripting
Systems: Linux Kernel, Device Drivers, Kernel Modules, Memory-Mapped I/O, Interrupt Handling
Hardware Interfaces: I2C, UART, GPIO
Debug & Tools: GDB, perf, strace, ftrace, printk, QEMU, Buildroot
Build & Integration: Embedded Systems, Make, Git, Cross Compilation, CI/CD