

ANKIT KHUSHWAHA

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Education

Indian Institute Of Technology Dharwad

Bachelor of Science, Physics

Dec. 2022 – Present

Dharwad, Karnataka

Technical Skills

Languages: C, Python

Systems & Tools: Linux, QEMU, gdb, GNU Make, Git, Vim

Core Skills: Driver development, Kernel Memory Analysis, Kernel debugging, Command-line interface, Open Source Development, GitHub Actions (CI/CD), Workflow Automation

Familiar With: C++, Shell Scripting, Web Development

Experience

Linux Foundation Mentorship (LFX '25) — Linux Kernel

Sept 2025 – Dec 2025

Mentee

Upstream Linux Kernel Patches

- Contributed 8+ patches across Linux kernel selftests in net, mm, tls, mptcp, and user_events subsystems.
- Reproduced syzbot-reported failures using QEMU and analyzed execution paths with ftrace and gdb to identify root causes.
- Performed memory error analysis using KASAN to detect and fix uninitialized variables and invalid memory usage.

Acadia Ventures

July 2025 – Aug 2025

Research and Development Intern

Remote

- Built a structured testing framework with fixtures to manage inter-test dependencies, streamlining test maintenance and enabling faster debugging cycles.
- Implemented secure JWT-based authentication with role-based (admin/user) access, strengthening API security and control.
- Built a notification system in FastAPI using event triggers and async tasks, improving user engagement with timely alerts.

Open-Source Contribution

Scientific Python Libraries

SunPy PRs — Stingray PRs

- **SunPy**
 - * Extended `TimeSeries` with slicing, time-range truncation, and custom energy bin support for flexible solar data analysis.
 - * Improved core utilities including `TimeRange.shift()`, timestamp parsing, and `CompositeMap` plotting.
 - * Maintained CI/CD automation using GitHub Actions, including changelog extraction and release workflows.
- **Stingray**
 - * Built a custom time-series modeling pipeline and added support for Fermi GBM FITS file ingestion.
 - * Fixed core data handling paths (`EventList.read`, `Lightcurve.shift`) to ensure correctness and consistency.
 - * Redesigned documentation UI and collaborated with maintainers via PR reviews and issue discussions.

Projects

sysfs-counter – Linux Kernel Input Counter

GitHub

C, Linux Kernel, Input Subsystem, sysfs, GNOME Extension

- Developed a Linux kernel module that hooks into the input subsystem to track Key press events and maintain a kernel-space counter.
- Exposed the counter to user space via a sysfs interface, enabling safe read access without custom device nodes.
- Integrated the sysfs output with a GNOME extension to display live key press counts, demonstrating kernel–user space interaction.

CPU Scheduler Simulation

GitHub

C, pthreads, Makefile, gdb, Debug Logging

- Implemented a multithreaded CPU scheduling simulator with separate arrival, scheduler, and wakeup threads to model process execution.
- Added support for FCFS, SJF, SRTF, and Round Robin scheduling, analyzing turnaround, waiting, and completion times.
- Built a debug logging system for testing and configured clean production builds with logs disabled, ensuring maintainability.

Certifications

The Linux Foundation

Issued Aug 2025

LFD103: A Beginner's Guide to Linux Kernel Development

Credly