Ayush Yadav

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Summary

Engineering student (CS minor) with backend (Go), systems and open-source experience. Shipped a production dashboard used by about 20 operators, merged 6 upstream pull requests as a Google Summer of Code 2026 contributor, and built an x86-64 kernel from scratch. First-author IEEE publication.

Education

Indian Institute of Technology Jammu 2024 – 2028 (expected)
B.Tech in Materials Engineering, Minor in Computer Science and Engineering; CGPA: 7.97/10 *Jammu, India*

Gyansthali Public School 2021 – 2023
Class XII (CBSE): 92.3%; Class X (CBSE): 97.2% *Mahoba, UP, India*

Experience

Open Source Contributor, Google Summer of Code May 2026 – Aug 2026
RTEMS Project | *summerofcode.withgoogle.com/programs/2026/projects/b7KoR81l* *Remote*

- Built **rtems-pkg**, a template-based packaging framework in Python for RTEMS deployment infrastructure, working with project mentors through upstream code review; 6 pull requests merged.
- Added Debian and FreeBSD packaging support, fixed distro-specific build failures and standardised architecture mappings across 3 platforms.
- Tested usability with 5 users and mentors; revised the CLI workflow and documentation based on their feedback.

Research Intern Sept 2024 – June 2025
Aadhrit Lab, IIT Jammu *Jammu, India*

- Built and deployed a full-stack dashboard (React/Next.js, TypeScript, Go back end, SQL, REST APIs) to monitor and control power devices in real time; used in production by about 20 operators in campus electric substations.
- Implemented multi-user support, fine-grained per-user access control and a scheduler for device automation.
- Built a secure IoT gateway on Raspberry Pi (Modbus to MQTT over redundant LAN and 4G LTE failover, TLS and client certificates) and firmware for 3 power devices; published at IEEE ICPS 2025 (first author).

Projects

Perimeter: Zero-Trust Access Proxy | *Go, mTLS, Networking, Linux* | github.com/acidicneko/perimeter 2026

- Built a zero-trust access proxy in Go authenticating every connection with mTLS and short-lived certificates to mitigate credential theft and replay.
- Enforced per-request policy checks on user identity, device posture and target application; built an outbound-only connector and a custom stream multiplexer.

Discitix Kernel | *C, x86-64 Assembly, Limine, QEMU, GDB* | github.com/acidicneko/discitix_x86_64 Aug 2025

- Implemented a modular x86-64 kernel from scratch booting to a shell in 1.5 s under QEMU: preemptive multitasking, virtual memory, physical allocator, 20-syscall ABI and filesystems.
- Ported newlib, Lua, TCC, dash and DOOM; root-caused an intermittent crash to mismatched allocators by logging every allocation and free under GDB.

Karui Build Tool | *C++, Concurrency, Linux* | github.com/acidicneko/karui Jul 2025

- Built a YAML-configurable C/C++ build system with dependency tracking and incremental, parallel builds; 1.1% faster than Make on Discitix by spawning compilers directly instead of via a shell.

Publication

A. Yadav, N. Singla, A. Sardhalia, S. Bashir, A. Shukla, "Digitizing Electrical Panels with MQTT and Multi-Network Raspberry Pi Gateways," *2025 11th International Conference on Power Systems (ICPS)*, IEEE, 2025. ieeexplore.ieee.org/document/11364771

Relevant Coursework

Computer Programming, Data Structures & Algorithms, Linux System Administration, Numerical Methods, Operating Systems

Technical Skills

Languages: Go, Java, TypeScript, JavaScript, Python, C, C++, x86-64 Assembly, Bash, SQL
Backend & Web: REST APIs, SQL, React, Next.js, Node.js, Tailwind CSS, mTLS/TLS, access control
Systems & Tooling: Linux, Docker, Git, CI/CD, QEMU, GDB, Nix, Debian/FreeBSD packaging, code review

Positions of Responsibility

Co-Head, Cybersecurity, Coding Club 2025
IIT Jammu: organized multiple Linux workshops and CTFs for students.

Branch Convenor, Nexus 2026
IIT Jammu: coordinated and led the branch, securing rank #2 in the inter-branch tech competition.