Ashutosh Panda

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Education

Bachelor of Technology in Electronics and Communication — Jun 2023 – Present
National Institute of Technology, Patna — *CGPA: 7.69/10*

Senior Secondary — May 2021 – May 2023
Saraswati Vidya Mandir — *Percentage: 80.83%*

Projects

Plero – AI Code Completion Editor — June 2025
***TypeScript**, Electron, Vite, OpenAI API*

- Built a Retrieval-Augmented Generation (**RAG**) pipeline with local vector search to improve context grounding.
- Refined token chunking and embedding strategies to lower cost/latency while preserving accuracy.
- Created a performance benchmarking suite to evaluate latency across chat, web, and reasoning workflows.
- Designed a type-safe IPC contract ensuring robust communication between main and renderer processes.
- Reduced inference time via embedding cache implementation and prompt optimizations.

ROC – Actor-Based Distributed Key-Value Store — Feb 2025
***Rust**, Tokio*

- Developed a multi-tenant asynchronous store with enforced per-user data isolation.
- Implemented encrypted packet transfer over **QUIC** with automated certificate generation.
- Added core database ops (SET, GET, DELETE, RANGE, LIST) with concurrency-safe execution.
- Built dynamic user session management using persistent UUIDs and server-side validation.

x86_64 Operating System — Mar 2025
***Rust**, QEMU*

- Implemented VGA text buffer driver for kernel-level text rendering.
- Integrated CPU exception and interrupt handlers enabling responsive keyboard input.
- Established virtual memory management with 4-level page tables and a bump allocator.
- Designed cooperative multitasking via async/await and a custom task executor.
- Wrote kernel-level integration tests for OS subsystem validation.

Mini TCP – Userspace TCP/IP Stack — Jan 2025
***Rust**, etherparse, tshark*

- Engineered a minimal TCP/IP stack in userspace with full packet-handling control.
- Implemented RFC 793-compliant TCP state machine from the ground up.
- Created low-level packet parsing for payload extraction, resolving protocol edge cases.
- Developed concurrent connection manager with mutex-based synchronization.

Technical Skills

Programming Languages: Rust, C, C++, Java, Python
Technologies & Frameworks: AWS, TensorFlow, LangChain
Developer Tools: VS Code, Neovim, Git & GitHub, Docker, Kubernetes, Postman
Coursework: Data Structures, Object-Oriented Programming, Computer Networks

Certifications

Python: Developed various tools including automated web scrapers — Jan 2024
Machine Learning: Built supervised/unsupervised ML models using Python libraries — Apr 2024
Cloud & DevOps: Deployed and scaled apps using AWS services — June 2024

Position of Responsibilities

Team Gray Interface, HackSlash — Apr 2024 - Present
Member

- Collaborated on deep learning projects (Neural Style Transfer, GPT-based modeling) and containerized models for reproducible deployment.