

Aranya Dutta

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Technologies

Languages: C++, C, Java, Python, JavaScript, HTML/CSS

Tools & Frameworks: FastAPI, Docker, Git, GitHub, JWT, Bcrypt, Gradle, Maven, Swagger

Systems/Hardware: Linux, ESP32, Embedded C++, Bash, Networking Basics, Pydantic

Projects

CICFlowMeter API (Python • FastAPI • Docker)

💬 [Project Link](#) ↗

- Built a Dockerized REST API to process uploaded PCAP files using CICFlowMeter and return extracted network flow features as CSV files.
- Orchestrated execution of Java/Gradle-based CICFlowMeter from a FastAPI service, isolating heavy dependencies from the API layer.
- Implemented file handling, ZIP packaging, and controlled single-request execution to support large PCAP analysis workloads.
- Exposed interactive API documentation using Swagger UI for easy testing and integration.
- **Technologies:** Python, FastAPI, Docker, Java, Gradle, CICFlowMeter, PCAP, REST API

SafeShare Backend (Python • FastAPI • Cryptography)

💬 [Project Link](#) ↗

- Developing a secure file-sharing service using FastAPI, implementing **JWT (JSON Web Tokens)** for stateless authentication and **Bcrypt** for secure password hashing.
- Authored comprehensive technical documentation including **SRS, System Architecture, and Testing Plans**, following industry-standard SDLC practices.
- Designed a **Role-Based Access Control (RBAC)** system and middleware to protect sensitive API endpoints.
- **Technologies:** Python, FastAPI, JWT, Bcrypt, Docker, Swagger/OpenAPI

KataYomi — Katakana Hover Reader (Chrome Extension)

💬 [Project Link](#) ↗

- Building a lightweight Chrome extension (**Manifest V3**) to assist Japanese learners by displaying Hiragana readings for Katakana text on hover.
- Implemented client-side Katakana detection by traversing DOM text nodes and matching specific Unicode ranges (U+30A0–U+30FF).
- Developed a custom translation logic using Unicode offset mapping for fast, dictionary-free conversion.
- Designed a non-intrusive tooltip overlay to display readings without disrupting original page layout.
- **Technologies:** JavaScript, Chrome Extension API, DOM Manipulation, Unicode Processing

KernelTalk (C • Linux Kernel • IPC)

💬 [Project Link](#) ↗

- Built a Linux kernel module enabling multi-client terminal-based chat via a custom character device (/dev/kerneltalk).
- Implemented producer-consumer synchronization using a circular buffer to safely handle concurrent operations.
- Designed blocking and non-blocking I/O behavior to manage message flow across multiple user-space processes.
- Enabled kernel-user space communication using file operations (open, read, write) in C.
- **Technologies:** C, Linux Kernel, IPC, Character Device Drivers

Experience

Open Source Contributor • Processing Foundation

Remote • June 2024 – Present

- Contributed bug fixes to Processing 4, a Java-based environment used in global creative coding education.
- Managed workflows including issue tracking, branching, and pull requests via GitHub peer review.

Competitive Programmer • KodeWreck

Bhubaneswar, India • Dec 2023 – Present

- Current Codeforces Rating: **1234 (Pupil)** — Solved 450+ problems on GeeksforGeeks.
- Improved rating from 800 → 1234 within 6 months through consistent algorithmic practice.

Achievements

- **2nd Runner-up** at ICDCIT Hackathon 2024 among 100+ participating teams.

Education

Kalinga Institute of Industrial Technology

August 2023 – May 2027

B.Tech in Computer Science

- GPA: 7.92/10.0 — **Coursework:** Data Structures, Operating Systems, Computer Networks.

- **Skills:** Cisco Networking Academy, Japanese (JLPT N5 – Beginner).