

Aryan Pathak

Software Engineer | Backend Engineer | Distributed Systems

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[GitHub](#) | [LinkedIn](#) | [Portfolio](#)

TECHNICAL SKILLS

Languages: Python, TypeScript, JavaScript, SQL

Frontend: React, HTML5, CSS3, Tailwind CSS

Backend: Node.js, Express.js, FastAPI, Flask, REST APIs, JWT Authentication, Role-Based Authorization, Microservices

Databases: Firebase Firestore, PostgreSQL, MongoDB, MySQL

Distributed Systems & Security: TCP/IP, Socket Programming, UDP, AES-256-GCM, Ed25519, X25519

Machine Learning: PyTorch, ONNX Runtime, OpenCV, Scikit-learn, Pandas, NumPy

Developer Tools: Git, GitHub, Docker, GitHub Actions, Linux, Vercel

EXPERIENCE

Software Engineering Intern | syn8x.tech

Jun 2025 – Sep 2025

- Engineered backend modules and REST APIs for Oper8a, a decentralized storage optimization platform using cryptographic verification and decentralized data workflows.
- Collaborated in Git-based debugging, testing, code reviews, and Agile development improve backend reliability.

Backend Engineering Intern | syn8x.tech

Jun 2024 – Sep 2024

- Developed backend services and REST APIs for DePost using Node.js, supporting IPFS-based decentralized storage and blockchain wallet authentication.
 - Collaborated on debugging, deployment, and scalable full-stack feature development across production applications.
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PROJECTS

ADST — Secure Distributed Learning Protocol | Python • TCP/UDP • Socket Programming • AES-256-GCM • Ed25519 • X25519

[GitHub](#)

- Engineered a secure coordinator–worker framework for distributed learning over hybrid TCP/UDP using X25519, Ed25519, and AES-256-GCM for secure authentication and encrypted communication.
- Architected modular networking components and secure aggregation workflows to enable scalable, privacy-preserving distributed learning.

CowpybaraMQ — Distributed Message Broker | Python • AsyncIO • TCP Sockets • Distributed Systems • Docker

[GitHub](#)

- Built a **Kafka-inspired distributed message broker** in Python using **AsyncIO** and raw TCP sockets, implementing topic partitioning, append-only logs, message persistence, and concurrent producer–consumer communication.
- Designed a custom messaging protocol with topic partitioning, consumer groups, persistent offsets, leader election, replication, configurable ACK modes, compression, runtime metrics, and Docker-based deployment.

Aegis — SQL Migration Static Analyzer (*Open Source*) | Python • Static Analysis • CI/CD • PostgreSQL • MySQL

[GitHub](#)

- Developing an open-source static SQL migration analyzer that identifies locking hazards and unsafe schema changes before deployment.
- Building a modular parser and extensible rule engine with automated testing, GitHub Actions CI, and community-driven development.

Trinetra — Real-Time Crowd Intelligence System | Python • OpenCV • ONNX Runtime • Flask

[GitHub](#)

- Engineered a real-time crowd intelligence platform using Python, Flask, OpenCV, and ONNX Runtime for live crowd density, flow, and surge analysis.
 - Achieved a **40x** inference speedup (from ~40s to <1s per frame) while exposing live analytics through REST APIs and an interactive dashboard.
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EDUCATION

B.Tech. Artificial Intelligence & Machine Learning

School of Information Technology, RGPV

Expected Graduation: 2027

ACHIEVEMENTS

- Active open-source contributor with accepted bug reports and contributions to Haystack; maintaining the Aegis static analysis project.
- Completed **two software engineering internships** at syn8x.tech, contributing to backend and full-stack product development.