

SHIVANSH CHARAK

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Education

Vishwakarma University

Bachelor of Science in Computer Science

Sep. 2020 – May 2024

Pune, Maharashtra

Projects

Cryptex | *Next.js, PostgresDB, TimescaleDB, WebSockets, Redis, Express, Prometheus, Grafana, Docker* Jan 2024

- Built a **high-frequency crypto trading platform** with real-time chart updates and **less than 12ms order-matching latency**.
- **Handled 7–8k requests/sec** while maintaining **ACID guarantees** using **Redis + Lua scripting** for atomic execution of trades.
- Designed a **modular architecture** with independent **API, WebSocket, and Engine** layers, each scaling horizontally.
- Used **TimescaleDB (columnar)** for analytics and **PostgreSQL** for transactional data by keeping the speed and transaction properties in mind.
- **Containerized services into Pods** and deployed within a local **Kubernetes cluster** for orchestration.
- Implemented **monitoring and observability** using **Loki, Prometheus, and Grafana** for **real-time metrics and logging**.

Tech Unplugged | *TypeScript, React.js, Hono, Cloudflare Workers* Nov 2024

- Developed a **serverless backend** on Cloudflare Workers, achieving **feed load latency of 4–5ms**.
- Optimized performance using **Cloudflare KV cache**, reducing startup latency from **10–12s to 5ms**.
- Implemented **batched writes for likes, comments, and views** via **Durable Objects** for faster persistence.
- Configured **Durable Objects to sync with DB every 5–10 minutes**, balancing consistency with throughput.
- Separated **read and write replicas** for optimized database scaling.
- Maintained **WebSocket connections** for **real-time notifications**.

Experience

Cybersecurist Technologies

Jan 2024 – May 2024

Software Security Intern

Pune, Maharashtra

- Studied the **internal workings** of Symmetric (AES, DES, 3DES) and Asymmetric (RSA, ECC, DH) cryptographic algorithms.
- Analyzed **web vulnerabilities** like **HTML Injection, SQL Injection, Clickjacking, XSS**, and their role in **privilege escalation**.
- Helped identify **20–30 security flaws**, including **reverse shell, information disclosure, broken access control, JWT-related attacks**.
- Worked with **OWASP ZAP, Nmap, Burp Suite, and brute-force techniques** for vulnerability detection and exploitation.

Technical Skills

Languages: JavaScript, TypeScript, Go, SQL, HTML/CSS

Frameworks/Technologies: React.js, Next.js, Express, MongoDB, Vitest, Linux, Git

Databases: PostgreSQL, TimescaleDB, Redis

DevOps & Monitoring: Docker, AWS, GitHub Workflows, Prometheus, Grafana, Loki, Winston

Security Tools: OWASP ZAP, Burp Suite, Nmap

Open Source Contributions

Layer5 - Sistent Design System

PR #1146

Implemented **palette.ts** to define and manage the design system colors and showcased them on a dedicated Next.js page.

Migrated state management from Redux to React Context for background color changes.

Upgraded the project from React v15 to v17 to ensure modern compatibility and performance.