

Kanishk Kulshrestha

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Skills

Languages: Python, C/C++, Go, JavaScript, Bash

Backend & Systems: REST APIs, WebSockets, TCP/IP, Multithreading, Authentication, SQL, Redis

Core Concepts: Data Structures & Algorithms, Operating Systems, Computer Networks, System Design, Concurrency

Tools and Infrastructure: Docker, Git, CI/CD, Bash Scripting, S3, RDS, EC2, Linux, Claude Code, Groq

Experience

Fiserv

Jun 2026 - Present

Software Engineer Intern

Pune

- Designed backend services in Python and Flask to automate reconciliation workflows for merchant transaction systems, reducing processing overhead by 10%.
- Implemented application metrics and monitoring dashboards, reducing issue diagnosis time for support teams.
- Developed 50+ unit and integration tests, increasing deployment confidence and reducing regression issues.

Projects

Light Ray Simulator | Github

C++

- Developed a multi-threaded CPU ray tracer from scratch, implementing recursive reflection and physically based lighting to render scenes **3X faster**.
- **Implemented intersection logic, shadows, and anti-aliasing (10 rays/pixel)** to achieve high-fidelity material rendering.
- **Architected a flexible camera system** for arbitrary positioning and dynamic FOV/aspect-ratio control.

Distributed Rate Limiter | Github

Python

- **Architected a stateless, horizontally scalable Distributed Rate Limiter** using Python (FastAPI) and a centralized Redis in-memory data store, ensuring unified traffic-shaping across multi-node server clusters.
- **Mitigated distributed concurrency bottlenecks and data synchronization lag** by shifting state management from local memory to an externalized cache, maintaining sub-millisecond execution overhead.
- **Engineered the microservice via Infrastructure as Code (IaC)** with Docker Compose to containerize application and caching tiers, validating system resilience by running distributed load testing (Locust) under simulated high-concurrency spikes.

CLI Spotify | Github

Go, Python

- **Built a Flask backend** integrating 5+ Spotify API endpoints with OAuth for real-time management.
- Developed a Go CLI with **10+ custom keyboard commands** for low-latency search and playback control.
- Implemented **OAuth2 token refresh logic** to maintain persistent sessions and minimize user login friction.

Achievements

- **Led a 4-person team to 1st place** at K J Somaiya's National XR Hackathon, developing a VR medical simulation for surgical training.
- **Specialist on Codeforces** with a maximum rating of 1500+. (Handle : kzar)
- Secured **All India Rank 18** in **HackCTF 2024**, a national-level cybersecurity challenge held in Jaipur.
- **Ranked 159** globally in CodeChef Starter 222 among 36000+ participants.

Education

Bachelor of Technology, Computer Science and Engineering

Jul 2023 - Jun 2027 (expected)

Bharati Vidyapeeth Deemed University, Pune

CGPA: 8.22