KIRTAN PATEL

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SUMMARY

Software Engineer specializing in backend and systems development with experience in distributed systems, concurrency, multithreading, REST APIs, and high-throughput services. Strong background in Linux, networking, performance optimization, and cloud-native systems.

TECHNICAL SKILLS

Languages: C, C++, Python, Java, JavaScript, TypeScript
Systems & Backend: Multithreading, Concurrency, Distributed Systems, TCP/IP, Linux, Memory Management, Thread Pools
Databases: PostgreSQL, SQL, Redis
Frameworks: FastAPI, Node.js, React, REST APIs
Tools: Git, Linux, GDB, VS Code, Jira
Cloud & Deployment: Docker, Microservices, Load Testing

EXPERIENCE

Resilience Inc **Nov 2025 - Present**
Software Engineer Intern – Backend / Systems

- Resolved production **memory leaks** and async **race conditions, lowering** error reports by **40%**
- Reworked backend REST API request flows, **cutting peak traffic latency by 30%** at production scale
- **Improved UI** render **performance** by **25%** through memoization, render batching, and optimized state management
- Containerized backend microservices using Docker on Linux/WSL, **improving deployment** consistency across environments

University of Illinois Chicago **Aug 2024 - Present**
Teaching Assistant – Computer Science (C/C++, MATLAB)

- **Led** C/C++ and MATLAB **lab** sessions, assisting students with **programming fundamentals**, debugging, and problem-solving
- Held weekly **office hours** to support students with **assignments**, exam preparation, and conceptual understanding
- **Reviewed** student **code** for **correctness**, readability, and **performance**, providing constructive feedback

PROJECTS

FlashSaleGuard - Distributed Inventory Reservation System | FlashSaleGuard

- **Designed a high-concurrency inventory reservation system** using **Redis atomic counters** and **TTL-based reservations** to prevent overselling during flash-sale traffic
- **Implemented idempotent order confirmation logic** to guarantee **exactly-once order** creation under concurrent requests
- **Load-tested with 10,000+** concurrent requests, achieving **zero oversell** and validating **system correctness and reliability**

Adaptive Load-Shedding API Gateway - C++ ,Linux ,Multithreading, Networking | Adaptive Gateway

- Built a **concurrent C++ API gateway** that detects backend overload using **latency and error-rate metrics** and **sheds low-priority traffic** to prevent cascading failures
- Implemented a **thread-pool architecture with bounded priority queues**, enforcing backpressure and prioritizing critical requests under burst traffic
- Load-tested with hundreds of concurrent requests, measuring **p95 latency** and validating **graceful degradation** during backend slowdowns

Multithreaded Web Server - C HTTP Server | Multithread Web Server

- Engineered a **multithreaded** HTTP/1.1 server in C using a thread pool and bounded queue, achieving **5×** throughput under **concurrent load**
- Added **rate limiting, routing and dynamic worker** scaling to maintain stability under **heavy traffic**
- Designed **synchronization** using mutexes and condition variables to ensure **thread-safe request handling**

ClusterStore- Distributed Key-Value Store |ClusterStore

- Built a **hash-partitioned distributed key-value store** supporting **concurrent reads and writes across multiple nodes**
- **Designed low-latency TCP-based messaging and a Python load-testing framework, reducing inter-node overhead by 35% and improving throughput by 25%**
- **Implemented timeouts and retries to maintain correctness and availability during partial node failures**

EDUCATION

Bachelor of Science, Computer Science
University of Illinois at Chicago **May 2026**
Coursework: Operating Systems, Computer Networks, Distributed Systems, Systems Programming, Data Structures, Algorithms, Database Systems

ACHIEVEMENTS & CERTIFICATIONS

- **Dean's List:** University of Illinois Chicago (Multiple semesters)
- **JPMorgan Chase:** Software Engineering Virtual Experience (Kafka, Spring Boot)
- **Walmart USA:** Advanced Software Engineering Virtual Experience (Forage)