KIRTAN PATEL

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SUMMARY

I am a software engineer who builds **scalable, reliable software**, with a focus on **concurrency, distributed execution, and performance**.

EDUCATION

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

TECHNICAL SKILLS

Languages: C, C++, Python, Java, JavaScript, TypeScript
Technologies: Linux, Git, PostgreSQL, SQL, Redis, Docker, Microservices
Utilities: FastAPI, Node.js, React, REST APIs, GDB, VS Code, Jira

EXPERIENCE

Resilience Inc — Nov 2025 – Present
Software Engineer Intern

- Work on **production backend systems**, identifying and fixing **memory leaks** and **async race conditions**, reducing **error reports by 40%**.
- Improve **REST API request flows** to reduce **latency during peak traffic**, achieving **up to 30% faster response times**.
- Collaborate with **frontend and backend engineers** to optimize **UI rendering** through **memoization and batching**, improving **performance by 25%**.
- **Containerize and maintain microservices** using **Docker on Linux**, ensuring **consistent deployments** across environments.

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

- Lead **C/C++ and MATLAB lab sessions**, helping students **debug code** and understand **core programming concepts**.
- Hold **weekly office hours** to support students with **assignments** and **exam preparation**.
- Review **student code** and discuss **design decisions**, improving **correctness, readability, and performance**.

PROJECTS

FlashSaleGuard - Distributed Inventory Reservation System **|** **FlashSaleGuard**

- Implemented an inventory reservation flow using **Redis atomic counters and TTLs** to safely handle flash-sale traffic **without overselling**.
- Designed **idempotent order confirmation logic** to guarantee **exactly-once order creation** under concurrent requests.
- Validated system correctness through **load testing with 10,000+ concurrent requests**, achieving **zero oversell** under heavy load.

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

- Developed a **concurrent API gateway in C++** that monitors latency and error rates and sheds low-priority traffic to **prevent cascading failures**.
- Introduced **thread pools with bounded priority queues** to apply **backpressure** and keep critical requests responsive during traffic spikes.
- Evaluated system behavior under stress using **p95 latency** while testing with hundreds of concurrent requests.

Multithreaded Web Server - C HTTP Server **|** **Multithread Web Server**

- Engineered a **multithreaded HTTP/1.1 server in C** with a thread pool and bounded queue, improving throughput by **5×** under concurrent load.
- Added **rate limiting and routing logic** to maintain stability as request volume increases.
- Ensured thread safety using **mutexes and condition variables** across worker threads.

ClusterStore - Distributed Key-Value Store **|** **ClusterStore**

- Designed a **hash-partitioned distributed key-value store** supporting concurrent reads and writes across multiple nodes.
- Reduced inter-node communication overhead by **35%** through **TCP-based messaging**, improving overall throughput by **25%**.
- Improved fault tolerance by adding **timeouts and retries** to handle partial node failures.

HONORS & CERTIFICATIONS

- **Dean's List:** University of Illinois Chicago (Fall 2023, Fall 2024, Spring 2025, Fall 2025)
- **Software Engineering Virtual Experience** — JPMorgan Chase (Kafka, Spring Boot)
- **Advanced Software Engineering Virtual Experience** — Walmart USA (Forage)