

SOLANKI AKSHADIPSINH YOGARAJ SINH

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Education

Pandit Deendayal Energy University

2023 – 2027

Bachelor of Technology in Computer Science and Engineering | CGPA: 9.58/10.0

Gandhinagar, India

Utkarsh Secondary Hightschool

2021 – 2023

Higher Secondary Education (HSC)

Ahmedabad, Gujarat

Projects

Helios – Distributed Job Scheduler

May 2026 – Present

Java 21, Spring Boot 3, etcd, Kafka, PostgreSQL, Docker

[Source Code](#)

- Solved the **split-brain problem** in multi-node deployments by implementing **etcd-based CAS leader election** with **lease-backed heartbeats**, guaranteeing at most one active leader coordinating job dispatch at any instant, even during **network partitions**.
- Prevented stale-write corruption from demoted or partitioned nodes by introducing **monotonically increasing fencing tokens**, rejecting any write carrying a token older than the last accepted one before it could reach the data layer.
- Decoupled job dispatch from execution by having the elected leader publish scheduled jobs to a **Kafka topic**, with worker nodes independently consuming jobs and claiming them via **PostgreSQL SKIP LOCKED** polling, eliminating **race conditions** so no two workers could ever lock and execute the same pending job.
- Guaranteed atomic job-state updates via a **transactional outbox pattern**, with asynchronous recovery of jobs stranded after a crash and a **dead-letter queue** quarantining tasks stuck in repeated-failure loops; exposed cluster state and job control through a **CRUD REST API** backed by a multi-node **Docker Compose** environment.

AtomicX

Apr. 2026 – Jul. 2026

Java 21, Spring Boot, PostgreSQL, REST API

[Source Code](#)

- Engineered a production-grade financial ledger REST API implementing ACID-compliant double-entry bookkeeping with pessimistic write locks (PESSIMISTIC_WRITE) and deterministic UUID-ordered lock acquisition to eliminate deadlocks under **500+ concurrent threads**.
- Tuned Hikari connection pool (50 max connections) and Tomcat thread pool (500 threads) for high-throughput workloads, achieving **13ms average transfer latency at 1000 RPS** and sustaining up to **1600 RPS** under load testing using K6, validated correctness with **27 unit tests** spanning concurrency, precision, and idempotency scenarios.
- Implemented **exactly-once transfer semantics** via header-supplied idempotency keys with O(1) indexed lookups, short-circuiting duplicate requests before lock acquisition to prevent double-spend on network retries.
- Designed an append-only immutable ledger model with a Lock-Check-Act three-phase transaction pattern inside a @Transactional(timeout=10) boundary, ensuring atomicity of debit/credit pairs and automatic rollback on failure.

FlowGuard – Distributed Rate Limiter

Jan. 2025 – Mar. 2025

Java 21, Spring Boot 3, Redis

[Source Code](#)

- Implemented a **sliding-window weighted-average rate limiter** using Redis, tracking per-IP request counts across current and previous minute windows to prevent burst traffic without hard resets.
- Built a custom servlet filter using **OncePerRequestFilter** with highest-precedence ordering, ensuring every incoming request is rate-checked before reaching application logic, returning **HTTP 429** on violations, with explicit 5-minute key expiry to prevent stale memory accumulation.

Leadership

Team Lead — Real-Time Auction Platform

Jan. 2026 – May 2026

Pandit Deendayal Energy University

- Led a **4-member team** in designing and developing a real-time auction platform, coordinating system design, task allocation, integration, and project delivery.

Technical Skills

Languages: C++, Java 21, Python, JavaScript, SQL

Distributed Systems: Leader Election, Consensus (etcd/CAS), Fencing Tokens, Idempotency, Replication, Fault Tolerance, Concurrency Control

Frameworks & Tools: Spring Boot 3, etcd, Kafka, Redis, PostgreSQL, Docker, Git, GitHub, Linux

Core CS: Data Structures & Algorithms, Operating Systems, DBMS, Object-Oriented Programming (OOPs)

Achievements

Competitive Programming

- CodeChef: Secured a **Max Rating of 1637 (3 Stars)**.
- CodeChef Starters: Secured **Global Ranks of 327 (Starters 118)** and **794 (Starters 114)**.
- Problem Solving: Solved **600+ problems** across CodeChef, Codeforces, and CSES.