

Abhinav Sai

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EXPERIENCE

Khumbu Systems

Hyderabad, India

Associate Software Engineer (Backend)

2024 – Present

- Designed & own order, cancellation, pricing, menu/store-sync services (Oracle Symphony STS Gen1, PAR POS, Chipotle) linking Uber Eats/RBI apps to Burger King, Popeyes, Tim Hortons, Chipotle, Wingstop POS: **~12k stores, 17 markets; 60k quotes, 10k orders, 40k menu + 123k store-status syncs/day**, peak **100 req/s**.
- Led migration from provisioned Redis + Lettuce to ElastiCache Serverless (Valkey) + GLIDE (**~75% lower cache cost**); built a custom Spring cache (AbstractValueAdaptingCache, isolated typed ObjectMapper); fixed a SmartLifecycle shutdown-order bug failing cache calls during SQS drain.
- Cut ECPU **44% (177M→100M/day)** gzipping large menu payloads; GLIDE's multiplexed client replaced custom pooling (new connections **1,000+→~0**); traced ClosingExceptions to proxy connection recycling.
- Write-through→cache-aside; DynamoDB Streams invalidation; “cache exception = miss” contract: **96–99% hits**.
- Idempotent SQS consumers via atomic SETNX keys (correlation ID + queue name) absorb partner retries and redeliveries; `/healthz` checks (Valkey, SQS, S3, DynamoDB) drive DR region failover.
- Cut heavy-load menu processing from **70s+ to <20s** (memory optimizations, parallelism); k6/JMeter load tests found S3 connection timeouts as the first bottleneck – added retry handling.
- ClickHouse storage design (**250k events/day**); ReplacingMergeTree versions dedupe (corr. ID, subtype).
- Single-handedly upgraded all backend services to Spring Boot 3 in **one week with zero rollbacks**.
- Automated store rollouts across EMEA, APAC and US: **10,000+ stores** onboarded, **90%** less manual work.

PROJECTS

Real-Time Multiplayer Chess Platform | *Java 25, Spring Boot 4, PostgreSQL, Valkey, WebSockets, AWS* 2026

- Server-authoritative clock from database time; exactly-once moves without distributed locks (idempotency keys, optimistic locking) – 1 winner in 16-way contention, 100/100; **1,000 WebSockets** on local K8s, **p99 6.7 ms**.
- AWS via Terraform (ECS Fargate, RDS, ElastiCache, SQS, ALB, OIDC CI/CD); k6 found bcrypt starving virtual-thread carriers on 0.5 vCPU – bounded pool + 503 shedding: sign-up burst **30/50→50/50 games**.
- Transactional outbox + SQS for exactly-once ratings; WebSocket drain carried **40 live games through a rolling deploy, 0 lost**; failure drills cut PostgreSQL-freeze waits **33.5s → 2.9s**.

TECHNICAL SKILLS

Languages & Backend: Java, Python, SQL, JavaScript, Spring Boot, REST, WebSockets, Microservices, Concurrency
Data & Messaging: PostgreSQL, DynamoDB, ClickHouse, MongoDB, Redis, Valkey, SQS, Distributed Caching
Cloud & DevOps: AWS (ECS, EC2, S3, ElastiCache, RDS, Lambda, CloudWatch), Terraform, Kubernetes, Docker
Testing & Concepts: JUnit, Testcontainers, k6, JMeter, System Design, Distributed Systems, Idempotency, CI/CD

WRITING

From Redis + Lettuce to Valkey GLIDE: Lessons from a Production Migration to ElastiCache Serverless *Medium, 2026*

EDUCATION

Chaitanya Bharathi Institute of Technology

Hyderabad, India

B.E. in Computer Science and Engineering (IoT, CyberSecurity & Blockchain) | CGPA: 9.27 / 10

2020 – 2024

ACHIEVEMENTS

- **1st Place** – Tech Savishkaar Hackathon, Vasavi College of Engineering (2023).
- **Top 40 of 400+ Teams** – Google & T-Hub Hack4Change Hackathon; selected among national finalists.
- Rapidly delivered integration services (Uber Eats, RBI, Chipotle, Tim Hortons, IBS): onboarding **weeks→days**.