Shubham Kumar

Software Engineer | Backend & Distributed Systems

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Summary

Software Engineer with **4+ years of experience** building backend services, distributed systems, and cloud-native applications. Experienced in **Python, Java, and microservices architecture**, performance engineering, and observability.

Experience

Cognitree Technologies — Bangalore
Software Engineer — *Mar 2022 – Present*

Zaimler *(Client Engagement)* — *Observability & Reliability*

- Introduced observability to previously unmonitored microservices by deploying **Grafana Alloy** to collect logs, traces, and service metrics, using **Loki, Tempo, and Prometheus** as backends.
- Implemented an **Istio Gateway** and built **Grafana dashboards** and alerting rules to visualize service health and surface operational issues.

DataStax *(Client Engagement)* — *Release Engineering & Automation*

- Rebuilt a shell-script-based, **9–10-hour manual release certification process** as a modular **Python application** integrated with **Jenkins**, automating execution and making certification repeatable.
- Automated tenant/client provisioning across **AWS, GCP, and Azure** and implemented **Kubernetes** test operations for data loading, live workloads, scaling, upgrades, and pod/rack failures.
- Extended a **Python provisioning CLI** and runtime test-templating engine; enhanced a **Java test executor** with retry configurations and feature-branch support.
- Built **Prometheus-based certification reports** with phase-wise p99/p999 latency, threshold checks, and automated pass/fail results.

Unravel *(Client Engagement)* — *Data Engineering & Analytics*

- Re-architected a **Python Dash** analytics backend with chunked **Elasticsearch** ingestion, reducing memory usage by ∼65% and processing datasets **3× larger** on the same hardware.
- Integrated **Great Expectations** into eight ingestion pipelines, improving automated data quality checks and reducing the risk of downstream data issues.
- Automated recommendation-testing pipelines with **Jenkins and Terraform**, removing manual cluster configuration and improving test repeatability.

Projects

Twig — Terminal JSON Explorer — workdone0/twig

- Developed an open-source **Python TUI** for navigating deeply nested JSON/YAML data, featuring column-based navigation, **jq-style path extraction**, and interactive search.
- **100+ GitHub stars and 3,000+ installs**.

NoSQLBench — Open Source Contributor — nosqlbench/nosqlbench

- Authored a **Java CLI** contribution to validate unrecognized drivers and add unit tests to the NoSQLBench benchmarking suite.

National Anthem Clustering — Write-up

- Applied **NLP and unsupervised clustering** to compare the lyrics of **193 national anthems**; published the analysis and findings.

Technical Skills

Languages: Python, Java, Rust

Backend: FastAPI, Flask, Spring Boot, REST APIs, Microservices, Background Services

Data & Messaging: PostgreSQL, MongoDB, Elasticsearch, Cassandra, Kafka

Cloud & Tooling: AWS, Kubernetes, Helm, Docker, Terraform, Jenkins

Observability: Grafana Alloy, Prometheus, Grafana, Loki, Tempo, Istio

Other: Distributed Systems, Chaos Engineering, Model Context Protocol (MCP)

Education

BITS Pilani — M.Tech, Artificial Intelligence & Machine Learning — *2026 – 2028 (Expected)*
Work Integrated Learning Programme (Part-time)

Sikkim Manipal Institute of Technology — B.Tech, Computer Science — 2018 – 2022