

Sanjay Nainwal

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WORK EXPERIENCE

BharatPe

Software Development Engineer-2

Gurugram, India (Remote)

June 2022 – August 2025

- **Payment Systems and UPI Infrastructure:**
 - **Architected** a scalable payment service handling 50M+ daily transactions with event-driven architecture, saga pattern, and CQRS using Java, Spring Boot, Kafka, Redis, MySQL, and Kubernetes.
 - **Engineered** dynamic QR UPI code generation with distributed locking and circuit breaker patterns, improving transaction continuity by 35% across 15+ partner banks via real-time failover.
 - **Unified** multiple banking systems for seamless UPI transactions using choreography pattern and automated event-driven rerouting, enhancing payment reliability by 28%.
 - **Designed** and deployed real-time downtime detection and notification leveraging Kafka event streaming and idempotent processing, achieving sub-second merchant updates and 99.5% uptime.
- **Security, Fraud Prevention, and System Integrity:**
 - **Modernized** a 10-billion-record database migration from RDS to Aurora using sharding and read replicas, boosting query performance by 60% and reducing latency by 45%.
 - **Fortified** offline QR payment endpoints with hash/token validation and OAuth 2.0, ensuring 100% transaction security in compliance with PCI DSS standards.
- **Scalability, Performance Optimization, and Resilience:**
 - **Migrated** a 10-billion-record database from AWS RDS to Amazon Aurora, improving query speed by 60% and reducing latency by 45% with zero downtime using Aurora's distributed architecture.
 - **Led** Kafka migration to Confluent platform in one week, enhancing throughput 3x to 2M+ events/second through optimized partitioning and consumer tuning.
 - **Architected** AWS disaster recovery with RTO/RPO planning, cutting downtime from 8 hours to 15 minutes and ensuring 99.95% uptime; implemented outbox pattern for transactional consistency between MySQL and Kafka.
- **Monitoring, Code Quality, and Production Support:**
 - **Established** an automated code quality pipeline integrating SonarQube for static analysis and Trivy for container and dependency vulnerability scanning across 100+ repositories, reducing critical vulnerabilities by 80%.
 - **Deployed** a comprehensive APM stack including New Relic, Coralogix, and Grafana with distributed tracing, boosting system observability by 70% and enabling proactive identification and resolution of production issues.
- **API Development and Tech Stack Expertise:**
 - **Architected** and launched 25+ RESTful APIs, achieving 95% unit test coverage, supporting a highly reliable backend serving 1M+ active users and 100M+ API calls/day.
 - **Accelerated** backend performance by 40% with caching, load balancing, and rate limiting strategies using Java 8-17, Spring Boot, Kafka, Redis, MySQL, Kubernetes, Jenkins, and AWS.

RazorPay

Software Engineer

Bengaluru, India (Remote)

January 2022- May 2022

- **Engineered** a Credit Account Book application managing transactional data consistency, streamlining order management for 500+ merchants and improving review processing efficiency by 30% using Java and MySQL.
- **Designed** and optimized database architectures with MySQL and MongoDB, implementing sharding and indexing strategies to improve data retrieval speed by 50% and reduce storage costs by 25%.
- **Executed** comprehensive unit testing using JUnit and TestNG, achieving 90% test coverage with zero critical production bugs, following test-driven development (TDD) best practices.

Virtually Inc.

Software Engineer,

Seattle, WA (Remote)

April 2021 – December 2021.

- **Developed** low-latency video app with AgoraRTC/WebRTC supporting 1000+ users, 1080p streaming, and team games.
- **Boosted** engagement 45% with new interaction features and REST APIs; integrated payment gateways handling \$50K+.
- **Ensured** cross-platform support and adaptive streaming, improving video quality and retention across devices.

Infosys Ltd.

System Engineer

Mysore, India

February 2020 – March 2021

- **Developed** Java mappings in SAP PI, improving data processing efficiency by 25% across 10+ integrated enterprise systems through optimized message-driven architecture.
- **Optimized** backend code and queries, reducing latency by 35% and memory usage by 20%.
- **Built** CRUD APIs for e-commerce platform serving 50K+ users, ensuring 99.5% uptime and fault tolerance.

PROJECTS

IoT Botnet Attack Detection and Classification

GitHub: [IoT Botnet Attack Detection and Classification](#)

- **Architected** a machine learning system to detect and classify IoT botnet attacks, focusing on data preprocessing, model training, evaluation, and performance visualization to improve detection accuracy.
- Technologies used: Python, Scikit-learn, Pandas, NumPy, Matplotlib.

Driver Drowsiness Detection

GitHub: [Driver Drowsiness Detection](#)

- **Developed** real-time drowsiness detection using facial landmarks and Eye Aspect Ratio (EAR), achieving 92% accuracy for driver alertness monitoring.
- Technologies used: Python, OpenCV, Dlib, scikit-learn, Matplotlib, leveraging facial landmark detection, eye monitoring.

Portfolio

GitHub: [Sanjay Portfolio](#)

- **Constructed** a responsive portfolio with 100% mobile compatibility using React.js, achieving a 95+ PageSpeed score.
- Integrated DeepSeek AI chatbot, improving user engagement by 40% through intelligent Q&A functionality

Image Processing Utilities

GitHub: [Image Processing Utilities](#)

- **Developed** modular utility functions for image resizing, rotation, and filtering, designed for ease of integration and reuse across multiple applications.
- Technologies used: Python, OpenCV, NumPy.

SKILLS

Languages: Java | C++ | Python | TypeScript | JavaScript | SQL | NoSQL

Backend & Frameworks: Spring Boot | Spring Cloud | Spring MVC | Hibernate/JPA | Django | REST | gRPC | OpenAPI | JUnit | TestNG | Mockito

Databases & Messaging: MySQL | Amazon Aurora | PostgreSQL | MongoDB | Redis | Apache Kafka | Confluent Kafka | Firebase | Elasticsearch

Cloud & DevOps: AWS (EC2, S3, Lambda, RDS, DynamoDB) | GCP | Docker | Kubernetes | Jenkins | GitLab CI/CD | Maven | Gradle | Terraform | Swagger | Vault | Grafana | Prometheus | New Relic | Devtron | SonarQube | Coralogix

Architecture & Practices: Distributed Systems | Microservices Architecture | Event-Driven Architecture | Service Mesh | API Gateway | Caching | High Availability | Design Patterns | TDD | Agile | SDLC | Blue-Green Deployment | Canary Deployment | Infrastructure as Code (IaC) | GitOps

EDUCATION

Graphic Era University

Bachelor of Technology in Computer Science and Engineering (CGPA: 8.43)

Dehradun, India

Graduation Date: June 2020