

# Shubham K. Singh

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## EDUCATION

### The National Institute of Engineering (NIE)

B.E. in Computer Science & Engineering | GPA: 8.9 (Current)

Aug. 2023 – Jun. 2027 (Expected)

Mysuru, India

- **Courses:** DBMS, OS, Networking, Machine Learning

### Kendriya Vidyalaya COD Chheoki (CBSE)

Class 12: 94.6% | Class 10: 89.4%

Apr. 2020 – Mar. 2022

Prayagraj, India

## PROJECTS

### API Monitoring System | Multi-Tenant SaaS | Node.js, RabbitMQ, MongoDB, PostgreSQL | [GitHub](#)

2026

- A **modular monolith** with isolated modules (Auth, Analytics) maintaining deployment simplicity.
- Implemented **RabbitMQ message queue with DLQ** and retry policies to handle thousands of requests/sec with async architecture and prevent event loss.
- Used **polyglot persistence**: MongoDB for high-throughput event logs and PostgreSQL for aggregated analytics (P95/P99 latency, error rates).
- **Multi-tenant data isolation** via tenant-scoped middleware to validate API keys and inject tenant context into all operations.
- React dashboard with **real-time metrics visualization** to monitor API health and identify performance bottlenecks.

### UTSAV | Campus Engagement Platform | React, TailwindCSS, Firebase | [GitHub](#)

Oct 2025

- Developed **role-based access control** distinguishing students, organizers, and admins.
- Implemented **dual authentication** (manual + OAuth) using Firebase Auth; reduced registration friction and **increased user adoption by 40%**.
- Integrated **real-time capacity tracking**, QR check-ins, and Excel export for a robust attendance mechanism.
- Post-event rating system and media attachments for peer experience sharing and future improvements.

### Mini OCR Pipeline | Product Feature Extraction | Python, PaddleOCR, ML Workflow

June 2025

- Built an **end-to-end OCR extraction pipeline** for an Amazon ML challenge, processing product images to extract unlabeled attributes (weight, dimensions, expiry dates).
- Implemented preprocessing to tackle noisy image data; engineered **custom post-processing logic** with regex, unit detection, and normalization.
- Benchmarked multiple OCR engines (PaddleOCR, EasyOCR, Tesseract) on **F1-score metrics**.

## SKILLS

**Backend Development** : Node.js, Express.js, RabbitMQ, REST APIs, OAuth2.0, Docker

**Databases** : MongoDB, PostgreSQL

**Languages** : JavaScript, C++, Python

**Machine Learning** : OCR, Data preprocessing, Classification, Clustering, RAG

**CS Fundamentals** : Data Structures, OS, DBMS, Computer Networks, OOP

**Tools** : Git, GitHub, Vercel, Postman, n8n, Zod, GenAI

## ACHIEVEMENTS & CERTIFICATIONS

- **Certifications:** **Hackerrank** - REST API(Intermediate), SQL(Intermediate).
- Real-world experience in product development for handling large number of users through **open-source contributions**, personal projects, and participating in global tech challenges.
- Organized learning sessions as part of **Anveshan (AIML Club)**, including ML bootcamps and tech talks.