Shubham Singh

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Education

Sinhgad College of Engineering **November 2022 – June 2026**
Bachelor of Engineering, Information Technology *Pune, Maharashtra*

Professional Summary

Aspiring Software Engineer with specialized skills in Backend API Design and Database Architecture. Proficient in Java, Spring Security, and Hibernate, with hands-on experience deploying containerized applications. Eager to leverage strong problem-solving skills in a challenging engineering role.

Technical Skills

Languages: Java, SQL, HTML, CSS
Frameworks & Libraries: Spring Boot, Spring Security, Spring Data JPA, Spring AI, Hibernate
Databases: MySQL, MongoDB (NoSQL/Vector)
Tools: Git/GitHub, Maven, Postman
Concepts: RESTful APIs, Microservices Architecture, JWT Authentication & Authorization, Object Oriented Programming (OOP), Design Patterns, Vector Embeddings & Semantic Search, Software Development Life Cycle (SDLC)
Core Subjects: Operating System, Database Management System, Computer Networks, Software Engineering

Projects

AI Architecture Reviewer | *Java, Spring Boot, JavaParser, Spring AI, Gemini API, JGit* ***[GitHub]***

- Designed an Al-driven Architecture Reviewer to automatically surface technical debt in Spring Boot applications, utilizing Java 21, Spring Data JPA, and Spring AI for LLM orchestration.
- Built a custom Abstract Syntax Tree (AST) parser to deeply analyze project structures, successfully identifying structural anti-patterns like God Classes, circular dependencies, and layer violations.
- Improved upon standard static analysis tools by combining deterministic AST rule engines with generative AI, allowing the system to not just flag errors, but output prioritized, human-readable refactoring plans.
- Built a dynamic frontend featuring real-time dependency graphing and automated PDF report generation, processing remote GitHub repositories on the fly via JGit.

AI Book Recommender | *Java, Spring Boot, MongoDB, Spring AI, REST APIs, JWT* ***[GitHub]***

- Built End-to-End Web Solution: Constructed a full-stack system using Spring Boot and React.js, delivering secure REST APIs protected by JWT for robust user management.
- Implemented AI-Driven Search: Integrated Spring AI to build a modular service layer for Semantic Search, enabling the generation of vector embeddings via LLMs with a cost-efficient simulation strategy.
- Designed NoSQL Data Model: Modeled a hybrid schema in MongoDB to support high-performance queries, indexing both standard metadata and vector data for real-time recommendation logic.

Expense Splitting Backend API | *Java, Spring Boot, MySQL, Hibernate, Spring Security, JWT, REST APIs* ***[GitHub]***

- Developed a RESTful backend API for an expense management application using Java Spring Boot.
- Implemented secure authentication and authorization workflows using Spring Security and JWT to protect user data and endpoints.
- Designed a normalized relational database schema in MySQL to efficiently handle complex many-to-many relationships between users, groups, and shared expenses.
- Applied the Factory Design Pattern to build an extensible expense-splitting engine, allowing for seamless integration of future splitting strategies.
- Utilized Spring Data JPA and Hibernate for optimized database interactions and transaction management across multiple entities.

Extracurricular

- Active in problem-solving on competitive programming platforms including LeetCode and GeeksforGeeks, solving over 200 problems to strengthen Data Structures and Algorithms skills [LeetCode Profile].
- Advanced to the second round of Smart India Hackathon 2023, collaborating in a team to design and develop an innovative software solution.