

SANDEEP SINGH

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Professional Summary

Full-Stack AI Engineer proficient in building production-ready web applications and agentic workflows using Next.js, TypeScript, FastAPI, and LangGraph. Experienced in designing scalable backend architectures, real-time communication systems, and RAG pipelines using LLMs. Strong focus on end-to-end type safety, asynchronous event-driven systems, and clean code principles.

Technical Skills

Languages: TypeScript, JavaScript, Python, SQL

Frameworks: Next.js, React, FastAPI, Node.js, Tailwind CSS

AI & LLMs: LangGraph, LangChain, RAG Pipelines, pgvector, Vector Search

Databases & DevOps: PostgreSQL, Redis, Docker, Git, Nginx, REST APIs, WebSockets

Projects

ClassBuddy – AI-Powered Learning Management System

[Live Project](#) | [GitHub](#)

Tech Stack: React.js, FastAPI, LangChain, LangGraph, Redis, PostgreSQL, Inngest, Razorpay

- Developed a full-stack LMS featuring **role-based access control (RBAC)**, modular study groups, and subscription billing integrated with **Razorpay PG**.
- Implemented multi-step agentic workflows using **LangGraph** and the **Gemini API** for automated curriculum generation, offloading heavy processing to asynchronous **Inngest** background jobs.
- Engineered a high-concurrency real-time messaging system using **FastAPI WebSockets** and **Redis Pub/Sub** with persistent conversation history in **PostgreSQL**.
- Architected a standalone **OAuth 2.0 Authorization Server with PKCE** (S256), featuring refresh token rotation, token family reuse detection, and dual-client support (**HttpOnly cookies** for Web, **Bearer tokens** for Android).

Nexora AI – Autonomous Multi-Agent Platform & Multimodal RAG

[Live Project](#) | [GitHub](#)

Tech Stack: LangGraph, Next.js 16, FastAPI, PostgreSQL (pgvector), LangSmith, Groq, Docker

- Architected an autonomous **multi-agent orchestration graph** using **LangGraph**, classifying user intent to dynamically route tasks to specialized Chat, Coding, and **SymPy** math agents.
- Engineered a multimodal **Agentic RAG pipeline** with **PostgreSQL + pgvector (HNSW)**, enabling in-memory zero-disk document parsing (PDF/DOCX/OCR) and interactive timestamped **YouTube video ingestion**.
- Built a real-time token streaming pipeline via **Server-Sent Events (SSE)** with interactive **Generative UI**, protected by **dual-stage security guardrails** and **LangSmith** observability.
- Built an asynchronous **SSE token streaming pipeline** featuring dynamic **Generative UI**, dual-stage prompt-injection/PII guardrails, and 100% run observability via **LangSmith**.

Buyzaar – Distributed Microservices E-Commerce

[GitHub](#)

Tech Stack: React 19, FastAPI, Nginx, Redis, Inngest, PostgreSQL, pgvector, Docker

- Architected a scalable **distributed microservices platform** with 7 isolated **FastAPI** services using an **Nginx API Gateway** and a strict **database-per-service** model on **Neon PostgreSQL**.
- Engineered an asynchronous, event-driven **RAG recommendation engine** using **Inngest**, **pgvector**, and **Groq (LLaMA-3.1)**, syncing catalog embeddings in real-time without blocking CRUD flows.
- Optimized catalog read latency via **Redis caching (Cache-Aside)** and secured checkout with **Cashfree PG** and **SHA-256 HMAC webhook signature verification**.

Education

Master of Computer Applications (MCA)

2024 – 2026

Chandigarh University

Punjab, India

Bachelor of Computer Applications (BCA) – Computer Science

2020 – 2023

Kanpur Institute of Technology

Kanpur, UP, India