

SANAT MEHROTRA

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SUMMARY

Final year B.Tech CSE student with hands-on experience in Python-based software development, database design, and data analytics, following software development best practices to build production-grade RAG systems and scalable backend applications. Currently interning at Zeroto10.ai, engineering REST APIs and PostgreSQL-backed data models for AI-driven platform features.

TECHNICAL SKILLS

Languages: Python, SQL, JavaScript, C++, C

Frameworks: React.js, Next.js 14, Node.js, Express, FastAPI, TensorFlow, PyTorch, Gradio, Tailwind CSS

Databases: PostgreSQL, pgvector, MongoDB, Supabase (PostGIS), Firebase, Alembic

AI/ML: Embedding Models, Cohere Rerank, LangChain, Hugging Face, Inception v3, Langfuse

Tools & Other: Git, Socket.io, JWT, REST APIs, Prompt Engineering, Azure

EXPERIENCE

Backend Engineering Intern - Zeroto10.ai

Jun 2026 – Present

Remote

- Engineered new FastAPI REST API endpoints and reengineered the history retrieval endpoint into a central platform feature, ensuring seamless compatibility with the Next.js frontend.
- Optimized and refactored the backend code for the company's onboarding page, improving modularity, reducing redundancy, and enhancing maintainability.
- Designed PostgreSQL database schemas using SQL and applied Alembic for version-controlled schema migrations, following software development best practices to ensure efficient, maintainable data modeling across new and existing features.
- Developed specific backend blocks required for the onboarding process of new-user applications.
- Built the RAG block and web crawler for the platform's AI agent, actively contributing to architecture design decisions and changes.

PROJECTS

QueryMind - Multimodal RAG Document Q&A System [\[GitHub\]](#)

June 2026

Python, FastAPI, Next.js 14, PostgreSQL (pgvector), Gemini Embedding 2, DeepSeek Chat, Cohere rerank-v3.5, LangChain

- Built a full-stack multimodal RAG platform enabling users to upload PDFs/DOCX and interactively query document content, receiving grounded answers with source citations across text, tables, and images.
- Engineered a 7-stage hybrid retrieval pipeline combining HNSW vector search (pgvector) + BM25 full-text search with Reciprocal Rank Fusion, MMR diversity filtering, and Cohere cross-encoder reranking to maximize answer precision.
- Implemented async multimodal document ingestion using unstructured + PyMuPDF with Gemini 2.5 Flash Vision for image captioning and Gemini Embedding 2 (1536-dim Matryoshka) for semantic indexing of text, tables, and images.
- Built a Next.js 14 frontend with JWT auth, streaming chat UI, and cited source cards; leveraged DeepSeek Chat via OpenRouter for 4-variant multi-query generation and MAP-REDUCE summarization at ~15x lower cost than GPT-4o.

PawAlert - AI-Powered Stray Animal Rescue Platform [\[Live Demo\]](#)

March 2026

Next.js 14, TypeScript, Tailwind CSS, Supabase, PostGIS, Gemini Vision API, Socket.io

- Built an AI-powered stray animal rescue platform connecting citizens, NGOs, and shelters; presented at India Innovates 2026, Bharat Mandapam (top 5,000 of 26,000+ registrations).
- Integrated Gemini Vision API to auto-score injury severity (1–10) and dispatch the nearest verified NGO van via geospatial routing with PostGIS.
- Developed a PWA with real-time live tracking, push notifications, and a full NGO/driver/admin dashboard powered by Socket.io.
- Built a full-featured Telegram Bot integration enabling users, NGOs, and drivers to perform all platform actions reporting stray animal, managing rescues, and real-time tracking - directly from Telegram without accessing the web app.

Automated Round Judging Tool [\[Deployed Tool\]](#)

GDG on Campus

Python, TensorFlow (Inception v3), Gradio, Hugging Face Spaces

- Built an ML-powered image comparison system using TensorFlow's Inception v3 to generate similarity scores and verify prompt compliance for automated competition judging.
- Created an interactive Gradio web interface for submissions; deployed on Hugging Face Spaces for organizer access.

CO-CURRICULAR & LEADERSHIP

Core Team Member - GDG on Campus SRM

2024 – Present

- Organized Prompt Rush 2.0 and AutoCoder 2.0 with 250+ participants each; independently secured two in-kind sponsors (InterviewBuddy, CodeCrafter Talks).
- Part of Technical Organizing Team for Indian AI Impact Summit 2026 (300–500+ registrations); received Event Organiser Award (Mar 2026).
- Designed and conducted a technical round - created problem statements and evaluated participants.

PR & Outreach - Tech4Hack

Oct – Nov 2025

- Led event promotion and participant engagement for a large-scale tech hackathon.

Volunteer - Robin Hood Army, Noida Chapter [\[Proof\]](#)

Ongoing

- Coordinated food distribution drives, social media content, and community outreach for underserved communities.

COMPETITIONS & CONFERENCES

India Innovates 2026 - Top 5,000 of 26,000+ (Bharat Mandapam) · **HackIndia Web3 Hackathon** - 11th / 40 teams · **HackHacks** - 15th / 42 teams (Cluster Innovation Centre, University of Delhi)

Conferences: **India AI Impact Summit 2026** (Govt. of India) · **GitTogether** - GitHub & Microsoft India (RAG, XR/AR, LLM Security) · **GDSC WOW** (IIIT-Delhi) · **Cybersecurity Workshop** (SRMIST-NCR) · **EHAX CTF**

EDUCATION

SRM Institute of Science and Technology, Ghaziabad - 2023 – 2027

B.Tech - Computer Science & Engineering | CGPA: 8.12/ 10

Schiller Institute Sr. Sec. School - Class XII, CBSE: 83% | Class X, CBSE: 80%

2019 – 2023

CERTIFICATIONS

Azure Fundamentals (Microsoft) · IBM Data Analytics (IBM) · Google Arcade - Cohorts 1 & 2