

Prakhar Dwivedi

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SUMMARY

Software engineering student focused on backend systems and production-ready web applications. Builds real-time services, data pipelines, and containerized deployments, with experience in caching, APIs, and applied Generative AI.

EDUCATION

IIT Bhopal

B.Tech, Electronics & Communication Engineering, **CPI: 8.74**

Nov 2023 – June 2027, Coursework: DSA, OOP, DBMS, CN, Systems

PROJECTS

PanditAI (2025)

Next.js, Python (FastAPI), Socket.IO (WebSockets), Redis, MongoDB, Docker

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- Built and deployed a full-stack AI application using FastAPI and Next.js, integrating astronomical computations, knowledge-graph reasoning (**Neo4j**), and LLM-based natural language generation.
- Tested and benchmarked the deployed backend, observing **~5.4s cold-start latency** and **~2.2s median warm-request latency**, with **~60% performance improvement** after cache warm-up.
- Optimized Docker builds by removing GPU dependencies, reducing backend image size by **~700MB** and improving deployment reliability on managed cloud infrastructure.
- Validated frontend-backend API contracts using **Pydantic** and **TypeScript** types, enforcing strict schemas and preventing runtime integration errors across services.

eVakeel (2025)

Generative AI, React, Fastify, GeminiAPI, Vite, Tailwind, Socket.IO, Node.js

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- Turned legal documents into searchable knowledge for quick AI answers.
- Made an end-to-end document ingestion and RAG pipeline (OCR, embeddings, retrieval) with session-based WebSocket chat for low-latency user queries.
- Deployed in Docker; used Redis for caching and structured logging for observability.
- Processed 10 document templates; reduced average document-to-embedding time from **12s to 1.2s** (measured on 100 test docs), and cut median API response latency from **340ms to 190ms** after adding Redis caching.

Chatify - Production-Grade Real-Time Messaging System

Socket.IO, Redis, Docker, MongoDB, Node.js, Express.js,

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- Created and deployed a real-time messaging backend handling **persistent WebSocket connections**, implementing Redis-based presence tracking and **rate limiting (10 messages/min per user)** to prevent abuse and ensure system stability.
- Reduced repeated database reads for online status and last-seen data by **~80%** using Redis ephemeral state, while ensuring **100% message durability** via MongoDB persistence with graceful fallback on cache failure.
- Containerized **3 core services (API, Redis, MongoDB)** using Docker Compose, enabling **one-command setup** and consistent environments across development and deployment.

ACTIVITIES AND LEADERSHIP

- Spearheaded a team of 4 in developing an AI-fueled career counseling web app, integrating chatbot interactions and ML-based recommendations; secured a **Top 10 position at Hack-O-Sprint 2024**.
- Organized and led the first-ever **Inter-IIT Hackathon** internal round, engaging **40+** teams across departments.
- Managed end-to-end logistics for **Convocation 2024**, handled on-ground logistics and issue resolution for **500+** attendees

ACHIEVEMENTS

- Achieved **top 12K rank among 262K** participants in **Adobe India Hackathon 2025**, placing in the **top 5% nationally**
- **Ranked 1st** in the **ECE department** with a **9.32 SGPA** in **Semester 3**, demonstrating consistent academic excellence
- **1799 LeetCode & 1614 CodeChef (3★)**; solved **250+** DSA problems across **LeetCode, CodeChef** and **GeeksForGeeks**
- Directed **3+** peer sessions as **Teaching Assistant for Digital Logic Design**

SKILLS

- **Languages:** C, C++, Python, TypeScript, JavaScript, SQL
- **Frameworks & Libraries:** React, Next.js, Node.js, Fastify, Prisma, NextAuth.js, Tailwind CSS, Framer Motion
- **Databases:** PostgreSQL, MySQL, SQLite
- **Concepts:** Data Structures & Algorithms, REST APIs, Authentication, Database Design
- **Tools:** Git, GitHub, Docker, Linux (basics)