

# Ayush Patel

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Web development enthusiast and Computer Engineering student.

## › Education

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| SVKM's Dwarkadas Jivanlal Sanghvi College of Engineering | August 2023 |
| BTech in Computer Science and Engineering (Data Science) | CGPA: 9.33  |
| IIT Madras   | June 2023   |
| BS in Data Science                                       | CGPA: 7.99  |

## › Skills

🔧 **Programming Languages:** C, Java, Python, PostgreSQL, MySQL, Shell Scripting  
🔗 **Web Technologies & Tools:** HTML, CSS, Javascript, ReactJs, VueJs, NextJs, Flask, FastAPI, MongoDB, Git  
📊 **Data Science:** Pandas, Numpy, Matplotlib, Seaborn, Plotly, Scikit-Learn, LightGBM, Optuna, Shap, NLP  
🛠️ **Other Frameworks:** PyMavlink, PyMavSwarm, MAVSDK, ROS, OpenCV, DepthAI, BeautifulSoup4, Playwright

## › Projects

👤 **InfluenceNet** | Flask, Flask-SQLAlchemy, Flask-Restful June 2024

- Designed a **role-based dashboard** for streamlined campaign and ad request management.
- Implemented a **dynamic ad request system** with renegotiation capabilities.
- Developed **search, filter, and analytics features** for improved user insights.
- Created **optimized RESTful API endpoints** with secure authentication.

🌐 **Zoom Trip – 3D Globe Explorer** | React, Cesium May 2025

- Built an **interactive 3D globe application** to help users explore global destinations using CesiumJS, React and Gemini AI for intelligent place suggestions based on user preferences and activity types.
- Implemented **real-time visualization** with smooth camera transitions, animated globe interactions, and instant location highlighting.
- Developed **dynamic filtering and search capabilities**, allowing users to refine results with contextual filters per activity type.

🌐 **Itinerary Generator** | Next.js, TailwindCSS, Cesium April 2025

- Developed the **Community feature**, enabling interactive user engagement through a dedicated platform for discussions and content sharing.
- Implemented the **Scrapbook component**, allowing users to post and share memorable events.
- Debugged **critical issues on the home page**, enhancing load speed and user experience.

🔍 **RAG Based TA** | FastAPI, Pinecone, LLaMA Embeddings, Faiss, Sentence-Transformers June 2025

- **Built Robust Web and Forum Scrapers:** Extracted structured content and metadata from both Markdown course files and Discourse forums, ensuring seamless integration and high-quality downstream data processing.
- **Deployed Scalable Vector Search Infrastructure:** Deployed scalable vector search infrastructure using Pinecone and LLaMA v2 embeddings after migrating from FAISS and Sentence Transformers, with optimized batch upserts, rate-limit handling, and metadata-aware indexing for efficient, large-scale semantic search.
- **Implemented Adaptive, TF-IDF-Driven Search Logic:** Developed a hybrid search algorithm that dynamically learns keyword weights, chunks and ranks context intelligently, and fuses course and forum content to return rich, relevant results, which are then passed to Gemini AI for final answer generation.

## › Extracurricular Activities

DJS Phoenix - Coding Mentor June 2024 - Present

**Simulated Drone Flight Dynamics:** Conducted simulations using mavsdk, pymavlink, pymavswarm and ArduPilot SITL to model real-world drone behavior and test navigation algorithms.

**Developing Advanced Edge Detection Algorithms:** Designing and implementing a robust edge detection model (using techniques like Canny Edge Detection) to accurately identify safe landing zones in real-time.