Vipransh Ojha

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Education

VIT Bhopal University — Bhopal, India
B.Tech in Computer Science and Engineering (AI & ML Specialization) — Sep 2023 – May 2027 (Expected)

Technical Skills

Languages: Python, TypeScript, JavaScript, C++, Java, SQL, HTML5, CSS3

Web Development & Backend: React, Node.js, Express.js, Flask, FastAPI, REST APIs, Tailwind CSS

Databases & Cloud: MongoDB, PostgreSQL, SQLite, AWS Cloud Services, Docker, Git, Linux

AI/ML & Data Science: TensorFlow, PyTorch, Scikit-learn, OpenCV, Keras, Pandas, NumPy, NLP

Developer Tools & Libraries: OpenAI APIs, Google TTS, Whisper, MediaPipe, Pygame, Matplotlib, PyOpenGL

Experience

Software Development Intern — New Delhi, India
BISAG-N (MeitY, Government of India) — May 2025 – Jun 2025

- Deployed a full-stack location recommendation system for 500+ users with 85% recommendation accuracy.
- Developed content-based and collaborative filtering algorithms using Python and Scikit-learn.
- Architected a scalable Flask backend with PostgreSQL, processing over 100 queries per second.
- Crafted a responsive interface with interactive mapping that improved user engagement by 25%.

Research Intern (SERB Sponsored Project) — Bhopal, India
VIT Bhopal University — May 2024 – Jun 2024

- Developed 'MolSpectra', a molecular visualization tool for a SERB-funded research project (Grant No. CRG/2022/002761).
- Engineered an interface to integrate 5+ quantum chemistry packages, automating simulation workflows.
- Built the application GUI using PyQt and GLEW to streamline 3D molecular structure rendering.

Projects

Dikastirio - AI Assistant for E-Courtroom Proceedings — Jan 2026 – Present

- Built a Unity VR environment for spatial visualization, cutting evidence retrieval time by 40%.
- Engineered a local RAG pipeline (LangChain, Llama 3) for secure analysis with zero data leakage.
- Integrated voice and gesture controls, reducing courtroom interaction steps by 30%.
- Optimized rendering to maintain 90 FPS for large datasets on standalone VR hardware.

Forensic Identification using Dental Radiology — Aug 2025 – Oct 2025

- Developed an automated forensic system with 92% accuracy in matching dental radiograph records.
- Trained a Siamese Neural Network on the DENTEX dataset to compare AM/PM dental records.
- Built a Flask web interface for experts to upload and analyze forensic data efficiently.
- Optimized system throughput to process 1,000+ records per hour, reducing identification time by 90%.

RubiksCube3D - Interactive 3D Simulator & Optimal Solver — Oct 2023 – Dec 2024

- Built a 3D simulator using Pygame and PyOpenGL with quaternion math for gimbal-lock-free rotations.
- Implemented a precise picking system via Ray-AABB intersection for real-time cube manipulation.
- Integrated the Kociemba Algorithm to solve any cube state optimally in 20 moves or fewer.
- Optimized performance by caching pruning tables, enabling near-instantaneous state solving.

Achievements & Activities

- Finalist in the National Buildathon organized by NASSCOM and Gnani.ai.
- Solved 150+ algorithmic problems on LeetCode; active in coding competitions and hackathons.