

# Pranav Yadav

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## EDUCATION

### Dr. Ambedkar Institute of Technology

Bachelor of Engineering in Computer Engineering; CGPA: 7.75/10.0 | Oct 2024 -- Expected Apr 2028 | Bengaluru, India

## EXPERIENCE

### Software Engineering Intern

Inbenne | Remote | Oct 2025 -- Jun 2026

- Architected and containerized a full-stack AI platform using Docker Compose (7-container application stack), orchestrating FastAPI, MongoDB, Redis, Celery and Ollama into a single reproducible deployment.
- Optimized real-time 3D rendering by migrating CPU-bound terrain operations to custom GLSL shaders on the GPU, reducing frame times from approximately 83 ms (12 FPS) to approximately 16 ms (a stable 60 FPS).
- Designed an async task queue with Celery and Redis to offload a multi-step ML pipeline, reducing API acknowledgment time from approximately 120 s (synchronous) to under 1 s (non-blocking).

### Machine Learning Research Intern

Indian Institute of Technology Roorkee | Remote | Aug 2025 -- Oct 2025

- Developed 4 ML algorithms from scratch (Linear/Logistic Regression, Decision Trees, k-NN), matching scikit-learn predictions within 0.1% mean absolute percentage error.
- Cut data-prep time by 60% with end-to-end preprocessing pipelines; benchmarked models on 5 metrics across 3 faculty-reviewed reports.

### Open Source Software Contributor

GirlScript Summer of Code | Remote | Jul 2025 -- Sep 2025

- Contributed 10+ merged pull requests spanning bug fixes, features and documentation across three open-source repositories.

## PROJECTS

### OVO: Git-Like Version Control System for Music | Technologies: TypeScript, Python, Next.js 15, FastAPI

Repository: [github.com/pranavsource1/OvO](https://github.com/pranavsource1/OvO)

- Architected a 5-module full-stack platform (Next.js 15, React Three Fiber, FastAPI) rendering live 3D branch trees in under 200 ms.
- Integrated a Groq-hosted LLM for metadata generation, librosa for BPM/key detection, and a PyTorch-based microphone analysis daemon, with data persisted in Supabase/PostgreSQL.

### Virtuoso Vision 1.0: AI-Powered 3D Audio-Visualizer | Technologies: Next.js, Three.js, FastAPI, Celery

Repository: [github.com/pranavsource1/Virtuoso-Vision-1.0](https://github.com/pranavsource1/Virtuoso-Vision-1.0)

- Built a real-time audio-reactive 3D platform, decoupling audio state from React's render cycle using mutable Zustand stores to maintain 60 FPS without triggering component re-renders.
- Orchestrated 3 local ML models (Whisper, DistilRoBERTa, Mistral 7B) in a sequential pipeline with a multi-layer validation and deterministic hash-based fallback, preventing generation failures during testing.
- Implemented vector similarity search using 1536-dimensional embeddings stored in Supabase pgvector, enabling semantic querying of song descriptions beyond basic keyword matching.

## TECHNICAL SKILLS

**Languages:** Python, TypeScript, JavaScript, Java, SQL, C, GLSL

**AI/ML:** PyTorch, Scikit-learn, NumPy, Pandas, LLM Integration

**Web & Graphics:** React, Next.js, Three.js, React Three Fiber, Zustand, Tailwind CSS

**Backend & Data:** FastAPI, Celery, Redis, PostgreSQL, MongoDB, Supabase, pgvector

**Developer Tools:** Git, GitHub, Docker, Docker Compose, Linux

## ACHIEVEMENTS & CERTIFICATIONS

- Innovitus Hackathon (RV University):** Led team to a top 50 finish among 1,000+ participating teams.
- Foundations of Deep Learning: Concepts and Applications** | NPTEL, 2026.