

Jizel Prince D'Souza

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TECHNICAL SKILLS

- **AI | ML | DL:** PyTorch, Computer Vision, LSTM
- **Python Libraries:** FastAPI, OpenCV, LangGraph, Streamlit, Alembic
- **Web Frameworks:** React.js, Next.js, Tailwind, React Router v-7, HTML5/CSS
- **Cloud:** Docker, YAML
- **Databases:** PostgreSQL, SQLite, Neo4j, MinIO, pgvector
- **Languages:** Python, JavaScript, TypeScript, C/C++, Java
- **Other:** Git, GitHub, Linux, Competitive Programming

PROJECTS

Lyra

Python, FastAPI, React, LangGraph, pgvector, Redis, Docker, WebSockets

- Built an open-source multi-agent AI research assistant that orchestrates four specialized agents (Researcher, Engineer, Planner, Critic) using LangGraph to handle end-to-end research and code generation tasks.
- Implemented a RAG pipeline using pgvector on PostgreSQL for semantic document search, with real-time agent reasoning visualized via React Flow over WebSockets.
- Designed a distributed backend on FastAPI with JWT auth, Celery task queues, and Docker-based sandboxed code execution for secure LLM-generated code runs.

FluidFlow

Python, YOLOv8, OpenCV, PyTorch LSTM, NumPy, Streamlit, SQLite

- Early warning system for crowd crush prevention, predicting dangerous crowd states 30–120 seconds in advance with physics-informed neural networks across existing CCTV infrastructure.
- Integrated YOLOv8-nano person detection, Farneback Optical Flow, and a NumPy fluid dynamics engine computing Turbulence Intensity, Reynolds Number, and Pressure Proxy to model crowds as non-Newtonian fluids.
- Deployed on Streamlit Community Cloud with zero GPU requirement, targeting 40% reduction in stampede fatalities across 50 high-risk venues including railway stations and religious gatherings.

EXTRA CURRICULAR

DevNation

Core Member

- Core member of the college's Computer Science club
- Organized workshops and events.

Hackathons

Participant

- Finalist of DevHost 2025 hosted at Sahyadri College of Engineering and Management, Mangaluru, hosted by EGDK

EDUCATION

- **BE, Computer Science and Engineering** | A J Institute of Engineering and Technology, Mangaluru
- **11th/12th, Physics, Chemistry, Maths, Biology** | St. Aloysius PU College, Kodialbail, Mangaluru
- **Schooling, CBSE Syllabus** | St. Aloysius Gonzaga School, Kodialbail, Mangaluru