DEEPESH PATIL

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Education

Indian Institute of Information Technology, Pune *2022-26*

B.Tech, Computer Science and Engineering

Experience

Indian Institute of Information Technology, Pune *Oct 2025 – Dec 2025*

Research Intern

- Developed a **multimodal video summarization pipeline** under faculty supervision, integrating **GoogLeNet** for spatial feature extraction and **R(2+1)D** for temporal keyframe analysis to automate semantic content understanding.
- Implemented **Generative AI workflows** using the **BLIP-2 (2.7B) Vision-Language Model** to perform zero-shot captioning on extracted frames, converting complex visual data into coherent textual narratives.
- Designed a scalable, serverless backend with **FastAPI** and **Modal** on GPU infrastructure, optimizing inference pipelines for heavy video processing tasks.

Saints Peter & Paul Roman Catholic Church *Jul 2025 – Aug 2025*

Freelance Full-Stack Developer

- Engineered a self-hosted **CRM & DBMS** using **React** and **MySQL**, enabling secure management of member data and family hierarchies for a community organization.
- Designed a low-code backend using **n8n** on Docker, designing complex automation workflows for CRUD APIs, image compression, and ETL pipelines without traditional boilerplate.
- Built an interactive Analytics Dashboard using **Recharts** to visualize real-time demographics and employment statistics, aiding administrative planning and decision-making.

Projects

Multi-Agent Fraud Detection System *| GitHub | Demo |*

Tech: Python, SQLite, FAISS (RAG), Streamlit, Plotly

- Built a **Multi-Agent System (MAS)** in **Python** using **RAG** + **FAISS** for autonomous fraud validation, reducing false claim acceptance rates.
- Implemented **agent coordination** workflows that performed cross-verification between data sources, improving fraud detection reliability.
- Developed an interactive **Streamlit dashboard** with **Plotly** analytics and **Chat-with-Data** features for investigators.

Cloud-Based DDoS Detection System (Research Project) *| GitHub | Demo |*

Tech: Python, Scikit-Learn, Random Forest, Cloud Security, Traffic Analysis

- Designed a hybrid **Machine Learning architecture** using **Random Forest** and **Incremental Learning** to detect DDoS attacks (SYN/UDP floods).
- Analyzed network traffic patterns to train classifiers that distinguish **zero-day threats** from harmless anomalies, simulating real-world cloud attack scenarios.
- Benchmarked detection accuracy on cloud-hosted datasets and demonstrated effective mitigation strategies in simulated high-traffic environments.

Technical Skills and Interests

Languages: Python, Go, SQL, C/C++, Shell
Tools & Frameworks: Git, GitHub, Docker, Kubernetes, Ansible, AWS, n8n, Linux
Coursework: Cloud Computing, Advance Computer Networks, Database Management Systems, Software Engineering, Information Systems Security, Data Structures and Algorithms, Operating Systems
Training & Certifications: AWS Cloud Quest - Cloud Practitioner, Mastercard Cybersecurity (Forage), Artificial Intelligence with Python (Coincent)

Achievements

- Served as **Co-Head** of **R.O.F.I.E.S (Robotics Club, IIIT Pune)**, leading technical workshops and design activities.
- Achieved **Top 10 (9th out of 250+ participants)** in the national **Vinyasa Summer of Code (VSoC)**.
- Secured **Finalist positions** in multiple **National-Level Hackathons**.