

# Jegan Pranav P

Coimbatore, India

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## SUMMARY

Computer Vision and AI developer focused on GPU-accelerated video analytics using NVIDIA technologies. Built real-time inference pipelines with **DeepStream**, **TensorRT**, and **GStreamer** for multi-stream RTSP processing, detection, and tracking on Jetson and RTX GPUs.

## TECHNICAL SKILLS

**Programming:** Python, Java

**Frameworks/Libraries:** PyTorch, OpenCV

**NVIDIA Stack:** DeepStream, TensorRT, TAO Toolkit, CUDA, NVIDIA Jetson

**Tools/Platforms:** Linux, Git, Docker, GStreamer, ZeroMQ

## EDUCATION

### B.Tech. Computer Science and Engineering

Karunya Institute of Technology and Sciences (Deemed University), Coimbatore

2022 – 2026

CGPA: 7.3/10

## EXPERIENCE

### Computer Vision Intern – Nextbrain Technologies Pvt Ltd, Bangalore

May 2024 – Jun 2024

- Developed OpenCV-based modules for retail surveillance analytics including motion detection and background subtraction on real CCTV footage.
- Improved robustness under lighting variation using preprocessing, noise filtering, and threshold tuning during video pipeline testing.
- Built reusable Python (OpenCV, NumPy) modules to support internal analytics workflows.

## PROJECTS

### CampusSentinel – Multi-Camera CCTV Video Analytics Platform (DeepStream/Savant)

Ongoing

- Built a multi-camera CCTV intelligence system for **Karunya University** enabling real-time crowd and traffic monitoring, searchable incidents, and automated alerts using live RTSP feeds.
- Designed a GPU-accelerated pipeline using **Savant (DeepStream 7.1)** with decoupled ingestion and inference via **ZeroMQ**, tested on **4MP Hikvision CCTV streams at 25–30 FPS on RTX 5090**.
- Integrated detection models (PeopleNet, YOLOv11, LPDNet/LPRNet) with **NvSORT** tracking and implemented zone rule updates with a dashboard for monitoring and playback.
- Tech:** Python, Savant(DeepStream 7.1), TensorRT 10.9, ZeroMQ, InfluxDB, Go2RTC

### Autonomous Drone Surveillance System (Cyberthon 2025 Finalist)

Mar 2025

github.com/Jegan-Pranav/Cyberthon-Drone

- Developed a real-time aerial surveillance pipeline for disaster response and public safety including border surveillance and search-and-rescue.
- Trained **YOLOv11n** and **YOLOv11s** on VisDrone (6467 train / 548 val / 1610 test) achieving **27.3** and **31.2 mAP@50–95** and integrated **DeepSORT** tracking with ROI filtering.
- Implemented distributed inference by streaming Jetson Nano video to **RTX 4050** using **ZeroMQ**, built alerting and dashboard system which achieved **16–24 FPS at 640x640**.
- Tech:** PyTorch, OpenCV, DeepSORT, CUDA, Jetson Nano, ZeroMQ, Flask, Leaflet.js

### Autonomous Mobile Robot Navigation (ROS 2, Nav2)

Jun 2025

- Built skid-steer autonomous robot and implemented mapping and navigation stack from perception to actuation.
- Generated occupancy grid maps using LiDAR SLAM (SLAM Toolbox) and executed autonomous navigation using Nav2 global planner and DWB local controller.
- Validated system performance through RViz visualization and live navigation on **NVIDIA Jetson AGX Orin**.
- Tech:** ROS 2 Humble, Nav2, SLAM Toolbox, RP Lidar A1, Jetson AGX Orin

## CERTIFICATIONS

NVIDIA: Getting started with AI on Jetson Nano

Microsoft Certified: Azure AI-900

## PUBLICATION

J. Pranav.P, A. Jenifer.J, S. Janish.A, N. K and J. Ernest.C, "Smart Fleet: An Advanced Web-Based Solution for Fleet Management and Security," 2023 International Conference on Circuit Power and Computing Technologies (ICCPCT), Kollam, India, 2023, pp. 530-535, doi: 10.1109/ICCPCT58313.2023.10245993.