Akanksha Murali

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Education

New York University, Tandon School of Engineering - New York *May 2025*
Master of Science in Mechatronics, Robotics and Automation Engineering
Relevant Coursework: Deep Learning & Robot Perception, Reinforcement Learning & Optimal Control for Robotics

PES University - Bangalore, India *May 2023*
Bachelor of Technology in Electronics and Electrical Engineering
Relevant Coursework: Control Systems, Digital Image Processing, Neural Networks & Fuzzy Logic Systems

Technical Skills

Machine Learning: TensorFlow, PyTorch, Scikit-learn, Deep Learning, Reinforcement Learning
Perception & Sensors: Sensor Fusion, LiDAR, Radar, Stereo Cameras, RGB-D, IMU, Visual Odometry
Computer Vision & AI: OpenCV, SIFT, ORB, Kalman Filter, CNNs, YOLO, SLAM
Programming Languages: Python, C++, C, Java, HTML, SQL, Linux Bash
Frameworks & Libraries: PyTorch, ROS Humble, OpenCV, SciPy, Pinocchio, Simulink, MATLAB Robotics Toolbox
Deployment Platforms: NVIDIA Jetson, Embedded Linux, Jetson Nano, GPU Inference, Real-time Tuning
Simulation & Design Tools: Unity, Blender, Innventor, Fusion 360, Gazebo, NumPy, Pandas, Git, Scikit-learn
Tools & Others: Git, Jira, LabVIEW, LPKF CircuitPro, KiCad, Overleaf

Relevent Experience

ModeliCon Infotech | Machine Learning & Computer Vision Engineer | Bangalore, India *Aug 2022 - Jun 2023*
- Developed a **digital twin platform** in Unity integrated with **Python-based ML anomaly detection** for predictive maintenance
- Built and evaluated **object recognition pipelines** using OpenCV, boosting detection performance by 20%
- Validated simulated sensor feedback loops for system diagnostics and lifecycle modeling

Nivetti Systems | Machine Learning Intern | Bangalore, India *Jan 2022 - Jul 2022*
- Engineered a **ROS2-based multi-modal perception system** using **depth cameras** for 3D object mapping
- Fused **LiDAR and vision data** to enhance localization and trajectory tracking accuracy in robotic arms
- Improved real-time object tracking accuracy by **20%** with optimized feature-matching algorithms

Equinox PESU | Project Lead | Bengaluru, India *Mar 2021 - Jun 2021*
- Led a 8-member team of a **vision-based terrain mapping** and **object detection system** using OpenCV and A* for exploration
- Orchestrated sensor calibration and classification model testing in simulated planetary environments
- Supervised integration of visual inputs with rover navigation and sampling modules

Academic Projects

Hexapod | NYU Capstone Project | New York *Fall 2024 - Spring 2024*
- Designed and deployed a **sensor fusion pipeline** integrating **stereo vision and IMU** data for state estimation
- Developed and tested **visual SLAM** algorithms under **unstructured terrain**, improving reliability and obstacle avoidance
- Led calibration of stereo sensors and fusion tuning, validating results in dynamic test environments

Robot Perception – NYU Course Project | NYU | New York *Fall 2024*
- Built a **SIFT-based visual querying system**, implemented **plane fitting, ICP alignment**, and **F-matrix estimation**
- Enabled **augmented reality overlays** via **Aruco tags** and executed **object tracking** using **optical flow**

Robotic Arm for Mobile Payload Carrier | PES Capstone Project | Bangalore, India *Spring 2023*
- Built a **monocular vision-based robotic interface** for **automated elevator operation** and floor selection
- Improved **classification accuracy** by **8%** through training **ML-based floor detection models**

Traffic Light Detection System | PES | Bangalore, India *Spring 2021*
- Deployed a real-time congestion monitoring system using frame differencing and edge detection techniques
- Achieved a 12% improvement in traffic flow post-deployment on university campus roads

Leadership Experience

Graduate Adjunct | NYU | New York *Summer 2024 - Summer 2025*
- Facilitated graduate-level labs on **vision-based control, sensor fusion, and autonomy pipelines**
- Created and delivered a **machine learning for perception** curriculum for pre-college students
- Mentored teams in implementing perception models on embedded platforms