

# 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, Inventor, Fusion 360, Gazebo, NumPy, Pandas, Git, Scikit-learn  
**Tools & Others:** Git, Jira, LabVIEW, LPKF CircuitPro, KiCad, Overleaf

## RELEVANT 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