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, CNNs, Reinforcement Learning
Computer Vision: OpenCV, Feature Matching, Object Detection, Visual Odometry, SLAM
Programming Languages: Python, C++, C, Java, HTML, SQL, Linux Bash
Frameworks & Libraries: PyTorch, ROS Humble, OpenCV, SciPy, Pinocchio, Simulink, MATLAB Robotics Toolbox
Robotics & Embedded Systems: ROS2, Sensor Fusion, Motion Planning, Embedded Firmware
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 & Simulation Engineer | Bangalore, India *Aug 2022 - Jun 2023*
- Developed a **digital twin framework** in **Unity** integrating **ML-based anomaly detection** for **predictive maintenance**
- Designed and deployed **C++-based reinforcement learning controllers** to optimize **robotic task execution**
- Engineered **visual recognition models** and **automated diagnostic pipelines**, enhancing **system efficiency by 20%**
- Conducted comprehensive **benchmark testing** to ensure **model robustness** and facilitate **scalable deployment**

Nivetti Systems | Machine Learning Intern | Bangalore, India *Jan 2022 - Jul 2022*
- Created **deep learning frameworks** for **3D object detection** and **environment mapping** on a **6-DOF robotic manipulator**
- Achieved a **20% improvement** in **trajectory tracking accuracy** using **reinforcement learning techniques**

Equinox PESU | Project Lead | Bengaluru, India *Mar 2021 - Jun 2021*
- Led an **8-member engineering team** to design a **terrain-adaptive Mars rover prototype** in collaboration with **ISRO**
- Developed **CNN-based terrain classifiers** and implemented **sensor fusion** (LiDAR, IMU, monocular vision) for **resilient autonomous navigation**
- Simulated **real-time path planning** with **A*** and **Dijkstra algorithms**, optimizing **mission-critical mobility**

Academic Projects

Hexapod | NYU Capstone Project | New York *Fall 2024 - Spring 2024*
- Developed an **MPC-based locomotion controller** for a **six-legged mobile robot** operating on unstructured terrain
- Implemented **visual-inertial SLAM** using **stereo vision** and **IMU**, enhancing **localization robustness**
- Achieved a **15% boost** in **energy efficiency** and **gait stability** via **deep learning techniques**

Embodied AI Visual Navigation | NYU | New York *Fall 2024*
- Designed a **real-time ML pipeline** for **place recognition** and **target identification** within **5 seconds**
- Applied **CNN-SVM hybrid models** for **obstacle classification** and **safe trajectory estimation**
- Performed **ablation studies** and **parameter optimization** to ensure **deployment-readiness** and **generalizability**

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**

Leadership Experience

Graduate Adjunct | NYU | New York *Summer 2024 - Summer 2025*
- Mentored **220+ students** in **machine learning, control theory, Kalman filtering, MATLAB simulations, and ROS2**
- Led **hands-on robotics labs** focused on **motion planning, embedded systems, and real-time testing**
- Designed and delivered an **introductory Machine Learning curriculum** tailored for **high school students**, emphasizing core ML concepts through **project-based instruction**