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, RNNs, Reinforcement Learning
Computer Vision: OpenCV, Feature Matching, Object Detection, Visual Odometry, SLAM
Programming Languages: Python, C++, C, Java, HTML, SQL, Linux Bash
Data Engineering: Pandas, Spark, NumPy, ETL, Data Cleaning, SQL
Frameworks & Libraries: PyTorch, ROS Humble, OpenCV, SciPy, Pinocchio, Simulink, MATLAB Robotics Toolbox
Tools & Others: Git, Jira, LabVIEW, LPKF CircuitPro, KiCad, Overleaf

Relevent Experience

Center for K12 STEM Education | Data Analyst | New York *Sep 2024 - May 2025*
- Built **data pipelines** to analyze student engagement trends, improving STEM program outcomes
- Performed **ETL operations**, cleaned and structured datasets for machine learning readiness using **Spark, and SQL**
- Delivered **impact assessments** and **KPI-driven reports** that supported grant acquisitions and funding renewals
- Worked with program leadership to identify performance and guide data-driven decisions across 12+ STEM programs

ModeliCon Infotech | Machine Learning & Simulation Engineer | Bangalore, India *Aug 2022 - Jun 2023*
- Developed a **Unity digital twin** with **C++ RL** controllers, integrating **ML anomaly detection** for predictive optimization
- Performed **data pre-processing, ETL**, and cleanup using **Pandas**, streamlining pipeline integration and model training
- 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** 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 **SLAM** using **stereo vision** and **IMU**, enhancing **localization robustness** achieving 15% increase in efficiency

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 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** covering **ML, control theory, Kalman filtering**, and simulation tools
- Led **hands-on robotics labs** and designed a **project-based ML course** for pre-college students, fostering STEM engagement