Akanksha Murali

akankshamurali02@gmail.com | +1 (929) 580-7663 | Portfolio | Linkedin

Education

New York University, Tandon School of Engineering - New York *May 202*

Master of Science in Mechatronics, Robotics and Automation Engineering

Relevant Coursework: Robotics Control System, Deep Learning & Robot Perception, Reinforcement Learning & Optimal Control for Robotic

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

Languages & Systems: Python, C++, MATLAB, C, Bash, Git, ROS2, HTML, SQL, Linux Bash

Hardware & Platforms: Jetson Nano, STM, ESP32, ZED Stereo Systems, Arduino

Frameworks & Libraries: OpenCV, TensorFlow, PyTorch, Keras, Unity, SLAM, CNNs, EfficientNet

Computer Vision Techniques: Visual Odometry, Pose Estimation, Feature Extraction, Thresholding, Optical Flow, Transforms

Relevent Experience

ModeliCon Infotech | Machine Learning & Simulation Engineer | Bangalore, India *Aug 2022 - Jun 2023*

- Developed a **Unity-based digital twin framework** using Python and Blender models to enable **visual simulation**
- Integrated **ML-based anomaly detection** for predictive maintenance, improving system efficiency by **20%**
- Implemented **feature-based face detection** enhancing the security system accuracy by **15%**

Nivetti Systems | Robotic Controls Intern | Bangalore, India *Jan 2022 - Jul 2022*

- Designed and implemented **ROS2 simulations** for **3D object detection** and **mapping** on a **6-DOF robotic manipulator**
- Enhanced **feature detection algorithms** for image processing, increasing recognition accuracy by **20%**
- Applied **A* & Dijkstra's algorithms** for vision-based navigation and path planning

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**
- Simulated **object recognition** & **terrain classification** using OpenCV & Python for autonomous decision-making
- Applied **A* & Dijkstra's algorithms** for **vision-based navigation** and path planning

Traffic Light System | PES University | Bengaluru, India *Mar 2021 - Jun 2021*

- Built a **real-time congestion detection module** using **frame subtraction & edge detection**
- Dynamically adjusted **traffic signals** based on **visual analytics** of lane occupancy
- Deployed the system in college campus roads , achieving a **12% improvement** in traffic flow

Academic Projects

Hexapod | NYU Capstone Project | New York *Fall 2024 - Spring 2024*

- Implemented **stereo camera-based visual odometry** for autonomous mobility across unstructured terrains
- Designed a **perception pipeline** using **feature extraction** and **image-based & IMU sensor fusion** for obstacle detection
- Optimized **visual SLAM algorithms**, enhancing localization precision in **dynamic environments**

Embodied AI Visual Navigation | NYU | New York *Fall 2024*

- Built a **robot perception system** with **ML-based feature extraction** and **visual place recognition**
- Deployed **binary image processing, visual odometry, and Dijkstra's algorithm** for path planning in cluttered 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*

- Programmed **OpenCV-based vision module** to detect elevator interfaces
- Estimated distance to interfaces via **monocular vision**, triggering **servo-based actuation** for floor navigation

Gesture-Controlled Lamp | NYU | New York *Fall 2023*

- Developed a **hand gesture recognition system** using **MediaPipe** and **OpenCV** for **gesture-to-command mapping**
- Enabled swipe-based **brightness control** and **on/off gesture switching**

Lane Line Detection System | PES | Bangalore, India *Fall 2022*

- Detected lane markings using **Canny edge detection** and **Hough Transform**
- Added **color-coded overlays** and **dynamic brightness feedback** based on lane positioning

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**