Vikram Raj Nagoor Kani

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EDUCATION

University of Illinois Urbana-Champaign — Urbana, IL
Master of Engineering in Autonomy and Robotics — *Aug 2024 - present*

BS Abdur Rahman Crescent Institute of Technology — Chennai, India
Bachelor of Technology in Electronics and Communication Engineering — *Jul 2017 - Jun 2021*

WORK EXPERIENCE

UIUC Research Lab, *Robotics Engineer Intern* — *Jan 2025 - present*

- Enhancing the STRETCH **Robot AI** repository to improve **object recognition**, pickup, and handover reliability for assisting the elderly in **IoT-enabled** homes and achieved an increase in pickup success rate from **40% to 80%**.
- Developing **distributed autonomous system** coordination between **STRETCH** and **Moxie** to enable seamless collaboration.

Accenture, *Automation Engineer* — *Aug 2021 - Jul 2024*

- Led deployment and testing of **cognitive vision models** on **IoT edge** servers to predict, identify and report faulty surveillance cameras at Microsoft Datacenters globally along side of **Azure Cognitive services development team**.
- Developed and led **automation development** in the project, implementing **CI/CD pipelines** for Azure resource procurement and setup, password rotation, vulnerability fixes and maintenance for cloud infrastructure and BareMetal physical servers. **Reducing manual hours spent by 90%**.

Nokia, *Embedded System Engineer Intern* — *Feb 2021 - May 2021*

- Developed an **IoT device** to **detect obstacles** blocking accessibility of fire extinguishers and alert security in **real time** for Nokia's Manufacturing Factory as part of their safety measures.

PROJECTS

LiDAR-Camera Fusion for Robust Navigation

ROS, Python, Open CV, NVIDIA Jetson, F1 Tenth, Unity, Linux

- Developed a lane detection algorithm on **Nvidia Jetson** using **OpenCV**, optimizing **computational speed by 30%** for **real-time waypoint generation**. And a **digital twin** of the lab and **F1TENTH** car for testing and validation.
- Implemented **PID** controller and designed a **dynamic error-switching** mechanism between **camera** and **LiDAR**-based navigation to ensure reliable performance in **low-light conditions**.

Contour-Based Image Drawing with UR3 Arm

ROS, Python, Open CV, UR3 Arm

- Designed an algorithm with **OpenCV** to detect **contours** from digital images, fine-tuned to **retain key features** and reduce waypoints for **faster drawing speed**. **Reducing time taken by 83%.**

Persistent Pedestrian Detection Using Sensor Fusion

GEM E4, PyTorch, ROS, Python, Open CV, YOLO, GEMStack

- Developed a **pedestrian detection and tracking algorithm** utilizing camera and LiDAR data from a GEM e4 vehicle for **real-time autonomous systems**. Optimized computational efficiency by implementing **voxel down-sampling** to improve **time complexity**.

Pre trained Neural Network model customization

PyTorch, Python, Open CV, CNN

- Customized a pre-trained ResNet50 Convolution Neural Network model to detect **7 additional breeds** of cats and dogs achieving an **accuracy of 91%**.

PUBLICATIONS

Design of Restaurant Service Robot for Contact less and Hygienic Eating Experience — *IRJET 2020*
***VIKRAM RAJ.N**, Prejitha.CT, Harshavardhan Vibhandik3, et al.*

- Published a paper on theoretical working model of a robot working in a restaurant to prevent spread of COVID-19.

TECHNICAL SKILLS

Programming Languages : Python, C++, Bash, PowerShell, LabView, Matlab, Azure CLI.
Technologies/Frameworks : Pytorch, Open CV, ROS, ROS2, Docker, Anaconda , NVIDIA Jetson, GEM E2, GEM E4, F1Tenth, Azure, Gazebo, Gazebo Ignition, Unity, Git, Linux, YOLO, Detic, SigLIP, Open AI Gym, Deep Learning, Machine Learning, UR3e.
Coursework : Principles of Safe Autonomy, Deep Learning with Computer Vision, Autonomous Vehicle System Engineering.

LEADERSHIP / EXTRACURRICULAR

Institution of Electronics and Telecommunication Engineers Club, Vice-President

- Proactively organized and led a variety of events for both internal and external college communities. Participated and earned 1st and 2nd place awards in technical coding and quiz competitions.