

# Siddarth Narasimhan

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**Technical Skills:** Python, C++, ROS, ROS2, PyTorch, Isaac Sim, Omniverse, Git, Autodesk Fusion

**Sensor Technologies:** LiDAR (Velodyne, Ouster), IMU, Stereo Camera (RealSense, ZED), GPS

## Education

### University of Toronto – M.S. Robotics

Sep 2023 - Aug 2025



- **CGPA:** 4.0 / 4.0
- **Thesis:** Navigation and Control Policies for Robots using Large Foundation Models (In Progress)

### University of Toronto – BAsC. Engineering Science, Robotics and AI

Sep 2018 - Apr 2023

- **Major GPA:** 3.6 / 4.0
- **Thesis:** Contrastive Learning for Map Inference in 3D Environments via Trajectory Map Pretraining 

## Publications

- **S. Narasimhan**, G. Nejat, "4D Gaussian Splatting SLAM for Language-Embedded Scene Reconstruction and Person Search", **IEEE Robotics and Automation Letters 2025** (In Progress)
- **S. Narasimhan**, A. H. Tan, D. Choi, G. Nejat, "OLiVia-Nav: An Online Lifelong Vision Language Approach for Mobile Robot Social Navigation", **ICRA 2025 + LLHomeRobots @ CoRL 2024 (Spotlight)** 
- A. H. Tan, **S. Narasimhan**, G. Nejat, "4CNet: A Diffusion Approach to Map Prediction for Decentralized Multi-Robot Exploration", **IEEE Transactions on Robotics 2025** 

## Experience

### Syncere – Lead Hardware and Software Engineer (Startup)

Sep 2024 – Feb 2025

- Architected a 6DoF manipulator from scratch, delivering a task-ready prototype within 6 weeks.
- Implemented multimodal diffusion and vision language model policies to perform object search and sanitation chores in indoor settings, improving task completion success by 30% across 10+ tasks


### Advanced Micro Devices – Power Design / Firmware Engineer

May 2021 - Apr 2022

- Evaluated 50+ GPUs using metrics including power loss, overcurrent protection, and dynamic response to identify component improvements, leading to a 10% increase in GPU power efficiency.
- Implemented a robust diagnostic script to automate the visualization, transmission and reception of I2C/SMBUS byte packets from GPUs, resulting in a 75% increase in packet error detection speed.
- Received **Spotlight Award** for novel contributions and exceptional performance as a co-op student.

### Ministry of Transportation – Data Science Intern

Jun 2020 – Aug 2020





- Developed an intelligent transportation system, leveraging GPS data and object detection to obtain live traffic volume estimates, resulting in 10% improvement in accuracy over state-of-the-art methods.
- Designed a novel timestamp detection and recognition pipeline with a 94% overall accuracy. 

### Ministry of Government and Consumer Services – Data Analyst

May 2019 – Aug 2019

- Designed a macro-powered database from scratch to analyze and visualize 100k+ government transactions, delivering the first cross-ministry cost analysis platform for annual spend reporting.

## Personal Projects

- **Koch VLM Benchmarks:** Implemented state-of-the-art VLM frameworks (ReKep, Pi0) on the Koch\_v1.1 manipulator to enable zero-shot, prompt-driven object manipulation. 
- **RRT Playground:** An object-oriented C++ implementation of popular variants of the rapidly exploring random trees algorithm, including RRT, RRT\*, Anytime RRT and Informed RRT\*. 
- **RobotVision:** A robotics simulator, integrating control (PID, lead-lag), path-planning, localization (EKF, UKF) and mapping algorithms (SLAM), supported by rigorous mathematical formulations. 
- **Pu239:** Our capstone project, where we developed an autonomous drone capable of stable hover, waypoint navigation and obstacle avoidance. Our team had won the **award for smoothest flight**. 

## Scholarships

- **IEEE Robotics and Automation Society** (\$2k) Feb 2025
- **NSERC Healthcare Robotics (HeRo) CREATE Fellowship** (\$10k) Sep 2024