

Akshunn Trivedi

📍 Ann Arbor ✉ akshunn@umich.edu 📞 +1(734)450-0805 in Akshunn Trivedi 🌐 triakshunn

Education

University of Michigan, Ann Arbor *August 2025 to Present*

Master's in Robotics

- GPA: 3.96/4
- **Coursework:** Maths for Robotics, Robotic Systems Lab, Robot Kinematics and Dynamics, Mobile Robots, Computational Human Robot Interaction(HRI)

Vellore Institute of Technology, Vellore *July 2019 to July 2023*

BTech in Electronics and Communication Engineering

- GPA: 8.86/10

Experience

Graduate Research Assistant - University of Michigan *Advisor: Dr. Ram* *Ann Arbor*

Vasudevan; Topic: Trajectory Optimization for Non-smooth mechanical systems *May 2026 to Present*

- Performed system identification for Unitree Go-1 robot, including both inertial and frictional parameters

Graduate Research Assistant - University of Michigan *Advisor: Dr. Dimi-* *Ann Arbor*

tra Panagou; Topic: Safety filters for Robot Control *September 2025 to Present*

- Implemented safety filters (Backup Control Barrier Function, Model Predictive Shielding, gatekeeper) for path planning tasks ensuring **guaranteed safety**, and compared their strengths and weakness. Devised new environments to benchmark these baselines for comparisons. (refer Conference Papers)

Research Assistant - Singapore University of Technology and Design *Singapore*

Advisors: Dr. Malika Meghjani; Topic: Zero-Shot Coordination and Multi-Agent Reinforcement Learning(MARL) *Dec 2023 to July 2025*

- Deployed multiple buoys in water-bodies for dynamic area coverage using modified Multi-Agent Deep Deterministic Policy Gradient (**MADDPG**) collecting sensor modalities like **water temperature, pH** etc.
- Conducted user studies (**N=50**) by deploying trained agents in Overcooked Game on AWS EC2 servers and playing the agents with human partners to test their human coordination skills.Developed methods to analyze and test our algorithm against diverse conventions present in human partners.
- Implemented **Actor-Critic procedure** for policy training of agents using simulated World Models and conducted baseline comparisons to evaluate our approach. (refer Conference Papers)
- Led an eleven-member interdisciplinary team in SUTD's **inaugural** RobotX competition in Florida, focusing on developing an autonomous maritime system using the BlueBoat platform. Managed development to meet the competition's autonomy requirements and handled sensor procurement and shipping plan development. (refer Technical Reports)

Research Intern - A*STAR, Institute of Infocomm Research *Singapore*

Advisor: Mr Manas Gupta; Topic: Biologically-Inspired Algorithms for Efficient Reinforcement Learning(RL) *Jan 2023 to June 2023*


- Investigated using bio-inspired methods like synapse-specific Hebbian learning to design more **sample-efficient architectural** components for classic gymnasium control tasks like CartPole and Acrobot.
- Successfully developed **Hebbian approaches that achieved comparable rewards to traditional back-propagation networks** while reducing training episodes by approximately **40%** for value-based training methods like Deep Q-Networks (DQN).

Publications


Conference Papers

Backup-based safety filters: A comparative review of backup cbf, model predictive shielding, and gatekeeper March 2026

Taekyung Kim, Aswin D Menon, *Akshunn Trivedi*, Dimitra Panagou


Paper Venue: Conference for Decision and Control (CDC) (Submitted, under review) [arxiv link](#) 

Efficient Generation of Diverse Cooperative Agents with World Models Feb 2026

Yi Loo, *Akshunn Trivedi*, Malika Meghjani [arxiv link](#) 

Technical Reports

RobotX 2024 Technical Design Report Oct 2024

Akshunn Trivedi, Hoo Jun Jie, Wong Kang Zhao, et al. [link](#) 

Skills

Programming Languages: Python, Matlab, C, C++

Select Frameworks: Pytorch, ROS/ROS2, Pinocchio, Git, AWS EC2, Docker

Robots: [Unitree Go1](#) , [ReactorX-200](#) , [Mbot Classic](#) 

Microcontrollers/SBCs: ATmega328p, ESP32, Arduino family, Nvidia Jetson family

Languages: Hindi(native), English

Awards and Scholarships

Singapore International Pre-Graduate Award (SIPGA) Jan 2023

- The Singapore International Pre-Graduate Award (SIPGA) is a prestigious short-term research training program that provides international undergraduate and master's students with the opportunity to engage in research projects at A*STAR, Singapore's leading research institute.

References

Malika Meghjani: malika_meghjani@sutd.edu.sg (*Assistant Professor, ISTD, Singapore University of Technology and Design*)

Manas Gupta: Manas_Gupta@i2r.a-star.edu.sg (*Senior Research Engineer, Institute of Infocomm Research, A*STAR*)

Noor Mohammed V: vnoormohammed@vit.ac.in (*Professor, School of Electronics Engineering (SENSE), VIT Vellore*)

Organizations and Outreach

IEEE-VIT Dec 2019 - July 2021

- As a core committee member of IEEE-VIT, I lead technical outreach activities to expose more students to core technical areas like electronics and machine learning by organizing and teaching in small monthly workshops called Techloops.
- Handled core organizing operations like managing sponsorships, outreach, and overall ops for OpenCon'20: A technical conference to help network students with industry leaders for their professional development. [link](#) 