

Anubhav Vishwakarma

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OBJECTIVE STATEMENT:

Robotics graduate student seeking an internship position. Expertise Intersection: Motion Planning, Imitation Learning, and Reinforcement Learning. **Graduating: December 2026**

EDUCATION

- **University of Washington, Seattle, USA**

Master of Science (MS) in Mechanical Engineering (**Concentration Robotics**); **GPA**: 3.82/4.0 Sep 2024 – Present
Coursework: Reinforcement and Machine Learning, Control for Safe Interactive Autonomy, and CUDA.

- **M. S. Ramaiah Institute of Technology, Bangalore, India**

Bachelor of Engineering (BE) in Mechanical Engineering; **GPA**: 9.36/10.0 Aug 2018 – Aug 2022
Coursework: Control Engineering, Computational Numerical Methods, Kinematics and Dynamics of Machines.

PUBLICATIONS

- T. Han, ..., [A. Vishwakarma](#), ..., B. Boots, “*Model Predictive Adversarial Imitation Learning for Planning from Observation (MPAIL)*,” [Best Paper Runner UP at CoRL 2025](#), [\[arXiv\]](#).
- K. Jyothish, [A. Vishwakarma*](#), S. Keshri*, S. Mishra “*Multimodal two-wheeler driving dataset for autonomous driving applications*,” [Discover Robotics](#)

EXPERIENCE

- **Model Predictive Adversarial Imitation Learning (MPAIL)**

Research Assistant, Robot Learning Lab, University of Washington, Seattle Mar 2025 – Present
[Video](#)

- Built a local terrain map from exteroceptive sensing to provide terrain-dependent cost evaluations for MPPI rollouts.
- Integrated formal safety guarantees in Adversarial Imitation Learning (**AIL**) algorithms increasing policy and planning (**MPPI**) robustness, as validated in the **ISAAC LAB Simulation** and real world experiments.
- Evaluated **MPAIL**, **AIL** and **IRL** (Inverse Reinforcement Learning) algorithms by conducting **Sim2Real** experiments on the 1/10 th autonomous racing car platform (**Mushr**), demonstrating that planning with learned cost and value functions from expert data outperforms AIL, and IRL baselines by **69%**.

- **3D Reconstruction of Archaeological Sites, Project Tirtha:**

Research Scholar, National Institute of Science Education and Research, India Feb 2024 – Jul 2024

- Integrated a **3D Gaussian Splatting** pipeline and built a containerized 3D scene generation environment using Docker for cross-device reproducibility.

- **GPS Denied Navigation of Micro UAV**

UAV Systems Engineer, UAVIO Labs, Indian Institute of Science, India Jul 2022 – Jan 2024
[Video](#)

- Built an autonomy stack leveraging ROS to synthesize information from multiple sensors for downstream tasks such as pose estimation using visual-inertial odometry, and object character recognition, collision avoidance and waypoint-navigation.
- Integrated 1D LiDAR, barometric altimeter, ToF sensors, stereo and monocular cameras to optimize drone autonomy performance with fail-safe redundancy by 40%.

PROJECTS

- **Model Predictive Path Integral Control with Discrete Control Barrier Functions**

– Developed a sampling-based MPPI controller with discrete CBFs for quadrotor obstacle avoidance
– Parallelized rollouts computation with **JAX**, and benchmarked it against an LQR controller with safety constraints.

- **Dynamics Model Learning for Model Predictive Control**

– Improved MPPI goal-reaching success from **41% to 74%** by reducing the epistemic uncertainty of learned dynamics model by using ensemble-based approach.

SKILLS

Frameworks: PyTorch, Isaac Sim and Lab, ROS, JAX, MuJoCo, Gazebo, Linux, Docker, Git

Programming Languages: Python, C++, MATLAB, C.

Hardware: MuSHR, Jetson Xavier-NX, Intel NUC, RealSense Tracking and Depth Cameras.

ACHIEVEMENTS

- Led the team to **The SAE Aero Design West 2022 Competition** - achieved **2nd place** internationally in Design among 43 teams from leading global institutions.
[Video](#), [Award](#)
- **Top 2 %** in the national level exam on Aircraft Design by NPTEL in India.