

Prajwal Thakur MASc

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SUMMARY

Proficient at developing and optimizing control and planning algorithms for robotic systems, focusing on enhancing motion planning and decision-making capabilities. Currently seeking a hybrid part-time role.

SKILLS

Programming: C++,Python

Softwares, Tools: ROS/ROS2, Gazebo, MATLAB, CARLA, V-REP, Pybullet, Drake ,Git/GitHub

EDUCATION

University of Waterloo,Canada

May.2023-May.2025(expected)

MASc ECE ,Specialization in Systems and Control

Current GPA: 89/100

Relevant Courses:

Introduction to Convex Optimization, Model Predictive Control,Multi-variable Control System,

Filtering and Control of Stochastic Linear Systems, Intro. to Machine Learning

Indian Institue of Technology ,India

June.2021

Bachelor of Technology , Electronics Engineering

GPA: 7.7/10.0

EXPERIENCE

Graduate Teaching Assistant

May. 2023 – Present

University of Waterloo

Waterloo, Canada

SE380 :Introduction to Feedback Control ,ECE250 : Data Structure And Algorithms

ECE486/780 :Robot Dynamics And Control

Mechatronic Vehicle Systems Lab and CL2-Lab

May. 2023 – Present

University of Waterloo

Waterloo, Canada

- **Path Planner for Autonomous Vehicles with Robust to Communication Latency**|*Thesis*

MPC,ROS2,C++,Python

Working on Designing a Path Following Algorithm for Autonomous vehicles, with safety guarantees against the communication latency .

- **MPCC for F1-10 Car** |  | *MPC,ROS2,Python,F110*



Implemented Model Predictive Contouring Control for fast Autonomous Racing reducing the lap time by 10% as compared to Pure Pursuit Algorithm.

Autonomous and Kooperative Systems Lab | *Research Engineer* |

April. 2022 – April. 2023

University of Tartu

Tartu, Estonia


- Integrated the ROS-Navigation stack in parrot-bebop drone for 2d planning in a Map-less Environment | 
- Developed ROS packages for a course on the perception and planning of quadrotor drones and acted as a referee in a competition (DeltaX)held at the end of the course.
- Designed the course for students related to ROS, Navigation stack, and TEB Planner. | 

Robotics Research Center (RRC), IIIT-Hyderabad | *Research Engineer* |

May.2021 – March. 2022

IIIT Hyderabad

Hyderabad,India

- Worked on Rearrangement Planning Problem in Robotic Manipulators combining optimization computer vision and reinforcement learning. Reduces the Planning Time by 4% , Published the Paper at IJCNN (listed below)
- Designed Linear model Predictive Controller to track small changes in altitude. | 
- Modelled a hybrid vertical takeoff and landing air vehicle (VTOL) in MATLAB.

PUBLICATIONS

- A. Manoharan, **P. Thakur**, and A. K. Singh, "Multi-agent Target Defense Game with Learned Defender to Attacker Assignment", International Conference on Unmanned Aircraft Systems, Warsaw, 2023.
- **Prajwal Thakur**, M. Nomaan Qureshi, Arun Kumar Singh, Y V S Harish, Pushkal Katara, Houman Masnavi, K. Madhava Krishna and Brojeshwar Bhowmick, "Learning Arc-Length Value Function for Fast Time-Optimal Pick and Place Sequence Planning and Execution", International Joint Conference on Neural Networks (IJCNN) 2023

PROJECTS

* *other projects listed at prajwal.github.io/projects*