Aditya Vamsikrishna Mandalika

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Education

PhD, Computer Science and Engineering, University of Washington   2017 – Present
Advisor: Dr. Siddhartha S. Srinivasa

MS, Robotics, Carnegie Mellon University [Transferred to UW]   2016 – 2017
Advisor: Dr. Siddhartha S. Srinivasa

B.Tech, Mechanical Engineering, Indian Institute of Technology Madras   2012 – 2016
Advisor: Dr. Arun D. Mahindrakar

Experience

Personal Robotics Laboratory   Graduate Research Assistant
University of Washington   2017 – Present

> With a research interest that lies at the intersection of planning and learning, I work on search-based geometric motion planning and decision-making under uncertainty in application to robotics.

Personal Robotics Laboratory   Graduate Research Assistant
Carnegie Mellon University   2016 – 2017

> Studied the application of double quaternions for solving the inverse kinematics of high DoF robot manipulators, specifically the Kinova Jaco.

Dynamics and Control Laboratory   Undergraduate Research Assistant
Indian Institute of Technology, Madras   2015 – 2016

> My Bachelor's Thesis investigated the application of the Leapfrog algorithm and Pontryagin's Maximum Principle to generate time, distance, and fuel optimal trajectories for mobile robots.

Systemantics India Pvt. Ltd.   Summer Research Intern
Bangalore   2014 – 2015

> Modelled the dynamics of a hybrid manipulator Modelled the dynamics of a hybrid manipulator for trajectory tracking and control in performing industry-precision manipulation tasks.

Raftar Formula Racing   Vehicle Dynamics Engineer
Indian Institute of Technology Madras   2013 – 2014

> Designed and manufactured the suspension system of a Formula-style racecar for Formula Student Combustion (FSC) Germany, 2014.

Publications

C1 **Generalized Lazy Search for Robot Motion Planning: Interleaving Search and Edge Evaluation via Event-based Toggles**, A. Mandalika, S. Chaudhury, O. Salzman and S.S. Srinivasa. In *International Conference on Automated Planning and Scheduling (ICAPS)*, 2019.
Best Student Paper Award Winner

C2 **Lazy Receding Horizon A* for Efficient Path Planning in Graphs with Expensive-to-Evaluate Edges**, A. Mandalika, O. Salzman and S.S. Srinivasa. In *International Conference on Automated Planning and Scheduling (ICAPS)*, 2018.

C3 **Numerical and Experimental Implementation of Leapfrog Algorithm for Optimal Control of a Mobile Robot**, A. Vamsikrishna, Arun D. Mahindrakar and Shaligram Tiwary. In *International Control Conference (ICC)*, 2017.

P1 **Sample-Efficient Learning of Nonprehensile Manipulation Policies via Physics-Based Informed State Distributions**, L. Pinto, A. Mandalika, B. Hou and S.S. Srinivasa. *arXiv preprint,* arXiv:1810.10654, 2018.

P2 **Bayesian Policy Optimization for Model Uncertainty**, G. Lee, B. Hou, A. Mandalika, J. Lee and S.S. Srinivasa. *arXiv preprint,* arXiv:1810.01014, 2018. [in review for ICLR 2019]

Teaching and Invited Talks

Graduate Teaching Assistant, University of Washington   Winter 2019
CSE571 Robotics: Algorithms and Applications

Graduate Teaching Assistant, University of Washington   Fall 2017
CSE599 Advanced Robotics: Manipulation Algorithms

Guest Lectures, Lakeside High School, Seattle   Fall 2017
Introduction to Robotics

Mentoring

Andrey Ryabtsev   Spring 2019 - Present
Motion Planning: Benchmarking Framework

Rahul Kumar Vernwal   Summer 2018
Learning Efficient Roadmaps for Robust Motion Planning

Open Source Software Development Experience

Contributor to AIKIDO   2017 - Present
C++ library for solving robotic motion planning and decision making problems.
Repository: https://github.com/personalrobotics/aikido

Technical Skills

Languages: C, C++, Python, MATLAB, LaTeX   **Libaries and Tools**: ROS, OMPL, OpenCV