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

- **International Conferences**

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.

- **Preprints**

  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]

Academic Honors

- **Best Student Paper Award**
  29th International Conference on Automated Planning and Scheduling, 2019
  Generalized Lazy Search for Robot Motion Planning: Interleaving Search and Edge Evaluation via Event-based Toggles.

- **Best Demonstration Award**
  32nd Conference on Neural Information Processing Systems (NeurIPS), 2018
  Autonomous robot feeding for upper-extremity mobility impaired people: Integrating sensing, perception, learning, motion planning, and robot control.

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