Aditya Mandalika

School of Computer Science and Engineering
University of Washington
✉ *adityavk@cs.washington.edu*
⌂ *www.adityavk.com*

▬ Current Position

Fall 2019	**Software Engineer, Aurora Innovation Inc**.

▬ Education

2017–Current	**PhD, Computer Science and Engineering**, University of Washington. Advisor: Dr. Siddhartha Srinivasa
2016–2017	**MS, Robotics**, Carnegie Mellon University. Advisor: Dr. Siddhartha Srinivasa
2012–2016	**B.Tech, Mechanical Engineering**, Indian Institute of Technology Madras. Advisor: Dr. Arun D. Mahindrakar

▬ Research Experience

2017–Current	**Graduate Research Assistant, Personal Robotics Laboratory**, *University of Washington*. 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.
2016–2017	**Graduate Research Assistant, Personal Robotics Laboratory**, *Carnegie Mellon University*. Studied the application of double quaternions for solving the inverse kinematics of high DoF robot manipulators, specifically the Kinova Jaco.
2015–2016	**Undergraduate Research Assistant, Dynamics and Control Laboratory**, *IIT Madras*. Investigated the application of Leapfrog algorithm and Pontryagin's Maximum Principle to generate time, distance and fuel optimal trajectories for mobile robots.

▬ Engineering Experience

Fall 2019	**Software Engineer, Motion Planning Team**, *Aurora Innovation Inc.*.
2019	**Robotics Engineer**, *Robotics Collaborative Technology Alliance (RCTA)*. Developed the motion planning stack on RoMAN, a tracked bimanual robot, to grasp and transport a diverse range of unmodelled items from an unstructured pile of debris.
Summer 2015	**Research Intern**, *Systemantics Pvt. Ltd*. Modelled the dynamics of a hybrid manipulator for trajectory tracking and control in performing industry-precision manipulation tasks.
2013-2014	**Vehicle Dynamics Engineer, Raftar Formula Racing**, *IIT Madras*. Designed and manufactured the suspension system of a Formula-style racecar for Formula Student Combustion (FSC) Germany, 2014.

▬ Academic Honors

2019	**Best Student Paper Award [See C1]**. *29th International Conference on Automated Planning and Scheduling (ICAPS)* Generalized Lazy Search for Robot Motion Planning: Interleaving Search and Edge Evaluation via Event-based Toggles.
2018	**Best Demonstration Award [See D1]**. *32nd Conference on Neural Information Processing Systems (NeurIPS)* Autonomous robot feeding for upper-extremity mobility impaired people: Integrating sensing, perception, learning, motion planning, and robot control.

Publications

International Conferences

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

C2 R. Kumar, A. Mandalika, S. Choudhury and S.S. Srinivasa, *LEGO: Learning to Sample Robust Adaptive Roadmaps*, In: International Conference on Intelligent Robots and Systems (IROS), 2019.

C3 G. Lee, B. Hou, A. Mandalika, J. Lee and S.S. Srinivasa, *Bayesian Policy Optimization for Model Uncertainty*, In: International Conference on Learning Representations (ICLR), 2019.

C4 A. Mandalika, O. Salzman and S.S. Srinivasa, *Lazy Receding Horizon A* for Efficient Path Planning in Graphs with Expensive-to-Evaluate Edges* , In: International Conference on Automated Planning and Scheduling (ICAPS), 2018.

C5 A. Mandalika, Arun D. Mahindrakar and Shaligram Tiwary, *Numerical and Experimental Implementation of Leapfrog Algorithm for Optimal Control of a Mobile Robot* , In: International Control Conference (ICC), 2017.

Workshops

W1 L. Pinto, A. Mandalika, B. Hou and S.S. Srinivasa., *Sample-Efficient Learning of Nonprehensile Manipulation Policies via Physics-Based Informed State Distributions* , In: Robotics Science and Systems (RSS), 2019.

Demonstrations

D1 T. Bhattacharjee, D. Gallenberger, D. Dubois, L. L'ÃĽcuyer-Lapiere, Y. Kim, A. Mandalika, R. Scalise, R. Qu, H. Song, E. Gordon, and S.S. Srinivasa, *Autonomous robot feeding for upper-extremity mobility impaired people: Integrating sensing, perception, learning, motion planning, and robot control* , In: Conference on Neural Information Processing Systems (NeurIPS), 2018. **Best Demonstration Award**.

Teaching and Invited Talks

Winter 2019 **Robotics: Algorithms and Applications**, University of Washington.
Teaching Assistant to Dr. Tapomayukh Bhattacharjee

Fall 2017 **Advanced Robotics: Manipulation Algorithms**, University of Washington.
Teaching Assistant to Dr. Siddhartha Srinivasa

Fall 2017 Guest Lecturer at Lakeside High School, Seattle

Mentoring

Summer 2019 **Rajat Kumar Jenamani**, *Multi-Agent Motion Planning*.

Spring 2019 **Andrey Ryabtsev**, *Motion Planning Benchmarking Framework*.

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

Open Source Software

2016–Present **Contributor to AIKIDO**.
C++ Library for solving robotic motion planning and decision-making problems.
Repository at https://github.com/personalrobotics/aikido

Technical Skills

Languages C++, C, Python, MATLAB, LaTeX

Libraries ROS, OMPL, OpenCV, MoveIt!, Abseil

Tools cmake, bazel