

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.**
Indian Institute of Technology 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.

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.**
Indian Institute of Technology 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'Älcuyer-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