# Dylan Jones

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## EDUCATION

**OREGON STATE UNIVERSITY** | PhD in Robotics
Expected May 2020 | Corvallis, OR
Advisor: Geoffrey Hollinger

**OREGON STATE UNIVERSITY** | MS in Robotics
Dec 2018 | Corvallis, OR
Advisor: Geoffrey Hollinger

**TUFTS UNIVERSITY** | BS in Mechanical Engineering
May 2015 | Medford, MA
Dean's List (All Semesters)
Graduated Summa Cum Laude
Cum. GPA: 3.89 / 4.0

## RESEARCH INTERESTS

Path Planning - Reinforcement Learning - Robust Control - Probabilistic Robotics - Marine Robotics - Machine Learning - Optimization - Field Robotics

## RESEARCH EXPERIENCE

**ROBOTICS DECISION MAKING LAB** | Doctoral Research Assistant
Doctoral Work | Sep 2015 – Present | Corvallis, OR
Advisor: Geoffrey Hollinger
Preliminary Title: *"Realizable Path Planning for Robotic Systems"*

A fundamental task for robotic systems is the ability to plan a path between a start and goal state. However, many times in practice there is a large difference between the planned path and the path that the robot realizes in the environment due to disturbances and improper dynamics models as well as uncertainty on both of these.

I am developing learning based methods to solve these problems. By utilizing a reinforcement learning based framework, robotic systems are able to learn policies mapping states to commands to a low-level controller and more accurately perform the desired path while being robust to changing disturbance levels and robot dynamics.

Masters Work | Sep 2015 – Dec 2018 | Corvallis, OR
Advisor: Geoffrey Hollinger
Title: *"Planning Energy-Efficient Trajectories in Strong Disturbances"*

I developed a stochastic optimization algorithm, EESTO, for trajectory generation in an ocean current environment. In addition to this optimization algorithm, I developed a replanning framework that was able to utilize information about the ocean currents collected during execution to improve the ocean current estimation and replan a lower energy trajectory. EESTO and the replanning framework were demonstrated with an autonomous surface vehicle on a lake where wind and surface currents served as an approximation of ocean currents.

## TEACHING EXPERIENCE

**OREGON STATE UNIVERSITY** | Graduate Teaching Assistant
Sep 2015 - March 2016 | ME 430 - System Dynamics and Control | Corvallis, OR
- Implemented a new grading system using Gradescope
- Mentored students for their final project

**TUFTS COMPUTER SCIENCE DEPARTMENT** | Computer Science Teaching Assistant
Sep 2013 – May 2015 | Medford, MA
- Taught students C++ and computer science concepts
- Re-designed homework, labs, and class projects to increase concept understanding in students
- Evaluated and graded homework for functionality

# PUBLICATIONS

### Journal Articles

1. M. Kuhlman, **D. Jones** , D. Sofge, G. Hollinger and S. Gupta, "Coordinating Underwater Vehicle Teams to Conduct Large-Scale Geospatial Tasks," Under Review in *Journal of Ocean Engineering*

2. N. Lawrance, R. DeBortoli, **D. Jones** , S. McCammon, L. Milliken, A. Nicolai, T. Somers and G. Hollinger, "Shared autonomy for low-cost underwater vehicles," *Journal of Field Robotics* , Oct. 2018.

3. Y. Ye, L. He, Z. Wang, **D. Jones** , G. Hollinger, M. Taylor, and Q. Zhang, "Orchard manoeuvring strategy for a robotic bin-handling machine," *Biosystems Engineering* , vol. 169, pp. 85-103, May 2018

4. **D. Jones** and G. Hollinger, "Planning energy-efficient trajectories in strong disturbances," *IEEE Robotics and Automation Letters* , vol. 2, no. 4, pp. 2080-2087, Oct. 2017

5. Y. Ye, Z. Wang, **D. Jones** , L. He, M. Taylor, G. Hollinger, and Q. Zhang, "Bin-dog: A robotic platform for bin management in orchards," *Robotics* , vol. 6, no. 2, article 12, May 2017

### Conference Papers

1. **D. Jones** and G. Hollinger, "Reinforcement Learning for Realizable Path Planning," Under Review for *Robotics: Science and Systems* (RSS), 2020.

2. S. McCammon, **D. Jones** and G. Hollinger, "Topology-Aware Self-Organizing Maps for Robotic Information Gathering," Under Review for *IEEE/RSJ International Conference on Intelligent Robots and Systems* (IROS) 2020.

3. **D. Jones** , M. Kuhlman, D. Sofge, S. Gupta, and G. Hollinger, "Stochastic Optimization for Autonomous Vehicles With Limited Control Authority," in *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems* (IROS), Madrid, Spain, Oct. 2018

4. N. Lawrance, T. Somers, **D. Jones** , S. McCammon and G. Hollinger, "Ocean Deployment and Testing of a Semi-Autonomous Underwater Vehicle," in *Proc. IEEE/MTS OCEANS Conference* , Monterey, CA, Sept. 2016

### Workshop Papers

1. **D. Jones** and G. Hollinger, "Real-Time Stochastic Optimization for Energy-Efficient Trajectories," in *Proc. Robotics: Science and Systems Conference Workshop on Robot-Environment Interaction for Perception and Manipulation* (RSS), Ann Arbor, MI, June 2016

2. N. Lawrance, T. Somers, **D. Jones** , S. McCammon and G. Hollinger, "Ocean Deployment and Testing of a Semi-Autonomous Underwater Vehicle," in *Proc. IEEE International Conference on Robotics and Automation Workshop on Marine Robot Localization and Navigation* (ICRA), Stockholm, Sweden, May 2016

# LEADERSHIP / VOLUNTEER EXPERIENCE

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| 2019, 2020 | Student Organizer for Robotics Seminar Series at Oregon State |
| 2018, 2019 | Safety Inspector / Design Judge for Oregon Regional MATE ROV Competition |
| 2017-2020 | Grad Student Host for Prospective Grad Students |
| 2016-2020 | Tufts Admission Interviewer |
| 2014-2015 | Tufts Tau Beta Pi secretary |
| 2014-2015 | Tufts Engineering Mentors founding member |
| 2014 | Tufts Club Soccer Team Captain |
| 2013-2015 | Tufts Board Game Club treasurer and founding member |

# AWARDS

- 2016 - NSF GRFP Honorable Mention
- 2015 - O'Leary Design Award for Top Senior Design Project
- 2014 - Daniel V. Byrne, E76, Endowed Scholarship
- 2013 - Daniel V. Byrne, E76, Endowed Scholarship
- 2012 - Frank T. Lewis Scholarship