Seth McCammon

205 Rogers Hall, Oregon State University, Corvallis, OR 97330

(615) 337 9905 • mccammos@oregonstate.edu

Fifth year PhD Candidate with the Collaborative Robotics and Intelligent Systems (CoRIS) Institute at Oregon State University, advised by Dr. Geoffrey A. Hollinger. My main research interests are using topological techniques and representations to enable robots to reason globally about the environments they operate within. I work on developing these techniques for field robotics applications and deploying them on hardware, particularly in the marine domain.

Research Interests

Autonomy | Field Robotics | Information Gathering | Long-Term Autonomy | Machine Learning | Marine Robotics | Multiagent Systems | Path Planning | Planning with Uncertainty | Probabilistic Robotics | Topological Path Planning

Education

- **Oregon State University** — **Corvallis, OR**
  Ph.D. in Robotics — Expected Nov 2020
  Topologically-Guided Robotic Information Gathering — Advisor: Dr. Geoffrey A. Hollinger
- **Northwestern University** — **Evanston, IL**
  B.S. in Computer Science — 2015

Publications

Journal Articles

- **S. McCammon**, G. Marcon dos Santos, M. Frantz, T. P. Welch, G. Best, R. K. Shearman, J. Nash, J. Barth, J. Adams, and G. Hollinger, "Ocean Front Detection and Tracking using a Team of Heterogeneous Marine Vehicles," under review in Journal of Field Robotics, submitted Dec 2019.
- 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, vol. 36, no. 3, pp. 495-516, May 2019.
- K. Benoit-Bird, T. Welch, C. Waluk, I. Wangen, P. McGill, C. Okuda, G. Hollinger, M. Sato, **S. McCammon**. "Equipping an underwater glider with a new echosounder to explore ocean ecosystems," Limnology and Oceanography: Methods, vol. 16, no. 11, pp.734-749, Nov. 2018.

Refereed Conference Papers

- **S. McCammon**, D. Jones, and G. Hollinger, "Topology-Aware Self-Organizing Maps for Robotic Information Gathering" Under Review for *IEEE/RSJ Int. Conf. on Intelligent Robots and Systems*

2020. Submitted Feb 2020.

- **S. McCammon**, T. Welch, C. Waluk, K. Benoit-Bird, J. Barth, and G. Hollinger, "Onboard autonomy system for the Slocum glider," in Proc. *IEEE/MTS OCEANS Conference*, Seattle, WA, Oct. 2019.
- **S. McCammon** and G. Hollinger. *"Topological hotspot identification for informative path planning with a marine robot,"* in Proc. *IEEE International Conference on Robotics and Automation* (ICRA), Brisbane, May 2018.
- **S. McCammon** and G. Hollinger. *"Planning and executing optimal non-entangling paths for tethered underwater vehicles,"* In proc. *IEEE International Conference on Robotics and Automation* (ICRA), Singapore, May 2017. **Finalist: Best Automation Paper**
- N. Lawrance, T. Somers, D. Jones, **S. McCammon**, and G. Hollinger. *"Ocean deployment and testing of a semi-autonomous underwater vehicle."* in *Proc. MTS/IEEE OCEANS Conference*, Monterey, CA, Sept 2016.

Refereed Workshop Papers

- **S. McCammon** and G. Hollinger, "Planning non-entangling paths for tethered underwater robots using simulated annealing," in Proc. Robotics: Science and Systems Conf. Workshop on Robot Learning and Planning (RSS16), Ann Arbor, MI, June, 2016.

Awards and Honors

- **Finalist: Best Automation Paper - ICRA 2017:** *'Planning and executing optimal non-entangling paths for tethered underwater vehicles'*
- **Northwestern Undergraduate Research Grant - Summer 2014:** *'Autonomous Mapping and Path Planning Module for a Smart Wheelchair'*
- **Northwestern McCormick Autonomous Robot Design Competition:**
  Winner (2013), 3rd Place (2014, 2015), *with Kevin Ye, Daniel Thirman, and Georgiy Mazin*
- **Myke Minbiole Elegant Engineering Award - 2013:**
  with Kevin Ye and Georgiy Mazin

Outreach and Leadership

- **Cresecent Valley High School ROV Curriculum Development** 2019-2020
- **Mission Judge, Oregon Regional MATE ROV Competition** 2017-2019
- **Northwestern University Alumni Admissions Interviewer** 2020-Present
- **REU Summer Intern Student Advisor** 2017-2019
- **ASE High School Summer Intern Student Advisor** 2019
- **Northwestern Robotics Club Executive Committee, Founding Member** 2014-2015

Undergraduate Research Experience

- **Independent Undergraduate Research Project:** *'Autonomous Mapping and Path Planning Module for Smart Wheelchair'*, ARGALLAB, Northwestern University. Summer 2014, Advised by: Brenna Argall
- **Summer Research Internship:** *'Image Segmentation for Localization in a Vision-based Capsule Robot'*, STORM Lab, Vanderbilt University. Summer 2013, Advised by: Pietro Valdastri
- **Independent Studies:** *'Robot Localization using an Extended Kalman Filter'*, ARGALLAB Lab, Northwestern University. Fall 2013 and Spring 2014 Advised by: Brenna Argall