

# Jason M. O’Kane

---

Professor of Computer Science and Engineering  
Texas A&M University

L. F. Peterson Building  
435 Nagle Street  
College Station, Texas 77843-3112  
United States  
jokane@tamu.edu

## Education

---

**Ph.D.** in Computer Science, University of Illinois, Urbana-Champaign, 2007.  
**M.S.** in Computer Science, University of Illinois, Urbana-Champaign, 2005.  
**B.S. *summa cum laude*** in Computer Science, Taylor University, Upland, Indiana, 2001.

## Professional Experience

---

**Professor**, Texas A&M University, August 2022–present.  
**Professor**, University of South Carolina, January 2019–August 2022.  
    **Associate Chair for Academics**, 2018–2022.  
    **Director, Center for Computational Robotics**, 2015–2022.  
**Associate Professor**, University of South Carolina, August 2013–December 2018.  
    **Director of Graduate Programs**, 2017–2018.  
**Assistant Professor**, University of South Carolina, August 2007–August 2013.

## Awards

---

**Graduate Teaching Award**, Department of Computer Science and Engineering, University of South Carolina, 2021.  
**South Carolina Open Educational Resources (SCOer) Award**, University Libraries, University of South Carolina, 2021.  
**Distinguished Service Award**, *IEEE Robotics and Automation Letters*, 2020.  
**Departmental Service Award**, Department of Computer Science and Engineering, University of South Carolina, 2020.  
**Senior Faculty Research Award**, Department of Computer Science and Engineering, University of South Carolina, 2019.  
**Distinguished Research Service Award**, University of South Carolina, Office of Research, 2019.  
**Most Valuable Professor (MVP) Award**, Department of Computer Science and Engineering, University of South Carolina, 2018.  
**Professor for Student Affordability Award**, University of South Carolina Student Government, 2017.  
**Breakthrough Star Award**, University of South Carolina, Office of Research, 2015.  
**CAREER Award**, National Science Foundation, 2010.  
**DARPA Computer Science Study Group**, 2010.  
**Best Student Paper Award finalist** for “On Comparing the Power of Mobile Robots,” *Robotics: Science and Systems*, 2006.

**Roy J. Carver Fellowship**, University of Illinois, 2001.

## Publications

---

### Journal articles

- [J:22] Phani Krishna Penumarthi, Aaron Pecora, Sanjib Sur, Jason M. O’Kane, Srihari Nelakuditi. ‘Order of FIB Updates Seldom Matters: Fast Reroute and Fast Convergence with Interface-Specific Forwarding.’ *High-Confidence Computing*, 2022.
- [J:21] Hazhar Rahmani, Dylan A. Shell, Jason M. O’Kane. ‘Planning to Chronicle: Optimal Policies for Narrative Observation of Unpredictable Events.’ *International Journal of Robotics Research*, 2022.
- [J:20] Hazhar Rahmani, Jason M. O’Kane. ‘Equivalence Notions for State-Space Minimization of Combinatorial Filters.’ *IEEE Transactions on Robotics*, 37(6):2117–2136, 2021.
- [J:19] Dylan A. Shell, Jason M. O’Kane, Fatemeh Zahra Saberifar. ‘On the design of minimal robots that can solve planning problems.’ *IEEE Transactions on Automation Science and Engineering*, 18(3):876–887, July 2021.
- [J:18] Cynthia F. Corbett, Elizabeth M. Combs, Peyton S. Chandarana, Isabel Stringfellow, Karen Worthy, Thien Nguyen, Pamela J. Wright, Jason M O’Kane. ‘Medication Adherence Reminder System for Virtual Home Assistants: Mixed Methods Evaluation Study.’ *JMIR Formative Research*, 2021.
- [J:17] Hazhar Rahmani, Jason M. O’Kane. ‘Integer linear programming formulations of the filter partitioning minimization problem.’ *Journal of Combinatorial Optimization*, 40:431–453, 2020.
- [J:16] Marios Xanthidis, Joel M. Esposito, Ioannis Rekleitis, Jason M. O’Kane. ‘Motion Planning by Sampling in Subspaces of Progressively Increasing Dimension.’ *Journal of Intelligent and Robotic Systems*, 100:777–789, 2020.
- [J:15] Alberto Quattrini Li, Phani Krishna Penumarthi, Jacopo Banfi, Nicola Basilico, Jason M. O’Kane, Ioannis Rekleitis, Srihari Nelakuditi, Francesco Amigoni. ‘Multi-robot Online Sensing Strategies for the Construction of Communication Maps.’ *Autonomous Robots*, 44:299–319, 2020.
- [J:14] Fatemeh Zahra Saberifar, Shervin Ghasemlou, Dylan A. Shell, Jason M. O’Kane. ‘Toward a language-theoretic foundation for planning and filtering.’ *International Journal of Robotics Research*, 38(2):236–259, March 2019.
- [J:13] Fatemeh Zahra Saberifar, Ali Mohades, Mohammadreza Razzazi, Jason M. O’Kane. ‘Improper Filter Reduction.’ *Journal of Algorithms and Computation*, 50(1):69–99, June 2018.
- [J:12] Nicholas M. Stiffler, Jason M. O’Kane. ‘Complete and Optimal Visibility-Based Pursuit-Evasion.’ *International Journal of Robotics Research*, 36:923–946, July 2017.
- [J:11] Glenn Robertson, Nirupam Roy, Phani Krishna Penumarthi, Srihari Nelakuditi, Jason M. O’Kane. ‘Loop-Free Convergence with Unordered Updates.’ *IEEE Transactions on Network and Service Management*, 14(2):373–385, June 2017.

- [J:10] Fatemeh Zahra Saberifar, Ali Mohades, Mohammadreza Razzazi, Jason M. O’Kane. ‘Combinatorial Filter Reduction: Special Cases, Approximation, and Fixed-Parameter Tractability.’ *Journal of Computer and System Sciences*, 85:74–92, May 2017.
- [J:09] Jason M. O’Kane, Dylan Shell. ‘Concise planning and filtering: Hardness and algorithms.’ *IEEE Transactions on Automation Science and Engineering*, 14:1666–1681, October 2017.
- [J:08] Laura Boccanfuso, Sarah Scarborough, Ruth K. Abramson, Alicia V. Hall, Harry H. Wright, Jason M. O’Kane. ‘A Low-Cost Socially Assistive Robot and Robot-Assisted Intervention for Children with Autism Spectrum Disorder: Field Trials and Lessons Learned.’ *Autonomous Robots*, 41(3):637–655, March 2017.
- [J:07] Jeremy S. Lewis, Jason M. O’Kane. ‘Planning for provably reliable navigation using an unreliable, nearly sensorless robot.’ *International Journal of Robotics Research*, 32(11):1339–1354, September 2013.
- [J:06] Jason M. O’Kane, Wenyuan Xu. ‘Energy-Efficient Information Routing in Sensor Networks for Robotic Target Tracking.’ *Wireless Networks*, 18(6):713–733, 2012.
- [J:05] Laura Boccanfuso, Jason M. O’Kane. ‘CHARLIE: An Adaptive Robot Design with Hand and Face Tracking for Use in Autism Therapy.’ *International Journal of Social Robotics*, 3(4):337–347, 2011.
- [J:04] Chase Gray, Chuan Qin, Jason M. O’Kane, Srihari Nelakuditi. ‘Movement strategies for intelligent mobile routers.’ *Mobile Computing and Communications Review*, 14(2):19–21, 2010.
- [J:03] Jason M. O’Kane, Steven M. LaValle. ‘On comparing the power of robots.’ *International Journal of Robotics Research*, 27(1):5–23, January 2008.
- [J:02] Jason M. O’Kane, Steven M. LaValle. ‘Localization with limited sensing.’ *IEEE Transactions on Robotics*, 23(4):704–716, August 2007.
- [J:01] Robert Ghrist, Jason M. O’Kane, Steven M. LaValle. ‘Computing pareto optimal coordinations on roadmaps.’ *International Journal of Robotics Research*, 24(11):997-1010, November 2005.

## Book

- [B:01] Jason M. O’Kane. *A Gentle Introduction to ROS*. ISBN 978-1492143239. Independently published, October 2013. Available at <http://www.cse.sc.edu/~jokane/agitr/>.

## Refereed conference papers

- [C:72] Ibrahim Salman, Jason Raiti, Nare Karapetyan, Annie Bourbonnais, Jason O’Kane, Ioannis Rekleitis. ‘Confined Water Body Coverage under Resource Constraints.’ In *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2022. To appear.
- [C:71] Marios Xanthidis, Bharat Joshi, Jason M. O’Kane, Ioannis Rekleitis. ‘Multi-Robot Exploration of Underwater Structures.’ In *IFAC Conference on Control Applications in Marine Systems, Robotics, and Vehicles*, 2022. To appear.

- [C:70] Trevor Olsen, Nicholas Stiffler, Jason M. O’Kane. ‘Robust-by-design plans for multi-robot pursuit-evasion.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2022.
- [C:69] Fatemeh Zahra Saberifar, Dylan A. Shell, Jason M. O’Kane. ‘Charting the trade-off between design complexity and plan execution under probabilistic actions.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2022.
- [C:68] Hazhar Rahmani, Dylan A. Shell, Jason M. O’Kane. ‘Sensor Selection for Detecting Deviations from a Planned Itinerary.’ In *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2021.
- [C:67] Trevor Olsen, Nicholas M. Stiffler, Jason M. O’Kane. ‘Rapid Recovery from Robot Failures in Multi-Robot Visibility-Based Pursuit-Evasion.’ In *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2021.
- [C:66] Marios Xanthidis, Michail Kalaitzakis, Nare Karapetyan, James Johnson, Nikolaos Vitzilaios, Jason M. O’Kane, Ioannis Rekleitis. ‘AquaVis: A Perception-Aware Autonomous Navigation Framework for Underwater Vehicles.’ In *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2021.
- [C:65] Adem Coskun, Jason M. O’Kane, Marco Valtorta. ‘Deadlock-Free Online Plan Repair in Multi-robot Coordination with Disturbances.’ In *Proc. International Conference of the Florida Artificial Intelligence Research Society*, 2021.
- [C:64] Diptanil Chaudhuri, Rhema Ike, Hazhar Rahmani, Dylan A. Shell, Aaron T. Becker, Jason M O’Kane. ‘Conditioning Style on Substance: Plans for Narrative Observation.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2021.
- [C:63] Rachel A. Moan, Dylan A. Shell, Jason M. O’Kane. ‘Multiplexing Robot Experiments: Theoretical Underpinnings, Conditions for Existence, and Demonstrations.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2021.
- [C:62] Yulin Zhang, Hazhar Rahmani, Dylan Shell, Jason M. O’Kane. ‘Accelerating Combinatorial Filter Reduction through Constraints.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2021.
- [C:61] Trevor Olsen, Anne M. Tumlin, Nicholas M. Stiffler, Jason M. O’Kane. ‘A Visibility Roadmap Sampling Approach for a Multi-Robot Visibility-Based Pursuit-Evasion Problem.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2021.
- [C:60] Ayan Dutta, O. Patrick Kreidl, Jason O’Kane. ‘Opportunistic Multi-Robot Environmental Sampling via Decentralized Markov Decision Processes.’ In *Proc. International Symposium on Distributed Autonomous Robotic Systems*, 2021.
- [C:59] Diptanil Chaudhuri, Hazhar Rahmani, Dylan Shell, Jason M. O’Kane. ‘Tractable Planning for Coordinated Story Capture: Sequential Stochastic Decoupling.’ In *Proc. International Symposium on Distributed Autonomous Robotic Systems*, 2021.
- [C:58] Nicholas Stiffler, Jason M. O’Kane. ‘Planning for robust visibility-based pursuit-evasion.’ In *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2020.

- [C:57] Hazhar Rahmani, Jason M. O’Kane. ‘What to Do When You Can’t Do It All: Temporal Logic Planning with Soft Temporal Logic Constraints.’ In *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2020.
- [C:56] Hazhar Rahmani, Dylan A. Shell, Jason M. O’Kane. ‘Planning to Chronicle.’ In *Proc. International Workshop on the Algorithmic Foundations of Robotics*, 2020.
- [C:55] Dylan A. Shell, Jason M. O’Kane. ‘Reality as a simulation of reality: robot illusions, fundamental limits, and a physical demonstration.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2020.
- [C:54] Rachel Moan, Victor Montano, Aaron Becker, Jason M. O’Kane. ‘Aggregation and localization of simple robots in curved environments.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2020.
- [C:53] Marios Xanthidis, Nare Karapetyan, Hunter Damron, Sharmin Rahman, James Johnson, Allison O’Connell, Jason M. O’Kane, Ioannis Rekleitis. ‘Navigation in the Presence of Obstacles for an Agile Autonomous Underwater Vehicle.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2020.
- [C:52] Nare Karapetyan, Adam Braude, Jason Moulton, Joshua A. Burstein, Scott White, Jason M. O’Kane, Ioannis Rekleitis. ‘Riverine Coverage for Large Scale Surveying Operations.’ In *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2019.
- [C:51] Shervin Ghasemlou, Jason M. O’Kane. ‘Accelerating the Construction of Boundaries of Feasibility in Three Classes of Robot Design Problems.’ In *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2019.
- [C:50] Hazhar Rahmani, Jason M. O’Kane. ‘Optimal temporal logic planning with cascading soft constraints.’ In *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2019.
- [C:49] Kevin Yu, Jason M. O’Kane, Pratap Tokekar. ‘Coverage of an Environment Using Energy-Constrained Unmanned Aerial Vehicles.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2019.
- [C:48] Dylan A. Shell, Li Huang, Aaron Becker, Jason M. O’Kane. ‘Planning Coordinated Event Observation for Structured Narratives.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2019.
- [C:47] Adem Coskun, Jason M. O’Kane. ‘Online Plan Repair in Multi-robot Coordination with Disturbances.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2019.
- [C:46] Fatemeh Zahra Saberifar, Jason M. O’Kane, Dylan A. Shell. ‘The hardness of minimizing design cost subject to planning problems.’ In *Proc. International Workshop on the Algorithmic Foundations of Robotics*, 2018.
- [C:45] Yulin Zhang, Dylan A. Shell, Jason M. O’Kane. ‘Finding plans subject to stipulations on what information they divulge.’ In *Proc. International Workshop on the Algorithmic Foundations of Robotics*, 2018.
- [C:43] Jeremy S. Lewis, Daniel Feshbach, Jason M. O’Kane. ‘Guaranteed Coverage with a Blind Unreliable Robot.’ In *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2018.

- [C:42] Shervin Ghasemlou, Jason M. O’Kane, Dylan A. Shell. ‘Delineating boundaries of feasibility between robot designs.’ In *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2018.
- [C:41] Hazhar Rahmani, Jason M. O’Kane. ‘On the relationship between bisimulation and combinatorial filter reduction.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2018.
- [C:40] Nare Karapetyan, Jason Moulton, Jeremy S. Lewis, Alberto Quattrini Li, Jason M. O’Kane, Ioannis Rekleitis. ‘Multi-robot Dubins coverage with autonomous surface vehicles.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2018.
- [C:39] Phani Krishna Penumarthi, Alberto Quattrini Li, Jacopo Banfi, Nicola Basilico, Francesco Amigoni, Ioannis Rekleitis, Jason M. O’Kane, Srihari Nelakuditi. ‘Multirobot Exploration for Building Communication Maps with Prior from Communication Models.’ In *Proc. IEEE International Symposium on Multi-Robot and Multi-Agent Systems*, 2017.
- [C:38] Fatemeh Zahra Saberifar, Jason M. O’Kane, Dylan Shell. ‘Inconsequential Improperities: Filter Reduction in Probabilistic Worlds.’ In *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2017.
- [C:37] Jeremy S. Lewis, William Edwards, Kelly Benson, Ioannis Rekleitis, Jason M. O’Kane. ‘Semi-Boustrophedon Coverage with a Dubins Vehicle.’ In *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2017.
- [C:36] Nicholas M. Stiffler, Andreas Kolling, Jason M. O’Kane. ‘Persistent pursuit-evasion: The case of the preoccupied pursuer.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2017.
- [C:35] Shervin Ghasemlou, Fatemeh Zahra Saberifar, Jason M. O’Kane, Dylan A. Shell. ‘Beyond the planning potpourri: reasoning about label transformations on procrustean graphs.’ In *Proc. International Workshop on the Algorithmic Foundations of Robotics*, 2016.
- [C:34] Alberto Quattrini Li, Marios Xanthidis, Jason M. O’Kane, and Ioannis Rekleitis. ‘Active Localization with Dynamic Obstacles.’ In *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2016.
- [C:33] Yang Song, Jason M. O’Kane. ‘Forming Repeating Patterns of Mobile Robots: A Provably Correct Decentralized Algorithm.’ In *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2016.
- [C:32] Alberto Quattrini Li, Adem Coskun, Sean M. Doherty, Shervin Ghasemlou, Apoorv S. Jagtap, MD Modasshir, Sharmin Rahman, Akanksha Singh, Marios Xanthidis, Jason M. O’Kane, Ioannis Rekleitis. ‘Experimental Comparison of open source Vision based State Estimation Algorithms.’ In *Proc. International Symposium on Experimental Robotics*, 2016.
- [C:31] Fatemeh Zahra Saberifar, Shervin Ghasemlou, Jason M. O’Kane, Dylan Shell. ‘Set-labelled filters and sensor transformations.’ In *Proc. Robotics: Science and Systems*, 2016.
- [C:30] Nicholas M. Stiffler, Jason M. O’Kane. ‘Pursuit-Evasion with Fixed Beams.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2016.
- [C:29] Jason M. O’Kane, Dylan A. Shell. ‘Automatic design of discreet discrete filters.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2015.

- [C:28] Nicholas M. Stiffler, Jason M. O’Kane. ‘Agent Classification using Implicit Models.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2015.
- [C:27] Nicholas M. Stiffler, Jason M. O’Kane. ‘A Sampling Based Algorithm for Multi-Robot Visibility-Based Pursuit-Evasion.’ In *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2014.
- [C:26] Nicholas M. Stiffler, Jason M. O’Kane. ‘A Complete Algorithm for Visibility-Based Pursuit-Evasion with Multiple Pursuers.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2014.
- [C:25] Yang Song, Jason M. O’Kane. ‘Decentralized Formation of Arbitrary Multi-Robot Lattices.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2014.
- [C:24] Jason M. O’Kane, Dylan A. Shell. ‘Finding concise plans: Hardness and algorithms.’ In *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2013.
- [C:23] Jason M. O’Kane, Dylan A. Shell. ‘Automatic Reduction of Combinatorial Filters.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2013.
- [C:22] Laura Boccanfuso, Eva Juarez Perez, Myra Robinson, Jason M. O’Kane. ‘Collecting Heart Rate Using a High Precision, Non-Contact, Single-Point Infrared Temperature Sensor.’ In *Proc. International Conference on Social Robotics*, 2012.
- [C:21] Laura Boccanfuso, Jason M. O’Kane. ‘Remote Measurement of Breathing Rate Using a High Precision Single-Point Infrared Temperature Sensor.’ In *Proc. IEEE International Conference on Biomedical Robotics and Biomechatronics*, 2012.
- [C:20] Jeremy S. Lewis, Jason M. O’Kane. ‘Reliable Indoor Navigation with an Unreliable Robot: Allowing Temporary Uncertainty for Maximum Mobility.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2012.
- [C:19] Yang Song, Jason M. O’Kane. ‘Comparison of Constrained Geometric Approximation Strategies for Planar Information States.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2012.
- [C:18] Nicholas M. Stiffler, Jason M. O’Kane. ‘Shortest Paths for Visibility-Based Pursuit-Evasion.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2012.
- [C:17] Miao Xu, Wenyuan Xu, Jason M. O’Kane. ‘Content-Aware Data Dissemination for Enhancing Privacy and Availability in Wireless Sensor Networks.’ In *Proc. IEEE International Conference on Mobile Ad-hoc and Sensor Systems*, 2011.
- [C:16] Nicholas M. Stiffler, Jason M. O’Kane. ‘Visibility-Based Pursuit-Evasion with Probabilistic Evader Models.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2011.
- [C:15] Jason M. O’Kane. ‘Decentralized Tracking of Indistinguishable Targets using Low-Resolution Sensors.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2011.
- [C:14] Laura Boccanfuso, Jason M. O’Kane. ‘Adaptive Robot-Assisted Autism Therapy Using a Robot with Hand and Face Tracking.’ In *Proc. International Conference on Social Robotics*, 2010.

- [C:13] Jason M. O’Kane, Wenyuan Xu. ‘Network-assisted target tracking via smart local routing.’ In *Proc. IEEE/RSJ International Conference on Intelligent Robots and Systems*, 2010.
- [C:12] Jeremy S. Lewis, Jason M. O’Kane. ‘Guaranteed navigation with an unreliable blind robot.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2010.
- [C:11] Jason M. O’Kane, Wenyuan Xu. ‘Energy-efficient target tracking with a sensorless robot and a network of unreliable one-bit proximity sensors.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2009.
- [C:10] Jason M. O’Kane. ‘On the value of ignorance: Balancing tracking and privacy using a two-bit sensor.’ In *Proc. International Workshop on the Algorithmic Foundations of Robotics*, 2008.
- [C:09] Hamid Chitsaz, Steven M. LaValle, Jason M. O’Kane. ‘Exact Pareto-optimal coordination for two translating polygonal robots on a cyclic roadmap.’ In *Proc. Canadian Conference on Computational Geometry*, 2008.
- [C:08] Lawrence Erickson, Joseph Knuth, Jason M. O’Kane, Steven M. LaValle. ‘Probabilistic localization with a blind robot.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2008.
- [C:07] Jason M. O’Kane, Steven M. LaValle. ‘Sloppy motors, flaky sensors, and virtual dirt: Comparing imperfect ill-informed robots.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2007.
- [C:06] Jason M. O’Kane, Steven M. LaValle. ‘Dominance and equivalence for sensor-based agents.’ In *Proc. AAAI Conference on Artificial Intelligence*, 2007.
- [C:05] Jason M. O’Kane, Steven M. LaValle. ‘On comparing the power of mobile robots.’ In *Proc. Robotics: Science and Systems*, 2006.
- [C:04] Jason M. O’Kane. ‘Global localization using odometry.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2006.
- [C:03] Jason M. O’Kane, Steven M. LaValle. ‘Almost-sensorless localization.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2005.
- [C:02] Robert Ghrist, Jason M. O’Kane, Steven M. LaValle. ‘Pareto optimal coordination on roadmaps.’ In *Proc. International Workshop on the Algorithmic Foundations of Robotics*, 2004.
- [C:01] Hamid Chitsaz, Jason M. O’Kane, Steven M. LaValle. ‘Exact Pareto-optimal coordination for two translating polygonal robots on an acyclic roadmap.’ In *Proc. IEEE International Conference on Robotics and Automation*, 2004.

## **Book chapter**

- [BC:01] Jason M. O’Kane, Benjamin Tovar, Peng Cheng, Steven M. LaValle. Algorithms for Planning Under Uncertainty in Prediction and Sensing. In S. S. Ge and F. L. Lewis, editors, *Autonomous Mobile Robots: Sensing, Control, Decision-Making, and Applications*, Series in Control Engineering, chapter 13, pages 501–547. Marcel Dekker, 2006.



## M.S. thesis and Ph.D. dissertation

- [PhD] Jason M. O’Kane. *A theory for comparing robot systems*. Ph.D. thesis. University of Illinois at Urbana-Champaign, 2007.
- [MS] Jason M. O’Kane. *Almost-sensorless localization*. Master’s thesis. University of Illinois, 2005.

## Lightly-reviewed publications

- [O:08] Marios Xanthidis, James Johnson, Jason M. O’Kane, Ioannis Rekleitis. ‘Towards Multi-Camera Active Perception of Underwater Structures.’ In *Proc. Advanced Marine Robotics Technical Committee Workshop on Active Perception at IEEE International Conference on Robotics and Automation*, 2021.
- [O:07] Yulin Zhang, Dylan A. Shell, Jason M. O’Kane. ‘What does my knowing your plans tell me?’ In *Towards Intelligent Social Robots: From Naive Robots to Robot Sapiens*, 2018.
- [O:06] Phani Krishna Penumarthi, Aaron Pecora, Jason M. O’Kane, Srihari Nelakuditi. ‘Failure Inference based Fast Reroute with Progressive Link Metric Increments.’ In *Proc. International Conference on Computer Communications and Networks*, 2018.
- [O:05] Alexandra Q. Nilles, Dylan A. Shell, Jason M. O’Kane. ‘Robot Design: Formalisms, Representations, and the Role of the Designer.’ In *Workshop on Autonomous Robot Design at IEEE International Conference on Robotics and Automation*, 2018.
- [O:04] Alberto Quattrini Li, Adem Coskun, Sean M. Doherty, Shervin Ghasemlou, Apoorv S. Jagtap, MD Modasshir, Sharmin Rahman, Akanksha Singh, Marios Xanthidis, Jason M. O’Kane, Ioannis Rekleitis. ‘Vision-Based Shipwreck Mapping: On Evaluating Features Quality and Open Source State Estimation Packages.’ In *Proc. MTS/IEEE Oceans*, 2016.
- [O:03] Jason M. O’Kane. ‘Book Review: Maja J. Mataric, The Robotics Primer.’ *Autonomous Agents and Multi-Agent Systems*, 17:362–365, 2008.
- [O:02] Benjamin Tovar, Anna Yershova, Jason M. O’Kane, Steven M. LaValle. ‘Information Spaces for Mobile Robots.’ In *Proc. International Workshop on Robot Motion and Control*, 2005.
- [O:01] Jason M. O’Kane, Steven M. LaValle. ‘Sampling-based methods for discrete planning.’ In *Doctoral Consortium of the International Conference on Automated Planning and Scheduling*, 2004.

## Courses Taught

---

- UNIX/Linux Fundamentals** (first-year level, required), 2 times.
- Algorithms and Data Structures** (junior level, required), 9 times.
- Analysis of Algorithms** (graduate level, required), 6 times.
- Applications in Field Robotics** (graduate level, elective), 1 time.
- Computer Architecture** (sophomore level, required, at University of Illinois), 1 time.
- Planning Algorithms** (graduate level, elective), 1 time.
- Robotic Applications and Design** (sophomore level, required), 2 times.
- Robotic Systems** (graduate level, elective), 4 times.
- Robotics** (senior level, elective), 7 times.
- Seminar on Advances in Computing** (graduate level, required), 1 time.

## Research Supervision

---

### Doctoral students (completed)

- Hazhar Rahmani**, 2022. *Automata theoretic approaches to planning in robotics: combinatorial filter minimization, planning to chronicle, and temporal logic planning with soft specifications.*
- Marios Xanthidis**, 2022. *On providing efficient real-time solutions to motion planning problems of high complexity.*
- Trevor Olsen**, Ph.D. in Computer Science, 2021. *Sampling and robustness in multi-robot visibility-based pursuit-evasion.*
- Shervin Ghasemlou**, Ph.D. in Computer Science, 2020. *Algorithmic robot design: Label maps, procrustean graphs, and the boundary of non-destructiveness.*
- Jeremy Lewis**, Ph.D. in Computer Science and Engineering, 2018. *Algorithms for robot coverage under movement and sensing constraints.*
- Nicholas M. Stiffler**, Ph.D. in Computer Science and Engineering, 2016. *Visibility-based pursuit-evasion in the plane.*
- Yang Song**, Ph.D. in Computer Science and Engineering, 2015. *Constrained geometric approximation algorithm for robot planning and distributed multi-robot formation algorithm.*
- Laura Boccanfuso**, Ph.D. in Computer Science and Engineering, 2014. *CHARLIE: A new robot prototype for improving communication and social skills in children with autism and a new single-point infrared sensor technique for detecting breathing and heart rate remotely.*

### Master of Science students (completed)

- Nicholas Stiffler**, M.S. in Computer Science and Engineering, 2012. *Visibility-based pursuit-evasion with probabilistic evader models.*
- Jeremy Lewis**, M.S. in Computer Science and Engineering, 2011. *Guaranteed navigation with an unreliable blind robot.*

### Undergraduate researchers supervised

- Rachel Moan**, 2019–2021.
- Tien Nguyen**, 2019–2021.
- Anne Tumlin**, 2020–2022.
- Sam Lowry**, 2021–2022.
- Approximately 25 other projects supervised from 2007 through 2020.

### Other research supervision

- Benito Mendoza**, Ph.D. committee member, 2009. *Economic and Computationally Efficient Algorithms for Bidding in a Distributed Combinatorial Auction.*
- Jeremiah Shepherd**, M.S. committee member, 2009. *Path-Finding with Differential Constraints in Real Time Strategy Video Games.*
- Mikhail Simin**, Ph.D. committee member, 2012. *REDCRAFT: Protein Structure Determination from Residual Dipolar Couplings.*
- Miao Xu**, Ph.D. committee member, 2015. *Emerging Wireless Sensor Networks in Intertidal Zones.*
- Fatemeh Saberifar**, External research advisor, 2015–2016. Visting doctoral student from Amirkabir University, Tehran, Iran.

- Nicholas Weidner**, M.S. committee member, 2017. *Underwater Cave Mapping and Reconstruction Using Stereo Vision*.
- Shannon Hood**, M.S. committee member, 2017. *Bird's Eye View: Cooperative Exploration by UGV and UAV*.
- Jason Moulton**, Ph.D. committee member, 2018. *A Novel and Inexpensive Solution to Build Autonomous Surface Vehicles Capable of Negotiating Highly Disturbed Environments*.
- Sharmin Rahman**, Ph.D. committee member, 2020. *A Multi-Sensor Fusion Based Underwater SLAM System*.
- Nare Karapetyan**, Ph.D. committee member, 2020. *Area Coverage Path Planning Problem in Aquatic Environments*.
- Adem Coskun**, Ph.D. committee member, 2021. *Multi-Robot Coordination with Environmental Disturbances*.
- Rhema Ike**, M.S. (electrical and computer engineering) committee member, external for University of Houston, 2021. *Robotic Cinematography: The Construction and Testing of an Autonomous Robotic Videographer and Race Simulator*.
- Stephen Smith**, Ph.D. (mathematics) committee member, 2022. *Results on select Combinatorial Problems with an Extremal Nature*.

## Presentations

---

### Invited Short Courses

*Seventh Winter School on Computational Geometry* at Amirkabir University, Tehran, Iran. Series of five lectures on “Automated Filtering and Planning for Simple Robots.” February 25–March 2, 2015.

### Invited Talks

- “Planning and Robot Design Near the Boundaries of Feasibility,” Workshop on Compositional Robotics: Mathematics and Tools at IEEE International Conference on Robotics and Automation, Philadelphia, Pennsylvania. May 23, 2022.
- “Robot Planning Near the Boundaries of Feasibility,” Texas A&M University, Department of Computer Science and Engineering. College Station, Texas. December 16, 2021.
- “Planning and Design for Minimalist Robots,” University of North Carolina at Charlotte, Department of Computer Science. Charlotte, North Carolina. February 20, 2020.
- “Coverage Planning for Mobile Robots with Constrained Motion and Limited Sensing,” Keynote Address at International Conference on Contemporary Computing and Applications, Dr. A.P.J. Abdul Kalam Technical University, Lucknow, India. February 6, 2020.
- “Introduction to Automated Filtering and Planning for Simple Robots,” Distinguished Lecture at Galgotias University, Greater Noida, India. February 3, 2020.
- “Coverage Planning for Mobile Robotics with Constrained Motion and Limited Sensing,” *Centro de Investigación en Matemáticas (CIMAT)*, Department of Computer Science. Guanajuato, Mexico. December 9, 2019.
- “New Coverage Algorithms for Mobile Robots,” University of Houston, Department of Electrical and Computer Engineering, Houston, Texas. April 4, 2019.
- “Minimal robots: Localization, Planning, and Design,” University of Queensland, School of Information Technology and Electrical Engineering. Brisbane, Australia. May 28, 2018.
- “Minimal robots: Localization, Planning, and Design,” University of North Carolina at Chapel Hill, Department of Computer Science. April 17, 2018.
- “Toward a Theory of Automated Design of Minimal Robots,” Virginia Polytechnic Institute and State

- University, Department of Electrical and Computer Engineering, Blacksburg, Virginia. February 16, 2018.
- “Software and Algorithms for Minimal Autonomous Robots,” University of Houston, Department of Electrical and Computer Engineering, Houston, Texas. April 27, 2017.
- “Toward a Theory of Automated Design of Minimal Robots,” Texas A&M University, Department of Computer Science and Engineering, College Station, Texas. April 24, 2017.
- “Algorithmic Questions on Combinatorial Filters, or: Bad News about Filter Minimization,” University of South Carolina, Department of Mathematics, Columbia, South Carolina. November 18, 2016.
- “Forming Repeating Patterns of Mobile Robots,” Taylor University, Department of Computer Science and Engineering, Upland, Indiana, October 14, 2016.
- “Planning and Filtering with Limited Sensing,” University of Sheffield, Department of Automatic Control and Systems Engineering, Sheffield, United Kingdom. March 8, 2016.
- “Minimal Robot Models for Localization and Navigation,” Sharif University, Department of Computer Engineering, Tehran, Iran. March 1, 2015.
- “Future Directions for Robot Software,” Shiraz University, Department of Computer Science and Engineering, Shiraz, Iran. February 23, 2015.
- “Robotic Planning with Limited Sensing,” Florida International University, Department of Computer Science, Miami, Florida. October 24, 2014.
- “Robotic Planning with Limited Sensing,” *Centro de Investigación en Matemáticas (CIMAT)*, Department of Computer Science. Guanajuato, Mexico. May 12, 2012.
- “Robotic Planning with Limited Sensing,” George Mason University, Department of Computer Science, Fairfax, Virginia. May 4, 2012.
- “Robotic Planning with Limited Sensing,” Rice University, Department of Computer Science, Houston, Texas. February 24, 2012.
- “Robotic Planning with Limited Sensing,” Texas A&M University, Department of Computer Science and Engineering College Station, Texas. February 22, 2012.
- “Robotic Planning with Limited Sensing,” Indiana University, School of Informatics. Bloomington, Indiana. October 17, 2011.
- “Graduate School, Research, and You,” Taylor University, Department of Computer Science and Engineering, Upland, Indiana. October 17, 2011.
- “Robotic Planning with Limited Sensing,” McGill University, Centre for Intelligent Machines. Montréal, Quebec, Canada. February 18, 2011.
- “Robotic Planning with Limited Sensing,” University of Colorado, Aerospace Engineering Sciences Department. Boulder, Colorado. December 6, 2010.
- “Planning and Reasoning for Simple Robots” Clemson University, Department of Electrical and Computer Engineering. Clemson, South Carolina. October 28, 2010.
- “Robotic target tracking using incomplete information,” University of Nevada at Reno, Computer Science Department. Reno, Nevada. July 26, 2010.
- “Robotic planning with limited sensing,” University of North Carolina Charlotte, Computer Science Department. Charlotte, North Carolina. February 27, 2009.
- “Computing Challenges in Robotics,” Benedict College, Mathematics and Computer Science Department. Columbia, South Carolina. March 7, 2008.
- “Planning and Analysis for Robot Systems with Limited Sensing,” Department of Computer Science and Engineering, University of South Carolina. Columbia, South Carolina. April 30, 2007.

“Almost-Sensorless Localization,” Northwestern University, Department of Mechanical Engineering. Evanston, Illinois. April 11, 2005.

“Minimalist Robots: Simple Designs for Complex Behavior,” Taylor University, Computing and System Sciences Department. Upland, Indiana. April 4, 2004.

## Funding

---

### Active Grants

**S&AS: FND: COLLAB: Planning Coordinated Event Observation for Structured Narratives.** NSF, \$200,000 UofSC portion; \$600,0000 total. PI with Dylan Shell (CSE, Texas A&M) and Aaron Becker (ECE, UHouston). 2019–2023.

**REU Site: Applied Computational Robotics.** NSF, \$405,000. PI with Yiannis Rekleitis (CSE, University of South Carolina). 2021–2024.

### Completed Grants

**Computing Pursuit and Capture Strategies for Sensing-Limited Agents.** USC, \$21,515. PI. 2008–2009.

**Computer Science Study Panel.** DARPA, \$99,957. PI. 2010–2011.

**Adaptive Robot-Assisted Therapy for Autistic Children.** South Carolina Developmental Disabilities Council, \$15,080. PI. 2010–2011.

**ASPIRE-III: A Platform for Basic and Applied Research in Personal Robotics.** USC, \$53,000. PI with Jenay M. Beer (CSE, USC), Gabriel Terejanu (CSE, USC), Michael Huhns (CSE, USC). 2014–2015.

**CAREER: Algorithms for Minimalist Robot Teams.** NSF, \$464,466. PI. 2010–2016.

**EU Collaboration: Robust Pursuit-Evasion with Simple Robots (*supplement to CAREER award*).** NSF, \$21,210. PI. 2015–2016.

**CRI: II-New: Acquisition of a Heterogeneous Team of Field Robots for Coastal Environments.** NSF, \$520,981. Co-PI with Ioannis Rekleitis (CSE, USC) and Jenay Beer (CSE, USC). 2015–2019.

**RI: Small: Collaborative Research: Why is Automating the Design of Robot Controllers Hard, and What Can Be Done About It.** NSF, \$225,000. PI with Dylan Shell (CS, Texas A&M). 2015–2019.

**REU Site: Applied Computational Robotics.** NSF, \$360,000. PI with Jenay Beer (CSE, USC). 2017–2021.

**Robust Software Testing of Autonomous Aerospace Robotic Systems Using Transfer Learning.** South Carolina Space Grant Consortium, \$25,000. Co-PI with Pooyan Jamshidi (CSE, USC), Gregory Gay (CSE, USC). 2019–2021.

## Service

---

### Internal service at University of South Carolina

#### Department level

Graduate Committee, 2007–2018.

Chair, Faculty Search Committee, 2013–2014.

Associate Graduate Director, 2013–2017.

Qualifying Exam Committee. Member, 2014–2022. Chair, Fall 2020.

Faculty Senator, 2015–2018.

#### College level

CSE Chair Search Committee, 2010, 2014.

Horizon 2 Space Committee, 2015–2017.  
Chair, Robotics and Control Faculty Search Committee, 2016–2017.  
Invited panelist, “NSF CAREER Award Workshop”, 2019.

#### University level

SPARC Graduate Fellowship review committee, 2012–2013.  
ASPIRE grant review committee, 2014.  
Magellan review committee, 2014, 2016.  
Carolina Scholar mentor, 2015–2022.  
Invited panelist, “Grant Basics Workshop”, sponsored by University of South Carolina, Office of Research, September 2017.  
Invited panelist, “Preparing for Graduate School”, sponsored by University of South Carolina, Office of Research, June 2017.  
Carolina Judicial Council, 2019–2022.

#### Professional service

Area Chair, Robotics Science and Systems, 2018.  
Associate Editor, ICRA Conference Editorial Board, 2009–2013, 2017, 2019–2022.  
Associate Editor, IEEE Robotics and Automation Letters, 2017–2020.  
Associate Editor, IEEE Transactions on Robotics, 2019–present.  
Associate Editor, IROS Conference Editorial Board, 2011–2012, 2014–2016, 2018–2021.  
Awards Chair, Robotics Science and Systems, 2021.  
Conference Co-Chair (with Steven M. LaValle, Michael Otte, Dorsa Sadigh, and Pratap Tokekar), Workshop on the Algorithmic Foundations on Robotics. College Park, Maryland. June 22–24, 2022.  
Co-organizer (with Aaron Becker and Dylan Shell), CASE 2016 Workshop on Multi-Robot Systems in Automation: Topics in Planning and Control. Fort Worth, Texas. August 21, 2016.  
Co-organizer (with Andrea Censi and Dylan Shell), RSS 2016 Workshop on Minimality and Design Automation. Ann Arbor, Michigan. June 18, 2016.  
Co-organizer (with Hadas Kress-Gazit, Andrea Censi, and Alexandra Nilles), RSS 2017 Workshop on Minimality and Trade-offs in Automated Robot Design. Cambridge, Massachusetts. July 16, 2017.  
Panelist, National Science Foundation, 2009, 2010, 2011, 2015, 2017, 2019, 2020, 2021.  
Program Committee, AAAI Conference on Artificial Intelligence, 2015, 2021.  
Program Committee, International Conference on Simulation, Modeling, and Programming for Autonomous Robots, 2014, 2016.  
Program Committee, Robotics: Science and Systems, 2008, 2010, 2012, 2014–2017.  
Program Committee, Workshop on the Algorithmic Foundations of Robotics, 2014–2020.  
Program Committee, International Symposium on Computational Geometry Media Exposition, 2022.  
Senior Program Committee, IEEE/RSJ International Conference on Intelligent Robots and Systems, 2020–2021.  
Senior Program Committee, International Joint Conference on Artificial Intelligence, 2020–2021.

#### Reviews

Automatica  
Autonomous Robots  
AAAI National Conference on Artificial Intelligence  
ACM Symposium on Computational Geometry

AI Communications  
Entropy  
IEEE Conference on Decision and Control  
IEEE Robotics and Automation Letters  
IEEE International Conference on Automation Science and Engineering  
IEEE International Conference on Robotics and Automation  
IEEE/RSJ International Conference on Intelligent Robots and Systems  
IEEE Transactions on Robotics  
IEEE Transactions on Robotics and Automation  
IEEE Transactions on Automation Science and Engineering  
IEEE Transactions on Cybernetics  
International Conference on Simulation, Modeling, and Programming for Autonomous Robots  
International Journal of Robotics Research  
International Symposium on Visual Computing  
International Joint Conference on Artificial Intelligence  
Intelligent Service Robotics  
Journal of Artificial Intelligence Research  
Journal of Intelligent and Robotic Systems  
Journal of Information Science and Engineering  
Robotica  
Robotics: Science and Systems  
Theory of Computing Systems  
Workshop on the Algorithmic Foundations of Robotics  
Wireless Communications and Mobile Computing

### **Professional society memberships**

---

Institute of Electrical and Electronics Engineers (IEEE), 2004–present.  
Senior member, 2013–present.  
Member, 2007–2013.  
Student member, 2004–2007.  
IEEE Robotics and Automation Society (RAS), 2004–present.