

# Jason M. O’Kane

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Professor of Computer Science and Engineering  
University of South Carolina

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## Education

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**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

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**Professor**, University of South Carolina, January 2019–present.  
**Associate Chair for Academics**, 2018–present.  
**Director, Center for Computational Robotics**, 2015–present.  
**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

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**Distinguished Service Award**, *IEEE Robotics and Automation Letters*, 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

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### Journal articles

[J:18] Dylan A. Shell, Jason M. O’Kane, Fatemeh Zahra Saberifar. On the design of minimal robots that can solve planning problems. 2020. To appear.

- [J:17] Hazhar Rahmani, Jason M. O’Kane. Integer linear programming formulations of the filter partitioning minimization problem. *Journal of Combinatorial Optimization*, 2020. To appear.
- [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*, 2020. To appear.
- [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*, 2019.
- [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.

### Journal articles under review

[J:xx] Yulin Zhang, Dylan A. Shell, Jason M. O’Kane. Planning subject to stipulations on divulged information. 2019. Submitted to *Artificial Intelligence*. Under review.

### 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: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 Penumarthy, 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.

### Conference papers under review

[C:xx] Nicholas Stiffler, Jason M. O’Kane. Planning for robust visibility-base pursuit-evasion. Submitted to *IEE/RSJ International Conference on Intelligent Robots and Systems*, 2020. Under review.

[C:xx] Hazhar Rahmani, Jason M. O’Kane. What to Do When You Can’t Do It All: Temporal Logic Planning with Soft Temporal Logic Constraints. Submitted to *IEE/RSJ International Conference on Intelligent Robots and Systems*, 2020. Under review.

### 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: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] A. Quattrini Li, A. Coskun, S. M. Doherty, S. Ghasemlou, A. S. Jagtap, M. Modasshir, S. Rahman, A. Singh, M. Xanthidis, J. M. O’Kane, I. 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

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- Algorithms and Data Structures** (junior level, required), 8 times.
- Analysis of Algorithms** (graduate level, required), 5 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), 3 times.
- Robotics** (senior level, elective), 7 times.
- Seminar on Advances in Computing** (graduate level, required), 1 time.

## Research Supervision

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### Doctoral students (completed)

- 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*.

### Doctoral students (current)

- Shervin Ghasemlou**, 2015–present.
- Hazhar Rahmani**, 2017–present.

### 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 research projects supervised

- Ben Fine**, 2007–2009.



**Max Kuipers**, 2008.  
**Philip Vander Broek**, 2009.  
**Korrigan Clark**, 2009–2011.  
**Stephen Bradley**, 2011–2012.  
**Michael Reynolds**, 2011–2013.  
**Caleb Braswell**, 2012–2013.  
**Nicholas Elson**, 2014.  
**Bradley Faircloth**, 2014.  
**Asante Dawkins**, 2014–2015.  
**William Edwards**, 2015–present.  
**Steward Wallace**, 2017.  
**Brook Thornell**, 2017.  
**Xavier Osta**, 2017.  
**Jodine Cruz**, 2017.  
**Austin Gray**, 2018.  
**Chris DeGuira**, 2018.  
**Mandy Seasholtz**, 2018.  
**Daniel Feshbach**, 2018.  
**Rachel Moan**, 2019.  
**Jonathan Rietveld**, 2019.  
**Jake McCullough**, 2019.  
**Chris Clement**, 2019.

#### **Other research supervision**

**Shiva Srivastava**, Honors thesis reader, 2008.  
**Benito Mendoza**, Ph.D. committee member, 2009.  
**Jeremiah Shepherd**, M.S. committee member, 2009.  
**Mikhail Simin**, Ph.D. committee member, 2012.  
**Miao Xu**, Ph.D. committee member, 2015.  
**Fatemeh Saberifar**, External research advisor, 2015–2016.  
**Nicholas Weidner**, M.S. committee member, 2017.  
**Shannon Hood**, M.S. committee member, 2017.  
**Jason Moulton**, Ph.D. committee member, 2018.

#### **Presentations**

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##### **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**

“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

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### Active Grants

- REU Site: Applied Computational Robotics.** NSF, \$360,000. PI with Jenay Beer (CSE, USC). 2017–2020.
- S&AS: FND: COLLAB: Planning Coordinated Event Observation for Structured Narratives.** NSF, \$200,000. PI with Dylan Shell (CS, Texas A&M) and Aaron Becker (ECE, UHouston). 2019–2022.
- 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). 2019–2020.

### 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.

## Service

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### 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, 2014–present.

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.

#### University level

SPARC Graduate Fellowship review committee, 2012–2013.

ASPIRE grant review committee, 2014.

Magellan review committee, 2014, 2016.

Carolina Scholar mentor, 2015–present.

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.

### **Professional service**

Associate Editor, IEEE Robotics and Automation Letters, 2017–present.

Associate Editor, IEEE Transactions on Robotics, 2019–present.

Associate Editor, ICRA Conference Editorial Board, 2009–2013, 2017, 2019–2020.

Associate Editor, IROS Conference Editorial Board, 2011–2012, 2014–2016, 2018–2019.

Senior Program Committee, International Joint Conference on Artificial Intelligence, 2020.

Program Committee, AAAI Conference on Artificial Intelligence, 2015.

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.

Area Chair, Robotics Science and Systems, 2018.

Program Committee, Workshop on the Algorithmic Foundations of Robotics, 2014–2016.

Panelist, National Science Foundation, 2009, 2010, 2011, 2015, 2017.

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 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 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.

### **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  
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**

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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.