

Publications Michael R. Benjamin

2019 (9 items)

1. Michael Novitzky, Paul Robinette, Caileigh Fitzgerald, Hugh R. R. Dougherty, Michael Benjamin, and Henrik Schmidt. Issues and mitigation strategies for deploying human-robot experiments on the water for competitive games in an academic environment. In *Proceedings of the Workshop Dangerous HRI: Testing Real-World Robots has Real-World Consequences ACM/IEEE International Conference on Human-Robot Interaction*, Daegu, South Korea, 2019. ACM/IEEE.
2. Paul Robinette, Michael Novitzky, Michael R. Benjamin, Caileigh Fitzgerald, and Henrik Schmidt. Exploring human-robot trust during teaming in a real-world testbed. In *Companion of the 2019 ACM/IEEE International Conference on Human-Robot Interaction*. ACM, March 2019.
3. Michael Novitzky, Caileigh Fitzgerald, Paul Robinette, Michael R. Benjamin, and Henrik Schmidt. Updated: Virtual reality for immersive simulated experiments of human-robot interactions in the marine environment. In *Proceedings of the Workshop Virtual, Augmented, and Mixed Reality for Human-Robot Interaction ACM/IEEE International Conference on Human-Robot Interaction*, Daegu, South Korea, March 2019. ACM/IEEE.
4. Paul Robinette, Michael Sacarny, Michael DeFilippo, Michael Novitzky, and Michael R. Benjamin. Dealing with the novelty of robots: observations of interactions with an autonomous surface vehicle on a recreational waterway. In *Proceedings of the Workshop Dangerous HRI: Testing Real-World Robots has Real-World Consequences ACM/IEEE International Conference on Human-Robot Interaction*, Daegu, South Korea, March 2019. ACM/IEEE.
5. Paul Robinette, Michael Sacarny, Michael DeFilippo, Michael Novitzky, and Michael R. Benjamin. Sensor evaluation for autonomous surface vehicles in inland waterways. In *(In preparation) OCEANS 2019 MTS/IEEE*, June 2019.
6. Kyle Woerner, Michael R. Benjamin, , Michael Novitzky, and John J. Leonard. Quantifying protocol evaluation for autonomous collision avoidance. *Autonomous Robots*, 43(4):967–991, April 2019.
7. Michael R. Benjamin, Michael Defilippo, Paul Robinette, and Michael Novitzky. Obstacle avoidance using multi-objective optimization and a dynamic obstacle manager. *IEEE Journal of Oceanic Engineering*, April 2019.
8. Paul Robinette, Michael Sacarny, Michael Novitzky, Michael R. Benjamin, and Michael DeFilippo. Robot vessels versus centuries of maritime tradition: How should robots react to authorities and emergencies on the water? In *Proceedings of the Workshop The Dark Side of Human-Robot Interaction: Ethical Considerations and Community Guidelines for the Field of HRI ACM/IEEE International Conference on Human-Robot Interaction*, Daegu, South Korea, March 2019. ACM/IEEE.
9. Michael Novitzky, Paul Robinette, Michael R. Benjamin, Caileigh Fitzgerald, and Henrik Schmidt. Aquaticus: Publicly available datasets from a marine human-robot teaming testbed. In *Companion of the 2019 ACM/IEEE International Conference on Human-Robot Interaction*, Daegu, South Korea, March 2019. ACM.

2018 (8 items)

10. Kyle L. Woerner and Michael R. Benjamin. Real-time automated evaluation of colregs-constrained interactions between autonomous surface vessels and human operated vessels in collaborative human-machine partnering missions. In *OCEANS 2018 MTS/IEEE Kobe Japan*, May 2018.
11. Supun Randeni, Nicholas R. Rypkema, Erin M. Fischell, Alexander L. Forrest, Michael R. Benjamin, and Henrik Schmidt. Implementation of a hydrodynamic model-based navigation system for a low-cost auv fleet. In *IEEE OES Autonomous Underwater Vehicle Symposium*, 2018.
12. Michael Novitzky, Michael R. Benjamin, Paul Robinette, Hugh R Dougherty, Caileigh Fitzgerald, and Henrik Schmidt. Virtual reality for immersive simulated experiments of human-robot interactions in the marine environment. In *Workshop on Virtual, Augmented and Mixed Reality for Human-Robot Interaction at HRI 2018*, Chicago, IL, March 2018.
13. Paul Robinette, Michael Novitzky, and Michael R. Benjamin. Longitudinal interactions between human and robot teammates in a marine environment. In *In Workshop on Longitudinal Human-Robot Teaming at HRI 2018*, Chicago, IL, March 2018.
14. Michael Novitzky, Paul Robinette, Michael R. Benjamin, Danielle K. Gleason, Caileigh Fitzgerald, and Henrik Schmidt. Preliminary interactions of human-robot trust, cognitive load, and robot intelligence levels in a competitive game. In *Companion of the 2018 ACM/IEEE International Conference on Human-Robot Interaction*, pages 203–204. ACM, 2018.
15. Arjun Gupta, Michael Novitzky, and Michael R. Benjamin. Learning autonomous marine behaviors in moos-ivp. In *OCEANS 2018 MTS/IEEE Charleston South Carolina*, October 2018.
16. Michael R. Benjamin. Capturing velocity function plateaus for efficient marine vehicle collision avoidance calculations. In *OCEANS 2018 MTS/IEEE Kobe Japan*, May 2018.
17. Michael Novitzky, Paul Robinette, Michael R. Benjamin, Danielle K. Gleason, Caileigh Fitzgerald, and Henrik Schmidt. Late breaking report: Preliminary interactions of human-robot trust, cognitive load, and robot intelligence levels in a competitive game. In *Proceedings of the Thirteenth Annual ACM/IEEE International Conference on Human-Robot Interaction*. ACM, 2018.

2017 (9 items)

18. Kyle L. Woerner, Michael R. Benjamin, and Henrik Schmidt. Collaborative autonomous multi-vessel detection, bounding, and containment for maritime environmental disasters. In *OCEANS 2017 MTS/IEEE Anchorage*, Anchorage, AK, September 2017.
19. Paul Robinette, Michael Novitzky, and Michael R. Benjamin. Trusting a robot as a user versus as a teammate. In *In Workshop on Morality and Social Trust in Autonomous Robots at RSS 2017*, Cambridge, MA, July 2017.
20. Paul Robinette, Michael Novitzky, and Michael R. Benjamin. Trusting a robot as a user versus as a teammate. In *Workshop on Morality and Social Trust in Autonomous Robots at RSS 2017*, Cambridge, MA, July 2017.
21. Michael R. Benjamin. Fast-CPA: A layered caching algorithm for rapid closest point of approach calculations in marine collision avoidance. In *OCEANS 2017 MTS/IEEE Anchorage*, Anchorage, AK, September 2017.

22. Michael R. Benjamin. The interval programming model solution algorithm experimentation tools and results. Technical Report MIT-CSAIL-TR-2017-013, MIT Computer Science and Artificial Intelligence Lab, September 2017.
23. Michael R. Benjamin. Autonomous colregs modes and velocity functions. Technical Report MIT-CSAIL-TR-2017-009, MIT Computer Science and Artificial Intelligence Lab, May 2017.
24. Kyle L. Woerner, Michael Novitzky, Michael R. Benjamin, and John J. Leonard. Legibility and predictability of protocol-constrained motion: Evaluating human-robot ship interactions under COLREGS collision avoidance requirements. In *In Workshop on Mathematical Models, Algorithms, and Human-Robot Interaction at RSS 2017*, Cambridge, MA, July 2017.
25. Michael Novitzky, Paul Robinette, Danielle K. Gleason, and Michael R. Benjamin. A platform for studying human-machine teaming on the water with physiological sensors. In *Workshop on Human-Centered Robotics: Interaction, Physiological Integration and Autonomy at RSS 2017*, Cambridge, MA, July 2017.
26. Michael Novitzky, Paul Robinette, Danielle Gleason, and Michael R. Benjamin. A platform for studying human-machine teaming on the water with physiological sensors. In *In Workshop on Human-Centered Robotics: Interaction, Physiological Integration and Autonomy at RSS 2017*, Cambridge, MA, July 2017.

2016 (4 items)

27. Arthur Anderson, Erin Fischell, Thom Howe, Tom Miller, Arturo Parrales-Salinas, Nick Rypkema, David Barrett, Michael Benjamin, Alex Brennen, Michael DeFillipo, John J. Leonard, Liam Paull, Henrik Schmidt, Nick Wang, and Alon Yaari. *An Overview of MIT-Olin's Approach in the AUVSI RobotX Competition*, pages 61–80. Springer International Publishing, 2016.
28. Kyle L. Woerner, Michael R. Benjamin, Michael Novitzky, and John J. Leonard. Collision avoidance road test for colregs-constrained autonomous vehicles. In *OCEANS 2016 MTS/IEEE Monterey*, pages 1–6, September 2016.
29. Michael Novitzky, Hugh Dougherty, and Michael Benjamin. *A Human-Robot Speech Interface for an Autonomous Marine Teammate*, pages 513–520. Springer International Publishing, 2016.
30. Henrik Schmidt, Michael R. Benjamin, Stephani M. Petillo, and Raymond Lum. Nested autonomy for distributed ocean sensing. In Nikolas I. Xiros Manhar R. Dhanak, editor, *Springer Handbook of Ocean Engineering*, pages 459–480. Springer, 2016.

2015 (1 items)

31. Kyle L. Woerner and Michael R. Benjamin. Autonomous collision avoidance tradespace analysis for high-speed vessels. In *13th International Conference on Fast Sea Transportation. Society of Naval Architects and Marine Engineers*, 2015.

2014 (1 items)

32. Kyle Woerner and Michael Benjamin. Safety and efficiency analysis of autonomous collision avoidance using multi-objective optimization with interval programming. *Naval Engineers Journal*, 126(4):163–168, 2014.

2012 (1 items)

33. Michael R. Benjamin, Henrik Schmidt, Paul M. Newman, and John J. Leonard. *Unmanned Marine Vehicle Autonomy with MOOS-IvP*, chapter 2, pages 1–100. Springer, 2012.

2010 (3 items)

34. Michael R. Benjamin, Henrik Schmidt, Paul M. Newman, and John J. Leonard. Nested autonomy for unmanned marine vehicles with moos-ivp. *Journal of Field Robotics*, 27(6):834–875, November/December 2010.
35. Toby Schneider, Henrik Schmidt, Thomas Pastore, and Michael Benjamin. Cooperative autonomy for contact investigation. In *OCEANS 2010 IEEE - Sydney*, pages 1–7, May 2010.
36. Arjuna Balasuriya, Stephanie Petillo, Henrik Schmidt, and Michael Benjamin. Behavior-based planning and prosecution architecture for autonomous underwater vehicles in ocean observatories. In *OCEANS 2010 IEEE - Sydney*, pages 1–5, May 2010.

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37. Henrik Schmidt, Donald P. Eickstedt, Arjuna Balasuriya, David Battle, and Michael R. Benjamin. Nested autonomy - a concept of operations for distributed, undersea acoustic surveillance. *U.S. Navy Journal of Underwater Acoustics*, 2009.

2008 (1 items)

38. Joseph Curcio, Toby Schneider, Michael Benjamin, and Andrew Patrikalakis. Autonomous surface craft provide flexibility to remote adaptive oceanographic sampling and modeling. In *OCEANS 2008*, pages 1–7. IEEE, 2008.

2007 (2 items)

39. Michael Benjamin, David Battle, Don Eickstedt, Henrik Schmidt, and Arjuna Balasuriya. Autonomous control of an autonomous underwater vehicle towing a vector sensor array. In *International Conference on Robotics and Automation (ICRA)*, Rome, Italy, April 2007.
40. Don Eickstedt, Michael Benjamin, Ding Wang, Henrik Schmidt, and Joseph Curcio. Behavior based adaptive control for autonomous oceanographic sampling. In *International Conference on Robotics and Automation (ICRA)*, Rome, Italy, April 2007.

2006 (8 items)

41. Donald P. Eickstedt and Michael R. Benjamin. Cooperative target tracking in a distributed autonomous sensor network. In *MTS/IEEE OCEANS*, Boston, MA, September 2006.
42. Donald P. Eickstedt, Michael R. Benjamin, Jack P. Iannello, Henrik Schmidt, and John J. Leonard. Adaptive tracking of underwater targets with autonomous sensor networks. *Journal of Underwater Acoustics*, 56:465–495, 2006.
43. Donald P. Eickstedt, Michael R. Benjamin, Henrik Schmidt, and John J. Leonard. Adaptive control of heterogeneous marine sensor platforms in an autonomous sensor network. In *IEEE/RJS International Conference on Intelligent Robots and Systems*, Beijing, China, October 2006.
44. Thomas Curtin, Denise Crimmins, Joseph Curcio, Michael Benjamin, and Christopher Roper. Autonomous underwater vehicles: Trends and transformations. *The Marine Technology So-*

- ciety Journal*, 39(3), Fall 2006.
45. Michael Benjamin, Joe Curcio, John Leonard, and Paul Newman. Navigation of unmanned marine vehicles in accordance with the rules of the road. In *International Conference on Robotics and Automation (ICRA)*, Orlando, Florida, May 2006.
 46. Michael Benjamin, John Leonard, Joe Curcio, and Paul Newman. A method for protocol-based collision avoidance between autonomous marine vehicles. *Journal of Field Robotics*, 23(5):333 – 346, May 2006.
 47. Michael Benjamin, Mathew Grund, and Paul Newman. Multi-objective optimization of sensor quality with efficient marine vehicle task execution. In *International Conference on Robotics and Automation (ICRA)*, Orlando, Florida, May 2006.
 48. Michael Benjamin. Multi-objective helming with interval programming on autonomous marine vehicles. In *IEEE/RJS IROS 2006 Workshop on Multi-Objective Robotics*, Beijing, China, October 2006.

2004 (1 items)

49. Michael R. Benjamin. The interval programming model for multi-objective decision making. Technical Report AIM-2004-021, Computer Science and Artificial Intelligence Laboratory, MIT, Cambridge, MA, September 2004.