Edwin Olson, Ph.D

Founder, CEO
May Mobility, Inc.
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Associate Professor of Computer Science
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Professional Experience

- **May Mobility, Inc.** *2017-present*
  Founder, CEO.

- **University of Michigan** *2020-present*
  Professor, Electrical Engineering and Computer Science.

- **Toyota Research Institute** *2016*
  Co-Director of Autonomous Driving.

- **University of Michigan** *2014-2020*
  Associate Professor, Electrical Engineering and Computer Science.

- **University of Michigan** *2014*
  Morris Wellman Assistant Professor, Electrical Engineering and Computer Science.

- **University of Michigan** *2008-2014*
  Assistant Professor, Computer Science and Engineering.

- **MIT DARPA Urban Challenge Team** *2006-2007*
  Student technical lead.

- **Massachusetts Institute of Technology** *2001-2008*
  Research Assistant and Teaching Assistant

- **Permabit Inc.** *2001-2002*
  Senior software engineer.

Education

- **PhD in Computer Science and Engineering** *2008*
  Massachusetts Institute of Technology.
  Thesis: *Robust and Efficient Robotic Mapping.*
  Advised by John Leonard and Seth Teller.

- **Masters of Engineering in Electrical Engineering and Computer Science** *2001*
  Massachusetts Institute of Technology.
  Thesis: *Otto: A Low-Cost Robotics Platform for Research and Education.*
  Advised by Lynn Andrea Stein.

- **Bachelor of Science in Electrical Engineering and Computer Science** *2000*
  Massachusetts Institute of Technology.

Honors and Awards

- **2022 Top YC Companies** *2021*
  Awarded to May Mobility by Y Combinator, February 2022

- **Top Ann Arbor Startups and Tech Companies to Watch in 2022** *2021*
  Awarded to May Mobility by Purpose Jobs in November, 2021

- **Top Workplaces 2021** *2021*
  Awarded to May Mobility by Detroit Free Press November, 2021

- **2022 Ann Arbor Companies with the Best Benefits** *2022*
  Awarded to May Mobility by Purpose Jobs October, 2021

- **Top Ann Arbor Startups and Tech Companies to Watch in 2021** *2021*
  Awarded to May Mobility by StartupNation, March 2021

- **2020 Top YC Companies** *2021*
  Awarded to May Mobility by Y Combinator, January 2021

- **The 2021 Best Ann Arbor Tech Companies** *2020*
  Awarded to May Mobility by Purpose Jobs, December 2020

- **Top Workplaces 2020** *2020*
  Awarded to May Mobility by Detroit Free Press, November 2020

- **SmartZone Best Small Business** *2020*
  Awarded to May Mobility by Michigan Celebrates Small Business, June 2020

- **Top AV Tech Start Up Emerging Awards** *2020*
  Awarded to May Mobility by Tracxn, May 2020

- **2020 Best Tech Startups in Michigan** *2020*
  Awarded to May Mobility by The Tech Tribune, March 2020

- **Entrepeneurial Services Company of the Year** *2020*
  Awarded to May Mobility by Ann Arbor Spark, Spring 2020

- **IROS ICROS Best Paper Finalist** *2019*
  For the AprilTags 3 paper, with my PhD student Maximilian Krogius as first author

- **IROS ABB Best Student Paper Finalist** *2019*
  For the AprilTags 3 paper, with my PhD student Maximilian Krogius as first author

- **Newsweek's Top 100 Smart City Partners (Honoree)** *2019*
  Awarded to May Mobility by Newsweek

- **Company of the Year in Autonomous Shuttles** *2020*
  Awarded to May Mobility by Frost and Sullivan

- **AutoSens- Most Innovative Driving Platform, Silver Award** *2019*
  Awarded to May Mobility

- **Fast Company's Most Innovative Companies – Transportation** *2019*
  Awarded to May Mobility

- **Forbes 2019 Top 50 AI Startups** *2019*
  Awarded to May Mobility

- **Fast Company's Most INnovative Companies – Transportation** *2019*
  Awarded to May Mobility

- **Ernst and Young Entrepeneuer of the Year (Michigan and Northern Ohio)** *2019*
  For my work at May Mobility

- **SAE World Congress Outstanding Oral Presentation Award** *2018*
  For my keynote, "How to build a safe autonomous vehicle"

- **The Avie, Shuttle of the Year** *2018*
  Awarded to May Mobility

- **CoE Education Excellence Award** *2015*
  "For his work in contributing to the curriculum in robotics, in developing educational robots, and for his activities in outreach."

- **Joel and Ruth Spira Award for Excellence in Teaching** *2014*

- **Morris Wellman Faculty Development Assistant Professor** *2014*
  Awarded to a junior faculty member in Computer Science and Engineering to recognize outstanding contributions to teaching and research.

- **DARPA Young Faculty Award** *2013*
  Identifies and engages rising research stars in junior faculty positions at US academic institutions.

- **TRW Automotive Endowed Research Award** *2013*
  The TRW Automotive Research Award supports innovative research in automotive technology.

- **Featured Speaker, World Science Festival "Cool Jobs"** *2013*

- **Popular Science, "Brilliant 10"** *2012*
  Awarded to a selection of "the brightest young researchers in the country."

- **Runner up, Dick Volz Best US PhD Award for the Most Impactful Thesis** *2012*
  Awarded four years after publication of PhD to recognize impactful theses

- **Keynote Speaker, RoboCup Competition** *2012*

- **IROS CoTeSys Cognitive Robotics Best Paper Finalist** *2012*

- **1st Place, Multi-Autonomous Ground Robot International Competition (MAGIC)** *2010*
  Principle Investigator, Team Michigan. $750,000 Prize

- **Finalist, Old Ram Shed's Challenge** *2010*
  Principle Investigator, Team Michigan.

- **4th Place, DARPA Urban Challenge** *2007*
  Student Technical Lead as part of MIT's Team Talos

- **Best Paper, MIT CSAIL student workshop** *2006*
  Recognizing Places with Weak Evidence

- **Best Paper, MIT CSAIL student workshop** *2005*
  Incremental Optimization of Large Robot-Acquired Maps

- **Frederick C. Hennie III Teaching Award for Teaching Excellence** *2004*
  MIT Department of Electrical Engineering and Computer Science.

FUNDED RESEARCH GRANTS

Dollar amounts represent my share (where applicable), sorted by start date.

- NSF "NRI: FND: Connected and Continuous Multi-Policy Decision Making" $655k. 2018-2021.

- ARC, "Communication Constrained Multi-Robot Collaboration" $105k. 2019 (extendable).

- USPS, "Project Zippy: Autonomous Rural Route Delivery" $349k. 2017-2018.

- DARPA, "Squad Multi-entity Autonomous Team SquadMATE" $499k. 2015-2017.

- TRI, "Autonomous Robotics Imagining to Act (ARIA)" $223k. 2016

- Mobility Transformation Center, "SmartCarts" $200k. 2015.

- NSF, "CyberSEES: TYPE 2: Sustainably Unlocking Energy from Municipal Solid Waste Using a Sensor-Driven Cyber-Infrastructure Framework", $399k. 2014-present.

- DARPA Young Faculty Award, "Mutual Modeling for Human/Robot Teaming with Minimal Communications", $230k. 2013-present.

- ONR, "Integrating Cognitive Architecture and Probabilistic Perceptual Processing", $1,040k. 2013-present. $464k. 2011-2012.

- Ford Motor Company, "Next-Generation Vehicle Platform for Active Safety and Driver Assistance Research", $1,176k. 2012-present

- ENSCO Corporation, "Automated Extraction of Grade Crossing Parameters, Associated Traffic Control Devices, and Sightlines from LIDAR data, Phase III", $149k. 2012-2013.

- Asian Office of Aerospace Research and Development (AOARD), "Joint Operations for Multiple Autonomous Robots", $750k. 2011-present

- HStar Technologies. "A Near-Autonomous Combat Casualty Extraction System" $70k. 2011-2012.

- DARPA, "I2O Broad Operational Language Translation (BOLT)", $216k. 2011.

- Intel, "Multi-camera, omni-directional vision for robotics", $23k. 2011.

- Federal Railway Administration, "Automated Extraction of Grade Crossing Parameters, Associated Traffic Control Devices, and Sightlines from LIDAR data, Phase II", $110k. 2011-2012.

- NSF BPC-AE: Collaborative Research, "The ARTSI Alliance: Advancing Robotics Technology for Societal Impact", $46k. 2010-2013.

- Federal Railway Administration, "Automated Extraction of Grade Crossing Parameters, Phase I", $99k. 2009.

- Department of Defense, "Team Michigan-MAGIC 2010", $50k. 2009-2011.

- Intel, "Infrastructure for large teams of autonomous robots", $45k. 2009.

- Ground Robot Research Center, "Autonomous robotic exploration of novel, human-filled environments", $295k. 2008-2011.

Invited Talks

Keynotes/featured talks in bold.

1. MSAIL, *May Mobility and Multi-Policy Decision Making.* Feb 24, 2023.

2. Transportation Research Board Panel, Washington DC. *Transforming Cities.* Jan 9, 2023

3. Hiroshima University, *Autonomous Driving using Multi-Policy Decision Making.* April 13, 2022.

4. Cowen: Global Transportation and Sustainable Mobility Conference. *Fireside Chat.* March 2022.

5. Barclay Global Automotive Tech Conference. *Panel: May Mobility.* November, 2021.

6. MOVE London. *Transforming Cities with Autonomous Vehicles.* November, 2021.

7. TRI Technical Seminar Series. *May Mobility's Approach to Building and Launching AVs.* November, 2021.

8. Cowen Fireside Chat. *The May Mobility Story and Perspective.* September, 2021.

9. **MOVE America (Keynote)**. *Transforming Cities with Autonomous Vehicles.* September, 2021.

10. MOVE America. *Panel: Integrating Autonomous Vehicles and Smart Cities.* September, 2021.

11. **AutoAI 2021 (Keynote)**. *Autonomous Driving using Multi-Policy Decision Making.* July, 2021.

12. University of Toronto CATTS Symposium. *Autonomous Driving using Multi-Policy Decision Making.* June, 2021.

13. Grand Valley State University (GVSU) Invited Talk. *Autonomous Driving using Multi-Policy Decision Making.* May, 2021.

14. Tech Crunch. *ExtraCrunch Live: May Mobility.* May, 2021.

15. Invited Lecture, University Texas Austin. *Autonomous Driving using Multi-Policy Decision Making.* May, 2021.

16. Automotive News Podcast with Pete Bigelow, *Shift, Episode 92.* April, 2021.

17. Scrum Venture's Tackle! *May Mobility.* March, 2021.

18. Hiroshima University, Smart Campus Initiative. *Autonomous Driving using Multi-Policy Decision Making.* March, 2021.

19. Autonomous Vehicles Conference 2021. *Smart City Panel.* February, 2021.

20. Smart Driving Car Podcast. *Episode 199.* February 2021.

21. Princeton Mobility Panel on Smart Driving. *Finally Doing It.* February, 2021.

22. EECS467, Guest Lecture. *Autonomous vehicles and MPDM.* November, 2020.

23. IROS 2020 Workshop on Benchmarking Progress in Autonomous Driving. *Do we need new paradigms for AV development? (Panel).* October, 2020.

24. Reuters Automotive Summit 2020. *Timing is Everything: Car Ownership vs Mobility Panel*, October 2020.

25. Xooglers in AV, *May Mobility's Autonomous Shuttles.* September 2020.

26. Ann Arbor Mobility Summit. *Fireside Chat - behind the scenes on autonomous vehicles.* September 2020.

27. SAFE: The Commanding Heights of Global Transportation. *Connectivity and the Autonomous Future*, September 2020.

28. Future of Mobility Podcast, *Episode 8, May Mobility - Enabling Better Transportation through Automation.* June, 2020.

29. **Auto.AI USA 2020.** ***Behavioural AI Approaches – Development and Deployment of L4 Self-Driving Vehicles in Urban Environments***, **February 2020.**

30. SAE Government/Industry Meeting. *Plenary Roundtable on the Future of Mobility*, January 2020.

31. EECS496 (MDE-Professionalism). *Startups Panel*, November 2019.

32. Michigan AI Symposium. *AI and Robots in the Real World.* October 2019.

33. ARC Seminar. *Communication-Constrained Multi-Robot Coordination*, September 2019.

34. Autos 2050, *Charting a road to the future (Panel)*, March 2019.

35. Friday Night AI @ AADL. *Ethics and Self-Driving Cars*, May 2019.

36. AutoSens 2019. *Fireside Chat: The short- and long-term future for autonomous driving*, May 2019.

37. Harvard Business School Entrepeneurship Club. *Early Markets for Autonomous Vehicles*, April 2019.

38. MIT CSAIL Alliances Seminar Series. *Escaping the hype cycle of Autonomous Vehicles*, April 2019.

39. U-Michigan Center for Entrepeneurship. *May Mobility and my Entrepeneurial Adventure*, February 2019.

40. City of London, Ontario; CAV and Ridesharing. *The role of autonomous vehicles in mass transit.*, February 2019.

41. World of Connections: Smart Mobility - Transportation as a Service. *May Mobility*, November 2018.

42. Automotive LIDAR 2018. *The role of LIDAR in multi-modal, high-reliability sensing*, September 2018.

43. CVPR Workshop on Autonomous Driving. *Driving like a human*, June 2018.

44. Society of Active Retirees (SOAR), *Safety and Autonomous Vehicles*, April 2018.

45. **SAE WCX 2018.** ***How to build a safe autonomous vehicle"***, April 2018. (Keynote)

46. Autonocast Podcast, *Episode 70, May Mobility and the Case For Self-Driving Micro Shuttles.* April, 2018.

47. May Mobility's Early Markets for Self-Driving Vehicles. *UM China Forum*, March 2018. (Invited Talk).

48. Autonomous Car Detroit, March 2018. *Connecting Communities through Self-Driving Micro-Transit*

49. IEEE RAS Michigan, March 2018. *Challenges and Opportunities with Self-Driving Vehicles*

50. UM China Forum. *May Mobility: Early Markets for Self-Driving Vehicles*, March 2018.

51. North American International Auto Show (NAIAS). *Autonomous Driving Panel*, January 2018. (Moderator).

52. UM HKN. *Connecting Communities with Self-Driving Micro-Transit*, January 2018.

53. **IROS 2017.** *Reliability and Robustness of Robotics Systems*, October 2017. (Keynote)

54. TU Automotive - *Deplying Fleets of Autonomous Vehicles*, October 2017.

55. Multi-Robot Control and Planning Workshop at ICRA 2017, May 2017. *Coupled Intent Estimation and Behavioral Planning* (Invited Speaker)

56. Osher Lifelong Learning Institute, January 2017. *Safety of Autonomous Vehicles: Technology and Policy* (Seminar)

57. Wharton Business School, LaunchPad on SiriusXM. January 2017. *Autonomous Vehicles Live Show* (Interview)

58. AutoMobiliD at NAIAS. January 2017. *Role of Innovation and Automobiles* (Panelist)

59. New England Robotics Conference. October 2016. Planning with Multi-Policy Decision Making (Invited Speaker)

60. Automotive TechAD. December, 2016. *The Road (Behind and) Ahead for Autonomous Vehicles* (Invited Speaker)

61. Development, Testing, and Verification of ADAS and ADF. Linz, Austria. September 2016. *Planning with Multi-Policy Decision Making* (Invited Speaker)

62. Geometry and Beyond: Representations, Physics, and Scene Understanding for Robotics (RSS Conference). June 2016. (Moderator)

63. Mitsubishi Electronic Research Labs: Celebrating 25 years, June 2016. *Smart Mobility* (Panelist)

64. MIT Robotics Seminar Series, May 2016. *Reliable Robots: Failing without failing*

65. Consumer Electronics Show, January 2016. *What drives the self-driving car business?* (Panelist)

66. **The International Conference on Robot and Intelligent Equipment (RIE), November 2015.** *The Promise of Robot Autonomy*

67. Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek (TNO), March 2015. *Autonomous cars and my gray hair*

68. Eindhoven University of Technology (TU/e), March 2015. *Where am I? Mapping and localization for autonomy*

69. Brown University, October 2014. *Autonomous cars and my gray hair*

70. Mitsubishi Electronics Research Laboratory (MERL), September 2014. *Autonomous cars and my gray hair*

71. Self-Driving Vehicles: Technology and Policy Workshop (RSS), July 2014. *Autonomous cars: Safety and Human Factors*

72. Nokia, June 2014. *APRIL Laboratory Overview*

73. Crossing the Reality Gap (Workshop, ICRA), May 2014. *Multi-Robot Systems and Communication Limits*

74. Workshop on what sucks in robotics, and how to fix it (ICRA), May 2014. *The robots are fine, it's the humans that suck*

75. Naval Research Lab (NRL), November 2013. *Learning to recognize objects in-situ*

76. **World Science Festival, June 2013.** ***Cool Jobs: Roboticist***

77. Workshop on Robust and Multimodal Inference in Factor Graphs (ICRA), May 2013. *Learning Max Mixtures.*

78. Dow Corning Technical Exchange Society, May 2013. *Robot and Human Teams for Exploration.*

79. Workshop on Many-Robot Systems: Crossing the Reality Gap (ICRA), May 2013. *Humans and Multi-Robot Systems.*

80. TRW Automotive, August 2013. *From MAGIC to Self-Driving Cars*

81. Army Research Lab, May 2013. *Learning Max Mixtures.*

82. AAAI Symposium, November 2012. *Putting Humans In The Loop.*

83. Spelman College, *The APRIL Robotics Lab*, November 2012.

84. UM Transportation Research Institute, November 2012. *From MAGIC to Self-Driving Cars.*

85. Willow Garage, December 2012. *Max Mixtures.*

86. Google, December 2012. *Max Mixtures.*

87. **RoboCup Competition Keynote, June 2012.** ***Multi-Robot Autonomy and the MAGIC Competition.***

88. Advancing Robotics Technology for Societal Impact (ARTSI) Faculty Summit, June 2012. *Modeling Robot Sensors.*

89. **AUVSI Driverless Car Summit, June 2012.** ***From MAGIC to Self-Driving Cars.***

90. ICRA Workshop on Long-Term Autonomy, May 2012. *Long term autonomy for multi-agent systems.*

91. Multi-Vehicle Dynamics Seminar Series, April 2012. *"Where the heck am I?"*

92. ARTSI Robotics Competition (Norfolk State University / HBCU) Invited Speaker, March 2012. *Where the heck am I? Why the simplest problems are often the hardest.*

93. Drexel Robotics Seminar Series, February 2012. *Winning the MAGIC 2010 Competition.*

94. ONR Program Review Invited Talk, February 2012. *Inference on Networks of Mixtures.*

95. Georgia Tech RIM Seminar, August 2011. *Winning the MAGIC 2010 Competition.*

96. Automated SLAM Evaluation Workshop (RSS), June 2011. *A brief introduction to graph-based SLAM.*

97. Automated SLAM Evaluation Workshop (RSS), June 2011. *Evaluating Back-Ends.*

98. Rice University Seminar, March 2011. *Winning the MAGIC 2010 Competition.*

99. Long-term autonomy workshop (ICRA), May 2011. *Lessons from 50 robot-hours of semi-autonomous robot operation.*

100. FIRST Robotics Competition Regional Championships, March 2011. *The robots are coming.*

101. UPenn GRASP Seminar, February 2011. *Winning the MAGIC 2010 Competition.*

102. Carnegie Mellon University Robotics Institute Seminar, January 2011. *Winning the MAGIC 2010 Competition.*

103. University of Texas (Austin) Seminar, January 2011. *Winning the MAGIC 2010 Competition.*

104. ONR Unmanned Systems Technology Review. January 2011. *The MAGIC 2010 Competition.*

105. AUVSI Invitied Panelist, January 2011. *Dual-Use Robotics.*

106. Probabilistic Graphical Models in Robotics Workshop (IROS), October 2010. *Graphical Models for Machine Perception.*

107. AAAI Robotics Workshop, July 2010. *Building large robot systems with LCM.*

108. TARDEC Seminar Series, April 2010. *Autonomous exploration and understanding of indoor and outdoor spaces.*

109. Advancing Robotics Technology for Societal Impact (ARTSI) Faculty Workshop, June 2009. *Data: communications, logging, and visualization*

110. Robotics Faculty Seminar, April 2009. *Error Bounded Depth Limited Planning.*

111. UMich Controls Seminar Series, November 2008. *Algorithms for an autonomous car.*

112. Future Directions in Visual Navigation workshop (ICRA), May 2008. *Learning Probabilistic Environmental Models with Vision: Successes and Challenges.*

113. Stanford, January 2008. *Algorithms for an autonomous car.*

114. UC Berkeley, January 2008. *Algorithms for an autonomous car.*

Discussion Panels

- "Robotics in Graduate School", Morgan State University. March 2013.

- "Opportunities for Autonomous Technology Development", National Center for Manufacturing Sciences, October 2012.

- AUVSI in Washington, DC, "Dual Use Robotics". February 2011.

Other Appearances

- World Science Festival: Presenter of Robotics Apprentice Program, June 2013.

Professional Activities

Organizing Committees

- Local Accommodations Co-Chair, Robotics Science and Systems, 2016.
- Short Talks Chair, Robotics Science and Systems, 2014.
- Publicity Chair, Robotics Science and Systems, 2013.
- Co-Organizer, Workshop on Robust and Multimodal Inference on Factor Graphs at ICRA, 2013.
- Co-Organizer, Advances in Robot Learning and Human-Robot Interaction Workshop at IROS, 2012.
- Steering Committee, Automated SLAM Evaluation Workshop at RSS, 2011.

Editorial

- Associate Editor, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS): 2010-2014.
- Associate Editor, IEEE International Conference on Robotics and Automation (ICRA): 2012-2015.
- Associate Editor, Association for the Advancement of AI (AAAI): 2012, 2015

Peer Review: Conferences

- Robotics Science and Systems: 2005 - 2012
- IEEE International Conference on Robotics and Automation (ICRA): 2007 - 2012, 2015, 2017-2019, 2022
- International Joint Conferences on Artificial Intelligence (IJCAI): 2009
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS): 2007-2012, 2017-2019
- AAAI: 2014, 2012, 2011, 2008
- IFAC World Congress: 2011
- Workshop on Algorithmic Foundations of Robotics (WAFR): 2011
- FLAIRS-24

Peer Review: Journals

- IEEE Robotics and Automation Letters: 2016, 2018.
- IEEE Transactions on Robotics (T-RO): 2008-2015
- Journal of Field Robotics (JFR): 2006, 2008-2014
- IEEE Transactions on Signal Processing, 2014
- International Journal of Robotics Research: 2009-2013
- Autonomous Robots: 2010-2012
- Robotics and Autonomous Systems: 2009-2010
- IEEE Robotics and Automation Magazine: 2009
- Cryptologia, 2012
- The International Journal of Intelligent Control and Systems (IJICS): 2011
- Journal of Robotics and Computer Integrated Manufacturing: 2010
- Journal of Intelligent and Robotic Systems: 2009, 2004
- Computer Vision and Image Understanding (CVIU): 2009

Other

- Member, SAE On-Road Autonomous Vehicle Standards Committee, 2011-Present.
- Co-chair, IEEE RAS Technical Advisory Committee on Robot Learning, 2012-2014.
- Panelist, NSF Proposal Review Panels, 2012.
- Member, Michigan Robotics Day Organizing Committee, 2012.
- Advisory Board, Autonomous Auto X PRIZE, 2011.
- Judge, IARRC Robotics Competition, 2010.
- Advisory Board, Intraduce Transit, 2009-2011.

PUBLICATIONS

Journals

[1] Ryan J. Marcotte, Xipeng Wang, Dhanvin Mehta and Edwin Olson. Optimizing Multi-Robot Communication under Bandwidth Constraints. *Autonomous Robots* 2019.

[2] Markus P. Nemitz, Ryan J. Marcotte, Mohammed E. Sayed, Gonzalo Ferrer, Alfred O. Hero, Edwin Olson and Adam A. Stokes. Multi-Functional Sensing for Swarm Robots Using Time Sequence Classification: HoverBot, an Example. *Frontiers in Robotics and AI* 2018.

[3] Markus P. Nemitz, Mohammed E. Sayed, John Mamish, Gonzalo Ferrer, Lijun Teng, Ross M. McKenzie, Alfred O. Hero, Edwin Olson and Adam A. Stokes. HoverBots: Precise Locomotion Using Robots That Are Designed for Manufacturability. *Frontiers in Robotics and AI* 2017.

[4] Enric Galceran, Alexander G. Cunningham, Ryan M. Eustice and Edwin Olson. Multipolicy decision-making for autonomous driving via changepoint-based behavior prediction: Theory and experiment. *Autonomous Robots* 2017.

[5] Edwin Olson and Pratik Agarwal. Inference on networks of mixtures for robust robot mapping. *International Journal of Robotics Research* 2013.

[6] Edwin Olson, Johannes Strom, Robert Goeddel, Ryan Morton, Pradeep Ranganathan and Andrew Richardson. Exploration and Mapping with Autonomous Robot Teams. *Communications of the ACM* 2013.

[7] Edwin Olson, Johannes Strom, Ryan Morton, Andrew Richardson, Pradeep Ranganathan, Robert Goeddel, Mihai Bulic, Jacob Crossman and Bob Marinier. Progress towards multi-robot reconnaissance and the MAGIC 2010 Competition. *Journal of Field Robotics* 2012.

[8] Yangming Li and Edwin Olson. A General Purpose Feature Extractor for Light Detection and Ranging Data. *Sensors* 2010.

[9] Albert S. Huang, Matthew Antone, Edwin Olson, Luke Fletcher, David Moore, Seth Teller and John Leonard. A High-rate, Heterogeneous Data Set from the DARPA Urban Challenge. *International Journal of Robotics Research* 2010.

[10] Edwin Olson. Recognizing Places using Spectrally Clustered Local Matches. *Robotics and Autonomous Systems* 2009.

[11] Albert Huang, David Moore, Matthew Antone, Edwin Olson and Seth Teller. Finding multiple lanes in urban road networks with vision and lidar. *Autonomous Robots* 2009.

[12] J. Leonard, J. How, S. Teller, M. Berger, S. Campbell, G. Fiore, L. Fletcher, E. Frazzoli, A. Huang, S. Karaman, O. Koch, Y. Kuwata, D. Moore, E. Olson, S. Peters, J. Teo, R. Truax, M. Walter, D. Barrett, A. Epstein, K. Maheloni, K. Moyer, T. Jones, R. Buckley, M. Antone, R. Galejs, S. Krishnamurthy and J. Williams. A Perception Driven Autonomous Urban Vehicle. *Journal of Field Robotics* 2008.

[13] Luke Fletcher, Seth Teller, Edwin Olson, David Moore, Yoshiaki Kuwata, Jonathan How, John Leonard, Isaac Miller, Mark Campbell, Dan Huttenlocher, Aaron Nathan and Frank-Robert Kline. The MIT – Cornell Collision and Why it Happened. *Journal of Field Robotics Special Issue on the DARPA Urban Challenge* 2008.

[14] Edwin Olson. Robust Dictionary Attack of Short Simple Substitution Ciphers. *Cryptologia* 2007.

[15] Edwin Olson, John Leonard and Seth Teller. Robust Range-Only Beacon Localization. *IEEE Journal of Oceanic Engineering* 2006.

Refereed Conferences

[16] Edwin Olson. AXLE: Computationally-efficient trajectory smoothing using factor graph chains. *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)* 2021.

[17] Acshi Haggenmiller, Cameron Kabacinski, Maximilian Krogius and Edwin Olson. The Masked Mapper: Masked Metric Mapping. *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* 2020.

[18] Maximilian Krogius, Acshi Haggenmiller and Edwin Olson. Flexible Layouts for Fiducial Tags. *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* 2019. Finalist for Best Student Paper, Finalist for Best Application Paper

[19] Acshi Haggenmiller, Maximilian Krogius and Edwin Olson. Non-parametric Error Modeling for Ultra-wideband Localization Networks. *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)* 2019.

[20] Xipeng Wang, Ryan J. Marcotte and Edwin Olson. GLFP: Global Localization from a Floor Plan. *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* 2019.

[21] Xipeng Wang, Ryan Marcotte, Gonzalo Ferrer and Edwin Olson. AprilSAM: Real-time Smoothing and Mapping. *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)* 2018.

[22] Dhanvin Mehta, Gonzalo Ferrer and Edwin Olson. Backprop-MPDM: Faster risk-aware policy evaluation through efficient gradient optimization. *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)* 2018.

[23] Dhanvin Mehta, Gonzalo Ferrer and Edwin Olson. Fast discovery of influential outcomes for risk-aware MPDM. *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)* 2017.

[24] Xipeng Wang, Steve Vozar and Edwin Olson. FLAG: Feature-based Localization between Air and Ground. *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)* 2017.

[25] Robert Goeddel, Carl Kershaw, Jacopo Serafin and Edwin Olson. FLAT2D: Fast Localization from Approximate Transformation into 2D. *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* 2016.

[26] Dhanvin Mehta, Gonzalo Ferrer and Edwin Olson. Autonomous Navigation in Dynamic Social Environments using Multi-Policy Decision Making. *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* 2016.

[27] Robert Goeddel and Edwin Olson. Learning Semantic Place Labels from Occupancy Grids using CNNs. *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* 2016.

[28] John Wang and Edwin Olson. AprilTag 2: Efficient and robust fiducial detection. *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* 2016.

[29] Ryan Marcotte and Edwin Olson. Adaptive forward error correction with adjustable-latency QoS for robotic networks. *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)* 2016.

[30] Julie Bateman, Dimitrios Zekkos, Edwin Olson, Sean M. Messenger, Carl Kershaw, Xunchang Fei and Jerry Lynch. Preliminary Observations from Robot-Enabled Surface Methane Concentration Monitoring at a MSW Landfill. *Geo-Chicago 2016* 2016.

[31] Surat Kwanmuang and Edwin Olson. Maximum Likelihood Tracking of a Personal Dead-Reckoning System. *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* 2015.

[32] Andrew Richardson and Edwin Olson. TailoredBRIEF: Online Per-Feature Descriptor Customization. *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)* 2015.

[33] Enric Galceran, Edwin Olson and Ryan M. Eustice. Augmented vehicle tracking under occlusions for decision-making in autonomous driving . *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)* 2015 .

[34] John Wang and Edwin Olson. High-Performance Inertial Measurements Using a Redundant Array of Inexpensive Gyroscopes (RAIG). *Proceedings of the IEEE Conference on Multisensor Fusion and Integration for Intelligent Systems (MFI)* 2015.

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Book Chapters

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Departmental Service

- Graduate Admissions Committee, 2012-2018.

- UM Robotics Institute, Faculty Steering Committee, 2013-2017.

- Michigan Transportation Center, Faculty Advisory Committee, 2013-Present.

- Michigan Mobility Transportation Center, Steering Committee, 2012-2017.

- UM/UMTRI Faculty Search Committee, 2012-2013.

- UM Robotics Institute, Education sub-committee, 2012-Present.

- Michigan Robotics Day Organizing Committee, 2011-2012.

- Graduate Admissions and Affairs Committee: 2008, 2009, 2010, 2011.

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- US Patent 10,838,065. *Localization using 2D maps which capture vertical structures in 3D point data.* E Olson, C Kershaw. 2018.

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- US Patent App. 15/760,033. *High-performance inertial measurements using a redundant array of inexpensive inertial sensors.* J Wang, E Olson. 2018.

- US Patent App. 15/481,818. *Systems and methods for remotely controlling data collection by a vehicle.* MR James, EB Olson. 2018.

Teaching

- EECS280x, Introductory Programming and Data Structures (Experimental Section). Winter 2015

- EECS280, Introductory Programming and Data Structures. Fall 2015

- EECS467, Autonomous Robotics Laboratory. Winter 2014.

- EECS598, Autonomous Automobiles. Fall 2013.

- EECS498, Autonomous Robotics Laboratory. Winter 2013.

- EECS498, Robotics: Algorithms and Methods. Fall 2012.

- EECS498, Autonomous Robotics Laboratory. Winter 2012.

- EECS568, Robotics: Algorithms and Methods. Fall 2011.

- EECS492, Introduction to Artificial Intelligence. Winter 2010.

- EECS598, Multi-robot systems. Fall 2010.

- EECS492, Introduction to Artificial Intelligence. Winter 2011.

- EECS498, Autonomous Robotics Laboratory. *new class.* Fall 2009.

- EECS598-2, Algorithms for Robotics. *new class.* Winter 2009.

- EECS492, Introduction to Artificial Intelligence. Fall 2008.

- 6.141/6.142 (MIT) Robotics Science and Systems (Teaching Assistant). 2006.

- 6.186 (MIT), Mobile Autonomous Systems Laboratory (Founder/Instructor). IAP 1999-2004.

- 6.004 (MIT) Computation Structures (Teaching Assistant). 1999-2002.

Students Advised

PhD Students

Acshi Haggenmiller, Estimated 2022

Xipeng Wang, 2019.

Ryan Marcotte, 2019.

Dhanvin Mehta, 2018.

Markus Nemitz (Visiting student), 2018.

Rob Goeddel, 2018.

Pradeep Ranganathan, 2016.

Johannes Strom, 2015.

Andrew Richardson, 2015.

Surat Kwanmuong, 2015.

Yangming Li (Visiting student), 2010.

Postdoctoral Students

Gonzalo Ferrer, 2015-2017

Enric Galceran, 2014-2015.

Alex Cunningham, 2014-2016.

Steve Vozar, 2015-2017.

Masters Students

Maximillian Krogius, 2021

John Wang, 2017.

Sean Messenger, 2017.

Lauren Hinkle, 2017.

Carl Kershaw, 2016.

Matt Vaughan, 2015.

Ryan Morton, 2014.

Pratik Agarwal, 2012.

Additional PhD Committees

Zhiqiang Sui, 2019.

Karthik Desingh, 2019.

Collin Johnson, 2017.

Ryan Oliver (ME Department), 2013.

Steve Vozar (ME Department), 2013.

Rachael Bis (ME Department), 2012.

Masters Committee Member

Ryan Tokola (ECE), 2013.

Yoichi Okubo (ME), 2009.

Team Mentoring

2012-2017. Advisor of University of Michigan Mars Rover Team.

2010-2017. Mentor of University of Michigan Autonomous Boat (UM:Autonomy) Team.

2009-2017. Advisor of University of Michigan Autonomous Aerial Vehicle (MAAV) Team.

2008-2017. Advisor of University of Michigan/MSAIL Robo-Cup Team.