

Bradley Hayes

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Education

Yale University Doctor of Philosophy, Computer Science Committee: Brian Scassellati*, Dan Spielman, Julie Dorsey, Rod Grupen Dissertation: <i>Supportive Behaviors for Human-Robot Teaming</i> Master of Philosophy, Computer Science Master of Science, Computer Science	September 2009 – May 2016
Boston College Bachelor of Science with Honors, Computer Science Bachelor of Arts, Mathematics Concentration, Scientific Computation	September 2004 - May 2008

Professional Experience

Circadence Corporation ; Boulder, CO <i>Chief Technology Officer (Part-Time)</i>	October 2018 – Present
University of Colorado Boulder ; Boulder, CO <i>Assistant Professor, Department of Computer Science, College of Engineering and Applied Science</i> <i>Director, Collaborative AI and Robotics Lab (http://www.cairo-lab.com/)</i>	August 2017 – Present
Massachusetts Institute of Technology ; Cambridge, MA <i>Postdoctoral Associate, Interactive Robotics Group, CSAIL</i> <i>Advisor: Julie Shah</i>	October 2015 – August 2017
Yale University ; New Haven, CT <i>Research Assistant / PhD Candidate, Social Robotics Lab, Computer Science Department</i> <i>Advisor: Brian Scassellati</i>	August 2009 – October 2015
BAE Systems, Inc. Advanced Information Technology ; Burlington, MA <i>Research Engineer, Multi-Sensor Exploitation Directorate</i>	June 2008 – August 2009
Microsoft ; Redmond, WA <i>Software Development Engineer Intern - Anti-Malware Lower Engine Team</i>	June 2007 – August 2007
IBM Extreme Blue Labs ; Austin, TX <i>Extreme Blue Technical Intern</i>	June 2006 – August 2006
IBM ; Cambridge, MA <i>Software Development Engineer Intern</i>	June 2005 – August 2005

Journal Articles

- J1. A. Tabrez[†], M. Luebbbers[†], B. Hayes. (2020). A Survey of Mental Modeling Techniques in Human-Robot Teaming. Springer-Nature Current Robotics Reports. <https://doi.org/10.1007/s43154-020-00019-0>. p1-9. **(Impact Factor: N/A -- Inaugural Issue)**
- J2. M. Gombolay, J. Yang, B. Hayes, N. Seo, S. Wadhwanian, Z. Liu, T. Yu, N. Shah, T. Golen, J. Shah. (2018). Robotic Assistance in Coordination of Patient Care. International Journal of Robotics Research (IJRR). <https://doi.org/10.1177/0278364918778344>. Volume 37, Issue 10, p1300-1316. **(Impact Factor: 4.047)**

Conference Papers

- C1. B. Hayes and M. Moniz. (2020). Trustworthy Human-Centered Automation through Explainable AI and High-Fidelity Simulation. 11th International Conference on Applied Human Factors and Ergonomics (AHFE 2020). **(Invited submission)**
- C2. Tariq Iqbal, Shen Li, Christopher Fourie, Bradley Hayes, and Julie A. Shah. (2019). Fast Online Segmentation of Activities from Partial Trajectories. Proceedings of the IEEE International Conference on Robotics and Automation (ICRA 2019). **(Acceptance Rate: 46%)**
- C3. Aaqib Tabrez[†], Shivendra Agrawal[†], and Bradley Hayes. (2019). Explanation-based Reward Coaching to Improve Human Performance via Reinforcement Learning. Proceedings of the 2019 ACM/IEEE International Conference on Human Robot Interaction (HRI 2019). **(Acceptance Rate: 24%)**
- C4. C. Mueller[†], J. Venicx[†], and B. Hayes. (2018). Robust Robot Learning from Demonstration and Skill Repair Using Conceptual Constraints. 2018 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2018). **(Acceptance Rate: 45%)**
- C5. B. Hayes and J. Shah. (2017). Interpretable Models for Fast Activity Recognition and Anomaly Explanation During Collaborative Robotics Tasks. 2017 IEEE International Conference on Robotics and Automation (ICRA 2017). **(Acceptance Rate: 41%)**
- C6. B. Hayes and J. Shah. (2017). Improving Robot Controller Transparency Through Autonomous Policy Explanation. 12th ACM/IEEE International Conference on Human-Robot Interaction (HRI 2017). **(Acceptance Rate: 24%)**
- C7. M. Gombolay, J. Yang, B. Hayes, N. Seo, S. Wadhwanian, Z. Liu, T. Yu, N. Shah, T. Golen, J. Shah. (2016). Robotic Assistance in Coordination of Patient Care. Proceedings of Robotics: Science and Systems (RSS 2016). **(Acceptance Rate: 21%)**
- C8. B. Hayes and B. Scassellati. (2016). Autonomously Constructing Hierarchical Task Networks for Planning and Human-Robot Collaboration. Proceedings of 2016 IEEE International Conference on Robotics and Automation (ICRA 2016). **(Acceptance Rate: 35%)**
- C9. H. Admoni, T. Weng, B. Hayes, and B. Scassellati. (2016). Robot Nonverbal Behavior Improves Task Performance in Difficult Collaborations. Proceedings of the 11th ACM/IEEE International Conference on Human-Robot Interaction (HRI 2016) **(Acceptance Rate: 25%)**
- C10. B. Hayes and B. Scassellati. Effective Robot Teammate Behaviors for Supporting Sequential Manipulation Tasks. IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2015). **(Acceptance Rate: 45%)**
- C11. B. Rosman, B. Hayes, and B. Scassellati. Enhancing Agent Safety through Autonomous Environment Adaptation. IEEE International Conference on Development and Learning and Epigenetic Robotics (ICDL 2015). **(Acceptance Rate: Oral Presentation 28%)**
- C12. B. Hayes and B. Scassellati. Discovering Task Constraints through Observation and Active Learning. In *2014 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2014)*. Chicago, Illinois, USA, September 2014. **(Acceptance Rate: 46%)**
- C13. B. Hayes, D. Ullman, E. Alexander, C. Bank, and B. Scassellati. People Help Robots Who Help Others, Not Robots Who Help Themselves. Proceedings of the 23rd IEEE International Symposium on Robot and Human Interactive Communication. Edinburgh, Scotland, August 2014. **(Acceptance Rate: Oral Presentation 47%)**

- C14. E. Alexander, C. Bank, J.J. Yang, B. Hayes, and B. Scassellati. Asking for Help from a Gendered Robot. In *Proceedings of the 36th Annual Conference of the Cognitive Science Society (CogSci 2014)*. Quebec City, Canada, July 2014. **(Acceptance Rate: 48%)**
- C15. H. Admoni, B. Hayes, D. Feil-Seifer, D. Ullman, and B. Scassellati. Dancing With Myself: The effect of majority group size on perceptions of majority and minority robot group members. In: *M. Knauff, M. Pauen, N. Sebanz, & I. Wachsmuth (eds.), Proceedings of the 35th Annual Conference of the Cognitive Science Society (CogSci 2013)*. Austin, TX: Cognitive Science Society. Berlin, Germany, July 2013. **(Acceptance Rate: 40%)**
- C16. H. Admoni, B. Hayes, D. Feil-Seifer, D. Ullman, and B. Scassellati. Are You Looking At Me? Perception of Robot Attention is Mediated by Gaze Type and Group Size. In *Proceedings of the 8th ACM/IEEE International Conference on Human-Robot Interaction (HRI 2013)*. Tokyo, Japan, March 2013. **(Acceptance Rate: 24%)**

Tutorials

- T1. B. Hayes, E. Kamar, and M. Taylor. Interactive Machine Learning: From Classifiers to Robotics. At the 16th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2017).
- T2. B. Hayes, E. Kamar, and M. Taylor. Interactive Machine Learning: From Classifiers to Robotics. At the International Joint Conference on Neural Networks (IJCNN 2017).
- T3. B. Hayes, E. Kamar, and M. Taylor. Interactive Machine Learning: From Classifiers to Robotics. At the 31st AAAI Conference on Artificial Intelligence (AAAI 2017).

Workshop, Symposia, and Poster Papers

- W1. A. Tabrez[†], M. Luebbers[†], B. Hayes. Automated Failure-Mode Clustering and Labeling for Informed Car-To-Driver Handover in Autonomous Vehicles. ACM/IEEE HRI Workshop on Assessing, Explaining, and Conveying Robot Proficiency for Human-Robot Teaming at HRI 2020. Cambridge, UK.
- W2. C. Mueller[†] and B. Hayes. Safe and Robust Robot Learning from Demonstration through Conceptual Constraints. HRI Pioneers Workshop at HRI 2020. Cambridge, UK.
- W3. Aastha Acharya[†], Shohei Wakayama[†], Bradley Hayes, and Nisar Ahmed. Iterative Reward Learning for Robotic Exploration. AIAA Scitech 2020 Forum. Orlando, FL.
- W4. Carl Mueller[†] and Bradley Hayes. Abstract Constraints for Safe and Robust Robot Learning from Demonstration. Doctoral Consortium at the 34th AAAI Conference on Artificial Intelligence (AAAI 2020). New York, NY.
- W5. B. Hayes and K. Dores. (2019). Using Artificial Intelligence to Mitigate Cyber-Risks. International Airport Review.
- W6. Aaqib Tabrez[†] and Bradley Hayes. Improving Human-Robot Interaction through Explainable Reinforcement Learning. In Proceedings of the HRI Pioneers Workshop at the 2019 ACM/IEEE International Conference on Human Robot Interaction (HRI 2019). Daegu, South Korea.
- W7. J. Perlow, B. Rosman, B. Hayes, P. Ranchod. Raw Material Selection for Object Construction. In *Proceedings of the 28th Annual Symposium of the Pattern Recognition Association of South Africa and the 10th Robotics and Mechatronics Conference of South Africa*. 2017.
- W8. B. Hayes, M.C. Gombolay, M.F. Jung, K. Hindriks, J. de Greeff, C. Jonker, M. Neerincx, J.M. Bradshaw, M. Johnson, I. Kruijff-Korbayova, M. Sierhuis, J.A. Shah, B. Scassellati. HRI Workshop on Human-Robot Teaming. In *Proceedings of the Tenth Annual ACM/IEEE International Conference on Human-Robot Interaction Extended Abstracts*. Portland, Oregon, March 2015.
- W9. B. Hayes and B. Scassellati. Social Hierarchical Learning. In Proceedings of the AAAI 2015 Doctoral Consortium. Austin, Texas, January 2015.
- W10. B. Scassellati and B. Hayes. Human-robot collaboration. *AI Matters* 1, 2 (December 2014), 22-23.
- W11. B. Hayes and B. Scassellati. Developing Effective Robot Teammates for Human-Robot Collaboration. In Proceedings of the "Artificial Intelligence and Human-Robot Interaction" (AI-HRI) Fall Symposium. Arlington, Virginia, November 2014
- W12. B. Hayes, E.C. Grigore, A. Litoiu, A. Ramachandran, B. Scassellati. A Developmentally Inspired Transfer Learning Approach for Predicting Skill Durations. In *Proceedings of the 4th joint IEEE International Conference on Development and Learning and Epigenetic Robotics*. (ICDL 2014).
- W13. B. Hayes and B. Scassellati. Social Hierarchical Learning: Enabling Human-Robot Teamwork. Poster and interactive demonstration in the "Robotics Exhibition" at CogSci/AAAI 2014. Quebec City, Canada, July 2014.
- W14. B. Hayes and B. Scassellati. Online Development of Assistive Robot Behaviors for Collaborative Manipulation and Human-Robot Teamwork. *Proceedings of the "Machine Learning for Interactive Systems" (MLIS) Workshop at AAAI 2014*. Quebec City, Canada, July 2014.
- W15. B. Hayes and B. Scassellati. Improving Implicit Communication In Mixed Human-Robot Teams With Social Force Detection. In *Proceedings of the 3rd joint IEEE International Conference on Development and Learning and Epigenetic Robotics*. Osaka, Japan, August 2013.
- W16. B. Hayes and B. Scassellati. Challenges in Shared-Environment Human-Robot Collaboration. In *Proceedings of the "Collaborative Manipulation" Workshop at HRI 2013*. Tokyo, Japan, March 2013.
- W17. B. Hayes and B. Scassellati. Social Hierarchical Learning. In: *Proceedings of the "HRI Pioneers" Workshop at HRI 2013*. Tokyo, Japan, March 2013.

Honors and Awards

- **Best Paper Finalist**, Technical Advances, ACM/IEEE International Conference on Human-Robot Interaction, 2019.
- GRAKN.AI Top 5 Breakthroughs in Deep Learning in 2016.
- ACM Dissertation Award Nominee for Yale University, 2015.
- Yale University Kempner Fellowship. September 2014 – August 2015.
- **Best Paper Finalist**, RSJ/KROS Distinguished Interdisciplinary Research Award, RO-MAN 2014.
- US Patent # [7877700](#) -- “Adding accessibility to drag-and-drop web content”, 2009.
- The Accenture Award for outstanding performance in Computer Science, Boston College, 2008.

Invited Panels and Talks

- **Workshop on Humans, Machines, and Experimental Social Science (HUMANESS)**, hosted by NYUAD. September 2020. (Postponed)
- **Plenary Speaker at the South American Business Forum**, hosted in Buenos Aires, Argentina. July 31, 2020. (Postponed)
- **“AI & Trust” at the Applied Machine Learning Days Conference** hosted at EPFL. January 28, 2020.
- **University of Colorado Boulder, Institute of Cognitive Science Colloquium Series**. Dec. 6, 2019.
- **University of Washington, “Explainable AI for Establishing Shared Expectations During Human-Robot Collaboration”**, Nov. 8, 2019.
- **Panelist, AI Los Angeles event on AI, Cybersecurity, and Privacy at the Cedars-Sinai Accelerator**. November 21, 2019.
- **ANIMATAS Project Winter School Keynote Speaker**, Paris, France. November 20, 2019.
- **TEDxMileHigh Humankind, “Can we trust artificial intelligence to make decisions for us?”**, June 22, 2019.
- **Panelist, Silicon Flatirons Panel on Explainable Artificial Intelligence in Boulder, CO**. May 3, 2019.
- **Panelist, AFCEA Homeland Security Conference panel on “Technology Solutions to Enhance Critical Infrastructure Protection and Incident Response around the Nation” in Washington, DC**. April 23, 2019.
- **IEEE-RAS Spring School on Social and Artificial Intelligence for User-Friendly Robots**, March 20, 2019.
- **United Technologies Research Center, “Explainable AI for Human-Robot Collaboration”**, December 3, 2018.
- **TEDxMileHigh Adventure, “Intelligent Robotics: Building Our Future Autonomous Teammates”**, October 11, 2018.
- **Global Conference on Educational Robotics, Keynote**, July 28, 2018.
- **Boulder Startup Week, “State of Robotics in Colorado” Panel**. May 17, 2018.
- **Conference on World Affairs, “Dreams of a Digitized Humanity: AI” Panel and Demonstration**. April 13, 2018.
- **Boulder is for Robots Seminar**. Mar 15th, 2018.
- **HRI 2018 Workshop on “Explainable Robot Behaviors”**. Mar 5th, 2018.
- **British Machine Vision Association meeting on “Cognitively inspired explainable perception-based AI”**. Feb 7th, 2018.
- **Brown University Humanity Centered Robotics Initiative Seminar Series**. November 8th, 2017.
- **Yale University Computer Science Seminar Series**. November 2nd, 2017.
- **IROS Workshop on Human-Robot Interaction in Collaborative Manufacturing Environments**. September 24th, 2017.
- **3rd Summer School on Social Human-Robot Interaction**. September 7, 2017.
- **University of Oxford**. April 28, 2017.
- **University of New Hampshire**. April 21, 2017.
- **Boston University**. April 3, 2017.
- **Stanford University**. March 16, 2017.
- **University of California Berkeley**. March 15, 2017.
- **Oregon State University**. March 13, 2017.
- **Cornell University**. March 3, 2017.
- **Northeastern University**. March 1, 2017.
- **Tufts University**. February 27, 2017.
- **University of Colorado Boulder**. February 23, 2017.
- **UC Berkeley / INRIA Paris: “Algorithms for Human-Robot Interaction” Workshop**. July 21, 2016.
- **University of Massachusetts, Amherst**. April 14, 2016.
- **Vicarious**. March 22, 2016.
- **Oregon State University**. November 17, 2015.
- **Joint Strike Fighter Joint Program Office**. November 13, 2015.
- **Cornell University**. April 3, 2015.
- **Worcester Polytechnic Institute**. November 21, 2014.
- **University of Edinburgh**. August 27, 2014.

Teaching Experience

University of Colorado Boulder --- CSCI 3302 "Introduction to Robotics"

Fall 2017: 30 Students (FCQs: Course 5.3, Instructor: 5.9)
Fall 2018: 61 Students (FCQs: Course 5.4, Instructor: 5.8)
Fall 2019: 65 Students (FCQs: Course 5.0, Instructor: 5.5)
Fall 2020: 65 Students

University of Colorado Boulder --- CSCI 4302/5302 "Advanced Robotics"

Fall 2020: 48 Students

University of Colorado Boulder --- CSCI 7000 "Algorithmic Human-Robot Interaction"

Spring 2018: 12 Students (FCQs: Course 5.6, Instructor: 5.9)
Spring 2019: 13 Students (FCQs: Course 5.6, Instructor: 5.7)
Spring 2020: 20 Students (FCQs: Not Available)

Guest Lecturer

University of Colorado Boulder, CSCI 5622 – Machine Learning

University of Colorado Boulder, CSCI 3002 – Human-Computer Interaction

Massachusetts Institute of Technology, 16.422J -- Human Supervisory Control of Automated Systems

Worcester Polytechnic Institute, RBE526 – Human Robot Interaction

Grants and Funding

Awarded:

PI: "Life-long Learning for Motion Planning in Human Populated Environments" Co-PI: Christoffer Heckman, University of Colorado Boulder National Science Foundation: National Robotics Initiative (NSF NRI)	\$749,094 Sept 2018 – Aug 2021 Submitted 2/2018
PI: "Opportunistic Planning for Emergent Capability in Dynamic Human-Robot Teams" Army Research Laboratory: Strengthening Teamwork for Robust Operations in Novel Groups	\$99,938 May 2020 – May 2021 Submitted 12/2019
PI: "Physiologically Informed Adaptive Communication for Resilient Human-Agent Teaming" Co-PI: Stephen Gordon, DCS Corporation Army Research Laboratory: Strengthening Teamwork for Robust Operations in Novel Groups	\$1,474,394 Jan 2021 - Dec 2023 Submitted 08/2020

Pending:

PI: "Policy Explanation for Transparent Robot Learning and Safe Human-Robot Collaboration" Office of Naval Research	\$506,633 Submitted 8/2019
PI: "The Role of Justification in Mediating Trust and Influence Within Human-Machine Teams" Air Force Office of Scientific Research: Young Investigator Program	\$448,795 Submitted 7/2020

Declined:

PI: "CHS: Small: Policy Explanation for Human-Robot Collaboration" National Science Foundation: Cyber-Human Systems	\$499,795 Submitted 11/2017
Co-PI: "Learning Performance Models and Tactical Knowledge for Continuous Mission Planning" PI: Orbit Logic Inc. Department of Defense SBIR	\$74,213 Submitted 2/2018
Co-PI: "Dynamic Semantic Communications and Reasoning for Collaborative Decision-Making" PI: Nisar Ahmed, University of Colorado Boulder Co-PI: Danielle Szafir, University of Colorado Boulder	\$1,900,000 Submitted 5/2018

Co-PI: Mark Campbell, Cornell University
Office of Naval Research

Co-PI: "Collaborative Research: Robotic Cognitive Assistants to Support Design Work in Teams" PI: Malte Jung, Cornell University Co-PI: Daniel Szafr, University of Colorado Boulder National Science Foundation: Future of Work at the Human-Technology Frontier	\$1,050,641 Submitted 6/2018
PI: "CRII: CHS: Moving Beyond Scalar Loss Functions to Establish Shared Values in Human-Robot Collaboration" National Science Foundation: CISE Research Initiation Initiative (CRII)	\$174,960 Submitted 8/2018
Co-PI: "Juniper Program Solicitation" PI: Stratagem Group Space Missiles Command (SMC) Remote Sensing Directorate (SMC/RS)	\$384,000 Submitted 9/2018
Co-PI: "Ponderosa Program Solicitation" PI: Stratagem Group Space Missiles Command (SMC) Remote Sensing Directorate (SMC/RS)	\$677,000 Submitted 9/2018
PI: "CHS: Small: Policy Explanation for Human-Robot Collaboration" National Science Foundation: Cyber-Human Systems	\$500,000 Submitted 11/2018
PI: "NRI: FND: Safe and Flexible Robot Manipulation through Constraint-Aware Learning from Demonstration" Co-PI: Alessandro Roncone, University of Colorado Boulder	\$750,000 Submitted 2/2019
PI: "Communication and Interaction Design for Managing and Coordinating Human-Robot Teams" Co-PI: Nikolaus Correll, University of Colorado Boulder National Science Foundation: Future of Work at the Human-Technology Frontier	\$1,497,877 Submitted 3/2020

Academic Service, Memberships, and Public Outreach

University Service

- Departmental Service
 - Machine Learning Search Committee. F2019 – S2020
 - Graduate Program Committee (GradComm). F2017 – S2020
 - Undergraduate Program Committee. F2020 - Present
 - Instructor Search Committee. F2020 - S2021

National Service

- U.S. Department of Commerce "Emerging Technologies Technical Advisory Committee". S2020 - Present

External Service

- Grant Review:
 - National Science Foundation (RI, NRI, CRII, S&AS, FW-HTF, SBIR)
 - AI Singapore Research Programme (2019)
 - Vrije Universiteit Brussel Interdisciplinary Research Programmes (2019)
 - NRF South Africa (Thuthuka 2018)
 - Ontario Research Fund (2017)
- Journal Leadership:
 - Associate Editor, ACM Transactions on Human-Robot Interaction, 2018-Present
 - Editor, ACM Transactions on Human-Robot Interaction Special Issue on AI-HRI, 2018.
 - Associate Editor, IEEE International Conference on Intelligent Robots and Systems, 2016.
 - Associate Editor, IEEE International Symposium on Robot and Human Interactive Communication, 2016.
- Conference and Workshop Leadership:
 - Program Committee, AAAI Special Programs and Tracks, 2021
 - Local Arrangements Chair, ACM/IEEE International Conference on Human-Robot Interaction, 2021
 - Program Committee, ACM/IEEE International Conference on Human-Robot Interaction, 2021
 - Sponsorship Chair, International Conference on Social Robotics (ICSR), 2020

- Publicity Chair, IEEE Conference on Robot-Human Communication (RO-MAN), 2020
- Organizing Committee, “Solutions for socially intelligent HRI in real-world scenarios” workshop, RO-MAN 2020.
- Area Chair, 32nd AAAI Conference on Artificial Intelligence, 2018.
- Organizing Committee, AAAI Fall Symposium on "Interactive Learning for AI-HRI", 2018.
- Organizing Committee, HRI Workshop on Longitudinal Human-Robot Teaming, 2018.
- Organizing Committee, AAAI Fall Symposium on “Human-Agent Groups”, 2017.
- Senior Program Committee, International Joint Conference on Artificial Intelligence, 2017.
- Program Committee, 31st AAAI Conference on Artificial Intelligence, 2017.
- Program Committee, ACM/IEEE International Conference on Human-Robot Interaction, 2017.
- Organizing Committee, AAAI Fall Symposium on “AI for Human-Robot Interaction”, 2016.
- Program Committee, IJCAI Workshop on Interactive Machine Learning, 2016.
- Program Committee, International Joint Conference on Artificial Intelligence, 2016.
- Program Committee, AAAI Robotics Fellowship Program, 2016.
- Program Committee, Human-Robot Interaction Pioneers Workshop, 2016.
- Program Committee, ACM/IEEE International Conference on Human-Robot Interaction, 2016.
- General Chair, AAAI Fall Symposium on “AI for Human-Robot Interaction”, 2015.
- General Chair, Human Robot Teaming Workshop at HRI 2015.
- Program Committee Chair, Human-Robot Interaction Pioneers Workshop, 2014.
- Journal Reviewing:
 - Frontiers Robotics and AI
 - Mechatronics
 - Journal of Autonomous Agents and Multi-Agent Systems.
 - Robotics and Automation Letters.
 - International Journal of Robotics Research.
 - International Journal of Robotics Research: Special Issue on HRI.
 - ACM Transactions on Interactive Intelligent Systems.
 - Journal of Human-Robot Interaction.
 - IEEE Transactions on Human-Machine Systems
 - Autonomous Robots.
 - Robotics and Computer-Integrated Manufacturing.
- Conference Reviewing:
 - ACM/IEEE International Conference on Human-Robot Interaction (HRI)
 - Robotics: Science and Systems (RSS)
 - IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
 - IEEE International Conference on Robotics and Automation (ICRA)
 - Neural Information Processing Systems (NeurIPS)
 - Conference on Robot Learning (CoRL)
 - AAAI Conference on Artificial Intelligence (AAAI)
 - International Joint Conference on Artificial Intelligence (IJCAI).
 - Autonomous Agents and Multi-Agent Systems (AAMAS).
 - IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN).
 - IEEE-RAS International Conference on Humanoid Robots (Humanoids).
 - IEEE International Conference on Development and Learning and Epigenetic Robotics (ICDL-EPIROB)
- Outreach:
 - TEDxMileHigh Speaker and Adventure Host. 2019.
 - Conference on World Affairs Panelist 2018.
 - Invited Public Science Q&A for Reddit.com on Human-Robot Collaboration and AI (front page, 45k views). 2016.
 - International charity drive benefiting GirlsWhoCode. 2016.
 - HackCU Hackathon Mentor, Boulder, CO, 2018.
 - HackMIT International Hackathon Mentor, Cambridge, MA 2016.
 - Boston Museum of Science Podcast. 2016.
 - MIT Centennial Open House Organizer and Exhibitor, Cambridge, MA 2016.
 - World Science Festival Exhibitor, New York City, NY, 2014.

Advising and Student Mentoring

• Kayleigh Bishop	University of Colorado Boulder	(PhD Thesis Advisor)	Fall 2020 – Present
• Maria Stull	University of Colorado Boulder	(PhD Thesis Advisor)	Fall 2020 – Present
• Clare Lohrmann	University of Colorado Boulder	(PhD Thesis Advisor)	Fall 2020 – Present
• Yi-Shiuan Tung	University of Colorado Boulder	(PhD Thesis Advisor)	Fall 2020 – Present
• Shivendra Agrawal	University of Colorado Boulder	(PhD Thesis Advisor)	Summer 2019 – Present
• Christine Chang	University of Colorado Boulder	(PhD Thesis Advisor)	Summer 2019 – Present
• Aaqib Tabrez	University of Colorado Boulder	(PhD Thesis Advisor)	Fall 2018 – Present
• Matthew Luebbers	University of Colorado Boulder	(PhD Thesis Advisor)	Fall 2018 – Present
• Carl Mueller	University of Colorado Boulder	(PhD Thesis Advisor)	Spring 2018 – Present
• Jeff Venix	University of Colorado Boulder	(MS Thesis Advisor)	Spring 2018 – Spring 2020
• Jack Kawell	University of Colorado Boulder	(MS Thesis Advisor)	Fall 2018 – Spring 2020
• Heather Hava	University of Colorado Boulder	(PhD Committee)	2020
• Andrew Kramer	University of Colorado Boulder	(PhD Committee)	2020
• Luke Burks	University of Colorado Boulder	(PhD Committee)	2019
• Mike Kasper	University of Colorado Boulder	(PhD Committee)	2019
• John Stechschulte	University of Colorado Boulder	(PhD Committee)	2019
• Brett Israelson	University of Colorado Boulder	(PhD Committee)	2019
• Radhen Patel	University of Colorado Boulder	(PhD Committee)	2019
• Steven McGuire	University of Colorado Boulder	(PhD Committee)	2019
• Sina Aghli	University of Colorado Boulder	(PhD Committee)	2018
• Fernando Noble	University of Colorado Boulder	(PhD Committee)	2018
• Yash Gandhi	University of Colorado Boulder	(MS Committee)	2020
• Jeremy Muesing	University of Colorado Boulder	(MS Committee)	2019
• Austin Whitesell	Oregon State University	(MS Committee)	2018
• Jason Perlow	University of the Witwatersrand	(MS Committee)	2018
• Yuki Wu	University of Colorado Boulder	(MS Committee)	Fall 2018 – Spring 2019
• Xinyu Cao	University of Colorado Boulder	(Undergraduate + MS)	Spring 2019 – Present
• Max Schwarz	University of Colorado Boulder	(Undergraduate + MS)	Fall 2018 – Spring 2020
• Liam Merz Hoffmeister	University of Colorado Boulder	(Undergraduate)	2019
• Lara Chunko	University of Colorado Boulder	(Undergraduate)	Fall 2019 – Present
• Tim Euken	University of Colorado Boulder	(Undergraduate)	Fall 2018 – Present
• Sumeet Batra	University of Colorado Boulder	(Undergraduate)	Fall 2017 – Spring 2020