

# Bradley Hayes

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## Education

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

## Professional Experience

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

## Journal Articles

- J1. A. Pasricha<sup>†</sup>, Y. Tung<sup>†</sup>, B. Hayes, A. Roncone. (2022). PokeRRT: Poking as a Skill and Failure Recovery Tactic for Planar Non-Prehensile Manipulation. IEEE Robotics and Automation Letters. **(Impact Factor: 3.741)**
- J2. A. Tabrez<sup>†</sup>, M. Luebbers<sup>†</sup>, 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)**
- J3. 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. C. Chang<sup>†</sup>, M. Luebbers<sup>†</sup>, M. Herbert, and B. Hayes. (2023). Human Non-Compliance with Robot Spatial Ownership Communicated via Augmented Reality: Implications for Human-Robot Teaming Safety. International Conference on Robotics and Automation. (ICRA 2023). **(Acceptance Rate: 42%)**
- C2. S. Agrawal<sup>†</sup>, S. Nayak<sup>†</sup>, A. Naik<sup>†</sup>, and B. Hayes. (2023). ShelfHelp: Empowering Humans to Perform Vision-Independent Manipulation Tasks with a Socially Assistive Robotic Cane. International Conference on Autonomous Agents and Multi-agent Systems. (AAMAS 2023). **(Acceptance Rate: 23%)**
- C3. S. Agrawal<sup>†</sup>, M. West<sup>†</sup>, and B. Hayes. (2022). A Novel Perceptive Robotic Cane with Haptic Navigation for Enabling Vision-Independent Participation in the Social Dynamics of Seat Choice. IEEE International Conference on Intelligent Robots and Systems (IROS 2022). **(Acceptance Rate: 48%)**
- C4. Y. Tung<sup>†</sup>, K. Bishop<sup>†</sup>, B. Hayes, and A. Roncone. (2022). Bilevel Optimization for Just-in-Time Robotic Kitting and Delivery via Adaptive Task Segmentation and Scheduling. 31st IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN 2022). Naples, Italy, August 2022. **(Acceptance Rate: 64%)**
- C5. H. Gupta<sup>†</sup>, B. Hayes, Z. Sunberg. (2022). Intention-aware Navigation in Crowds with Extended-Space POMDP Planning. International Conference on Autonomous Agents and Multi-agent Systems (AAMAS 2022). **(Acceptance Rate: 26%)**
- C6. M. Luebbers<sup>†</sup>, A. Tabrez<sup>†</sup>, B. Hayes. (2022). Descriptive and Prescriptive Visual Guidance to Improve Shared Situational Awareness in Human-Robot Teaming. International Conference on Autonomous Agents and Multi-agent Systems (AAMAS 2022). **(Acceptance Rate: 26%)**
- C7. A. Tabrez<sup>†</sup>, J. Kawell<sup>†</sup>, B. Hayes. (2021). Asking the Right Questions: Facilitating Semantic Constraint Specification for Robot Skill Learning and Repair. IEEE International Conference on Intelligent Robots and Systems (IROS 2021). **(Acceptance Rate: 45%)**
- C8. M. Luebbers<sup>†</sup>, C. Brooks<sup>†</sup>, C. Mueller<sup>†</sup>, D. Szafir, B. Hayes. (2021). ARC-LfD: Using Augmented Reality for Interactive Long-term Robot Skill Maintenance via Constrained Learning from Demonstration. IEEE International Conference on Robotics and Automation (ICRA 2021). **(Acceptance Rate: 48%)**
- C9. 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)**
- C10. 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%)**
- C11. Aaqib Tabrez<sup>†</sup>, Shivendra Agrawal<sup>†</sup>, 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%)**

- C12. C. Mueller<sup>†</sup>, J. Venicx<sup>†</sup>, 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%)**
- C13. 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%)**
- C14. 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%)**
- C15. M. Gombolay, J. Yang, B. Hayes, N. Seo, S. Wadhwanja, 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%)**
- C16. 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%)**
- C17. 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%)**
- C18. 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%)**
- C19. 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%)**
- C20. 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%)**
- C21. 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%)**
- C22. 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%)**
- C23. 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%)**
- C24. 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. E. Jensen, B. Hayes, and S. Sankaranarayanan. 2023. More Than a Number: A Multi-dimensional Framework For Automatically Assessing Human Teleoperation Skill. In Late-Breaking Reports at the ACM/IEEE International Conference on Human-Robot Interaction (HRI 2023). Stockholm, Sweden.
- W2. S. Agrawal and B. Hayes. 2022. ShelfHelp: Empowering Humans to Perform Vision-Independent Manipulation Tasks with a Socially Assistive Robotic Cane. In the Social and Cognitive Interactions for Assistive Robotics Workshop at the IEEE International Conference on Intelligent Robots and Systems (IROS 2022). Kyoto, Japan.
- W3. A. Tabrez and B. Hayes. 2022. Mediating Trust and Influence in Human-Robot Interaction via Explainable AI. RSS Pioneers Workshop at Robotics: Science and Systems (RSS 2022). New York City, NY, USA.
- W4. M. Luebbers, A. Tabrez, and B. Hayes. 2022. Augmented Reality-Based Explainable AI Strategies for Establishing Appropriate Reliance and Trust in Human-Robot Teaming. Workshop on on Virtual, Augmented, and Mixed Reality for Human-Robot Interaction at the ACM/IEEE International Conference on Human-Robot Interaction (HRI 2022). Virtual.
- W5. A. Pasricha, Y. Tung, B. Hayes, and A. Roncone. 2021. PokeRRT: A Kinodynamic Planning Approach for Poking Manipulation. Workshop on Impact-Aware Robotics at IROS 2021. Virtual.
- W6. C. Mueller<sup>†</sup>, A. Tabrez<sup>†</sup>, B. Hayes. 2021. Robot Behavior Counterfactuals for Interactive Constrained Learning from Demonstration. Workshop on “Accessibility of Robot Programming and Work of the Future” at RSS 2021. Virtual.
- W7. C. Chang<sup>†</sup>, J. Dixon<sup>†</sup>, M. Luebbers<sup>†</sup>, A. Tabrez<sup>†</sup>, B. 2021. Hayes. Emerging Autonomy Solutions for Human and Robotic Deep Space Exploration. SpaceCHI Workshop at CHI 2021. Virtual.
- W8. Kaleb Bishop<sup>†</sup>, B. Hayes, A. Roncone. 2021. Teaching Grounded Reading Skills via an Interactive Robot Tutor. Workshop on Robots for Learning – Learner-Centered Design at HRI 2021. Virtual.
- W9. A. Tabrez<sup>†</sup>, M. Luebbers<sup>†</sup>, B. Hayes. 2020. 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.
- W10. C. Mueller<sup>†</sup> and B. Hayes. 2020. Safe and Robust Robot Learning from Demonstration through Conceptual Constraints. HRI Pioneers Workshop at HRI 2020. Cambridge, UK.
- W11. Aastha Acharya<sup>†</sup>, Shohei Wakayama<sup>†</sup>, Bradley Hayes, and Nisar Ahmed. 2020. Iterative Reward Learning for Robotic Exploration. AIAA Scitech 2020 Forum. Orlando, FL.
- W12. Carl Mueller<sup>†</sup> and Bradley Hayes. 2020. Abstract Constraints for Safe and Robust Robot Learning from Demonstration. Doctoral Consortium at the 34<sup>th</sup> AAAI Conference on Artificial Intelligence (AAAI 2020). New York, NY.
- W13. B. Hayes and K. Does. 2019. Using Artificial Intelligence to Mitigate Cyber-Risks. International Airport Review.
- W14. Aaqib Tabrez<sup>†</sup> and Bradley Hayes. 2019. 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.
- W15. J. Perlow, B. Rosman, B. Hayes, P. Ranchod. 2017. Raw Material Selection for Object Construction. In *Proceedings of the 28<sup>th</sup> Annual Symposium of the Pattern Recognition Association of South Africa and the 10th Robotics and Mechatronics Conference of South Africa*.
- W16. 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. 2015. HRI Workshop on Human-Robot Teaming. In *Proceedings of the Tenth Annual ACM/IEEE International Conference on Human-Robot Interaction Extended Abstracts*. Portland, Oregon.
- W17. B. Hayes and B. Scassellati. 2015. Social Hierarchical Learning. In Proceedings of the AAAI 2015 Doctoral Consortium. Austin, Texas.

- W18. B. Scassellati and B. Hayes. 2014. Human-robot collaboration. *AI Matters* 1, 2 (December 2014), 22-23.
- W19. B. Hayes and B. Scassellati. 2014. Developing Effective Robot Teammates for Human-Robot Collaboration. In Proceedings of the "Artificial Intelligence and Human-Robot Interaction" (AI-HRI) Fall Symposium. Arlington, Virginia.
- W20. B. Hayes, E.C. Grigore, A. Litoiu, A. Ramachandran, B. Scassellati. 2014. 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).
- W21. B. Hayes and B. Scassellati. 2014. Social Hierarchical Learning: Enabling Human-Robot Teamwork. Poster and interactive demonstration in the "Robotics Exhibition" at CogSci/AAAI 2014. Quebec City, Canada.
- W22. B. Hayes and B. Scassellati. 2014. 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.
- W23. B. Hayes and B. Scassellati. 2013. 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.
- W24. B. Hayes and B. Scassellati. 2013. Challenges in Shared-Environment Human-Robot Collaboration. In *Proceedings of the "Collaborative Manipulation" Workshop at HRI 2013*. Tokyo, Japan, March 2013.
- W25. B. Hayes and B. Scassellati. 2013. Social Hierarchical Learning. In: *Proceedings of the "HRI Pioneers" Workshop at HRI 2013*. Tokyo, Japan.

## Honors and Awards

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- **CEAS Textbook Recognition Award** for "Introduction to Autonomous Robots: Mechanisms, Sensors, Actuators, and Algorithms", University of Colorado Boulder, 2022
- **Peebles Innovation in Education Award Finalist**, University of Colorado Boulder, 2022.
- **Best Paper with Student Lead Author Runner-up**, International Conference on Autonomous Agents and Multi-agent Systems, 2022.
- **Outstanding Faculty Mentor Award**, University of Colorado Boulder, 2021.
- **Best Paper Runner-up**, 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

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- **Talking Robotics, Invited Talk, March 2023.**
- **St. Edwards University, Keynote Speaker, Spring Event: "AI and it's DEI/ethical Implications". March 2023.**
- **Reinforcement Learning meets HRI, Control, and Formal Methods Workshop at IROS 2022, "Making Capable Human-Robot Teams through Reinforcement Learning and Multimodal Communication", October 2022.**
- **AIAA-ATS, "The future of In-space Manufacturing: Robotics and AI", September 2022.**
- **Alberta Machine Intelligence Institute, "Human-Robot Teaming", May 2022.**
- **National Science Foundation: National Robotics Initiative Annual Meeting, Long Talk. April 2022.**
- **University of Southern California, "Human-robot teaming is a lot less dangerous with communication: Improving Human-Robot Teaming Performance in Partially Observable Environments with Augmented Reality", April 2022.**
- **University of Wisconsin-Madison, "Multi-Modal Communication is All You Need", May 2021.**
- **University of Delaware, "The Critical Role of Shared Situational Awareness in Collaborative Robotics", April 2021.**
- **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 15<sup>th</sup>, 2018.
- HRI 2018 Workshop on "Explainable Robot Behaviors". Mar 5<sup>th</sup>, 2018.
- British Machine Vision Association meeting on "Cognitively inspired explainable perception-based AI". Feb 7<sup>th</sup>, 2018.
- Brown University Humanity Centered Robotics Initiative Seminar Series. November 8<sup>th</sup>, 2017.
- Yale University Computer Science Seminar Series. November 2<sup>nd</sup>, 2017.
- IROS Workshop on Human-Robot Interaction in Collaborative Manufacturing Environments. September 24<sup>th</sup>, 2017.
- 3<sup>rd</sup> 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

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### 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 (FCQs: Not Available)  
 Fall 2021: 140 Students

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

Fall 2020: 48 Students (FCQs: Not Available)  
 Fall 2021: 31 Students  
 Spring 2023: 65 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

University of Delaware, CISC4/667 - Computing for Social Good

## Grants and Funding

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### Awarded:

PI: "Natural Language Constraint-based Learning from Demonstration" Autonomous Systems Interdisciplinary Research Theme	\$11,849 Mar 2018 - Dec 2018
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
PI: "Opportunistic Planning for Emergent Capability in Dynamic Human-Robot Teams" Strengthening Teamwork for Robust Operations in Novel Groups Army Research Laboratory	\$99,938 May 2020 – May 2021
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
PI: "Actuated Assistive Smart Cane for the Visually Impaired" Autonomous Systems Interdisciplinary Research Theme	\$24,204 May 2021 - Aug 2021
Co-PI: "Policy Learning for Optimal Teaming via TF-Conditioned Metalearning (PLOT-Meta)" PI: Alessandro Roncone Army Research Laboratory	\$1,999,884 Oct 2021 - Dec 2026
PI: "Deep Reinforcement Learning (DRL) Enabled Warfighter Assistant" DoD Missile Defense Agency STTR Subcontractor of Toyon Corporation (Lead Institute)	\$45,000 Nov 2022 - May 2023

### In Submission:

Co-PI: "Leveraging the Default Mode Network-Reward Circuitry to Build Neuro-Inspired Agents for Enhanced Human-Machine Teaming" PI: Leanne Hirschfield, University of Colorado Boulder Co-PI: Alessandro Roncone, University of Colorado Boulder Co-PI: Marta Ceko, University of Colorado Boulder Co-PI: Sidney D'Mello, University of Colorado Boulder Co-PI: Vasileios Maroulas, University of Tennessee	\$1,500,000 Submitted 1/2023
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## Academic Service, Memberships, and Public Outreach

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### National Service

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

### University Service

- College Service
  - Co-Director, Autonomous Systems Interdisciplinary Research Theme F2021 - F2022
- Departmental Service

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

## External Service

- Grant Review:
  - Canadian Foundation for Innovation and FRQNT, John R. Evans Leaders Fund (2023)
  - 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.
- Conference and Workshop Leadership:
  - Program Committee, ACM/IEEE International Conference on Human-Robot Interaction, 2022
  - Associate Editor, ICRA 2022
  - Program Committee, AAAI Workshop on Interactive Machine Learning
  - Associate Editor, IROS 2021
  - 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, 32<sup>nd</sup> 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, 31<sup>st</sup> 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.
  - Associate Editor, IEEE International Conference on Intelligent Robots and Systems, 2016.
  - Associate Editor, IEEE International Symposium on Robot and Human Interactive Communication, 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)
- Ubiquitous Robotics (2021)
- Outreach:
  - FOX 31 KDVR Feature: CU students developing 'smart cane' to help visual impairment. 2023.
  - Amazon re:MARS Featured Academic Research Group. 2022.
  - 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

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• Breanne Crockett	University of Colorado Boulder	(PhD Thesis Advisor)	Fall 2022 – Present
• Emily Jensen	University of Colorado Boulder	(PhD Thesis Co-Advisor)	Summer 2021 – Present
• Kayleigh Bishop	University of Colorado Boulder	(PhD Thesis Co-Advisor)	Fall 2020 – Present
• Maria Stull	University of Colorado Boulder	(PhD Thesis Advisor)	Fall 2020 – Present
• Clare Lohrmann	University of Colorado Boulder	(PhD Thesis Co-Advisor)	Fall 2020 – Present
• Yi-Shiuan Tung	University of Colorado Boulder	(PhD Thesis Co-Advisor)	Fall 2020 – Present
• Himanshu Gupta	University of Colorado Boulder	(PhD Thesis Co-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
• Xinyu Cao	University of Colorado Boulder	(MS Thesis Advisor)	Fall 2020 – Fall 2021
• Jeff Venicx	University of Colorado Boulder	(MS Advisor)	Spring 2018 – Spring 2020
• Jack Kawell	University of Colorado Boulder	(MS Advisor)	Fall 2018 – Spring 2020
• Camden Elliott-Williams	University of Colorado Boulder	(PhD Committee)	2023
• Le Hoang Truong	University of Colorado Boulder	(PhD Committee)	2022
• Nick Conlon	University of Colorado Boulder	(PhD Committee)	2022
• Connor Brooks	University of Colorado Boulder	(PhD Committee)	2022
• Shohei Wakayama	University of Colorado Boulder	(PhD Committee)	2022
• Hoang Truong	University of Colorado Boulder	(PhD Committee)	2022
• Sarah Aguasvivas-Manzano	University of Colorado Boulder	(PhD Committee)	2022
• Michael Iuzzolino	University of Colorado Boulder	(PhD Committee)	2022
• Shruthi Sukumar	University of Colorado Boulder	(PhD Committee)	2022
• Hooman Hedayati	University of Colorado Boulder	(PhD Committee)	2021
• Carlos Pinedo	University of Colorado Boulder	(PhD Committee)	2021
• Andrew Kramer	University of Colorado Boulder	(PhD Committee)	2021
• Heather Hava	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
• Scott Scheraga	University of Colorado Boulder	(MS Committee)	2021
• 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
• 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 – Spring 2020
• Sumeet Batra	University of Colorado Boulder	(Undergraduate)	Fall 2017 – Spring 2020