

# Dylan P. Losey

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<b>Research Interests</b>	Human-robot interaction, machine learning, and control theory, with applications in personal and assistive robots.	
<b>Current Position</b>	<b>Virginia Tech</b> Assistant Professor Department of Mechanical Engineering	August 2020 – Present
<b>Education</b>	<b>Stanford University</b> Postdoctoral Scholar in Computer Science Advisor: Dorsa Sadigh	2019 – 2020
	<b>Rice University</b> Ph.D. in Mechanical Engineering M.S. in Mechanical Engineering Dissertation: <i>Responding to Physical Human-Robot Interaction</i> Advisor: Marcia K. O'Malley	2018 2016
	<b>Vanderbilt University</b> B.E. in Mechanical Engineering	2014
<b>Honors &amp; Awards</b>	IEEE/RSJ International Conference on Intelligent Robots and Systems Best RoboCup Paper Award, Finalist	2021
	Conference on Robot Learning Best Paper Award	2020
	Robotics: Science and Systems Best Student Paper Award, Finalist	2020
	ACM/IEEE International Conference on Human-Robot Interaction Best Paper Award, Honorable Mention	2020
	Rice University, Department of Mechanical Engineering Outstanding Ph.D. Thesis Award	2019
	IEEE/ASME Transactions on Mechatronics Best Paper Award	2017
	IEEE Conference on Biomedical Robotics and Biomechatronics Best Student Paper Award, Finalist	2016

	National Science Foundation Graduate Research Fellowship	2014
	Rice University Graduate Research Fellowship	2014
	Vanderbilt University Dynamics & Controls Award	2014
	Vanderbilt University Cornelius Vanderbilt Scholarship	2010
<b>Teaching</b>	<b>ME 4824: Introduction to Human-Robot Interaction</b> Course Developer and Instructor, Virginia Tech	Spring 2022
	<b>ME 5824 / CS 5844: Algorithmic Human-Robot Interaction</b> Course Developer and Instructor, Virginia Tech	Spring 2022
	<b>ME 4524: Robotics and Automation</b> Instructor, Virginia Tech	Spring 2021, Fall 2021, Fall 2022
	<b>ME 4015/16: Engineering Design and Project</b> Advisor, Virginia Tech	Fall 2020, Spring 2021, Fall 2022
<b>Advising &amp; Mentoring</b>	<b>Current Ph.D. Students</b> Ananth Jonnavittula, Soheil Habibian, Shaunak Mehta, Sagar Parekh, Shahab Sagheb	
	<b>Current M.S. Students</b> Benjamin Christie, Joshua Hoegerman	
	<b>Past Undergraduate Students</b> James Mullen (Ph.D. student at University of Maryland)	
<b>Outreach</b>	<b>Women in Mechanical Engineering Tea (WeMET)</b> I founded and sponsor this program at Virginia Tech. WeMET provides an opportunity for female graduate students across different research groups to get to know each other, socialize, discuss the highs and lows of graduate school, and foster diversity. Participants meet monthly and chat over tea.	2022 – Present
	<b>Stanford AI Mentor</b> I mentored in this SAIL program, where we connected underrepresented minorities and female undergraduate students interested in AI with Ph.D. students to meet monthly and discuss research and career choices.	2019 – 2020
	<b>AI4ALL</b> I shared our lab's research in human-robot interaction with female high-schools students participating in AI4ALL, and lectured on how we write code to control robots at Stanford University.	2019 – 2020
	<b>TOMODACHI-STEM</b> I mentored a female undergraduate student from Japan throughout a mechatronics research project as a part of this Rice University program meant to provide an introduction to higher education and opportunities for cultural engagement.	2018

## Professional Activities

### Journal Associate Editor

ACM Transactions on Human-Robot Interaction (THRI) 2021 – Present  
IEEE Robotics and Automation Letters (RA-L) 2020 – Present

### Conference Associate Editor

IEEE International Conference on Intelligent Robots and Systems (IROS) 2021, 2022  
IEEE International Symposium on Multi-Robot and Multi-Agent Systems (MRS) 2021

### Center for Human-Computer Interaction

2021 – Present  
Member of the Virginia Tech Center for Human-Computer Interaction (CHCI)

### Workshop Organizer

RSS: *Emergent Behaviors in Human-Robot Systems* 2020

### Editorial Board

Stanford Artificial Intelligence Lab (SAIL) Blog 2019 – 2020

### External Reviewer for Conferences, Journals, and Grant Panels

- NSF NRI 3.0 Proposal Panel
- NSF M3X Proposal Panel
- International Journal of Robotics Research
- IEEE Transactions on Robotics
- IEEE Robotics and Automation Letters
- IEEE/ASME Transactions on Mechatronics
- ACM Transactions on Human-Robot Interaction
- Conferences including ICRA, RSS, CoRL, IROS, HRI, and ICORR

## Invited Talks

**Vanderbilt University**, Mechanical Engineering Seminar 2022  
*Robots that Learn to Influence Humans*

**Worcester Polytechnic Institute**, Robotics Engineering Colloquium 2022

**Commonwealth Cyber Initiative (CCI)**, Integrated Security Seminar 2022

**UC Berkeley**, CITRIS People and Robots Seminar Series 2022

**Purdue University**, Robotics Seminar 2021  
*Interactive, Inclusive, and Revealing Robot Learners*

**UIUC**, Human-Centered Autonomy Lab 2021

**Virginia Tech**, Center for Human-Computer Interaction 2021

**University of Virginia**, ESE Colloquium 2021

**UC Berkeley**, InterACT Lab 2021  
*Towards Inclusive and Revealing Robot Learners*

<b>UC Berkeley</b> , Learning for Dynamics and Control Group <i>Latent Roles and Strategies in Multi-Agent Interaction</i>	2020
<b>ICRA</b> , Workshop on Interactive Robot Learning <i>Personalizing Robots through Learned Latent Actions</i>	2020
<b>University of North Carolina</b> , Department of Computer Science <i>Personalizing Robots with Mechanics and Learning</i>	2020
<b>University of Washington</b> , Department of Mechanical Engineering	2020
<b>Boston University</b> , Department of Mechanical Engineering	2020
<b>Notre Dame</b> , Department of Aerospace and Mechanical Engineering	2020
<b>Virginia Tech</b> , Department of Mechanical Engineering	2020
<b>Stanford University</b> , Robotics Seminar	2020
<b>Amazon Research Awards</b> <i>Controlling Assistive Robots with Learned Latent Actions</i>	2019
<b>MIT</b> , Computer Science & Artificial Intelligence Lab <i>Personalizing Robots with Physics and Intelligence</i>	2019
<b>Harvard University</b> , Materials Science and Mechanical Engineering	2019
<b>Boston University</b> , Center for Information & Systems Engineering	2019
<b>UIUC</b> , Departments of Mechanical Engineering & Computer Science <i>Responding to Physical Human-Robot Interaction</i>	2019
<b>Stanford University</b> , Robotics Seminar	2019

## Journal Papers

16. Antonio Valdivia, Soheil Habibian, Carly Mendenhall, Francesco Fuentes, Ritish Shailly, Dylan P. Losey, and Laura Blumenschein, "Wrapping haptic displays around robot arms to communicate learning," *IEEE Transactions on Haptics*, 2022 (in review).
15. Shaunak A. Mehta and Dylan P. Losey, "Unified learning from demonstrations, corrections, and preferences during physical human-robot interaction," *ACM Transactions on Human-Robot Interaction*, 2022 (in review).
14. Ananth Jonnavittula, Shaunak A. Mehta, and Dylan P. Losey, "Learning to share autonomy from repeated human-robot interaction," *IEEE Transactions on Robotics*, 2022 (in review).
13. Soheil Habibian, Ananth Jonnavittula, and Dylan P. Losey, "Here's what I've learned: Asking questions that reveal reward learning," *ACM Transactions on Human-Robot Interaction*, 2022 (in press).
12. Soheil Habibian and Dylan P. Losey, "Encouraging human interaction with robot teams: Legible and fair subtask allocations," *IEEE Robotics and Automation Letters*, vol. 7, no. 3, pp. 6685-6692, 2022.

11. Dylan P. Losey, Andrea Bajcsy, Marcia K. O'Malley, and Anca D. Dragan, "Physical interaction as communication: Learning robot objectives online from human corrections," *The International Journal of Robotics Research*, vol. 41, no. 1, pp. 20-44, 2022.
10. Erdem Biyik, Dylan P. Losey, Malayandi Palan, Nicholas C. Landolfi, and Dorsa Sadigh, "Learning reward functions from diverse sources of human feedback: Optimally integrating demonstrations and preferences," *The International Journal of Robotics Research*, vol. 41, no. 1, pp. 45-67, 2022.
9. Dylan P. Losey, Hong Jun Jeon, Mengxi Li, Krishnan Srinivasan, Ajay Mandlekar, Animesh Garg, Jeannette Bohg, and Dorsa Sadigh, "Learning latent actions to control assistive robots," *Autonomous Robots*, vol. 46, pp. 115-147, 2022.
8. James F. Mullen Jr, Josh Mosier, Sounak Chakrabarti, Anqi Chen, Tyler White, and Dylan P. Losey, "Communicating inferred goals with passive augmented reality and active haptic feedback," *IEEE Robotics and Automation Letters*, vol. 6, no. 4, pp. 8522-8529, 2021.
7. Dylan P. Losey and Marcia K. O'Malley, "Learning the correct robot trajectory in real-time from physical human interactions," *ACM Transactions on Human-Robot Interaction*, vol. 9, no. 1, pp. 1-19, 2019.
6. Dylan P. Losey, Laura Blumenschein, Janelle Clark, and Marcia K. O'Malley, "Improving short-term retention after robotic training by leveraging fixed-gain controllers," *Journal of Rehabilitation and Assistive Technologies Engineering*, vol. 6, pp. 1-13, 2019.
5. Dylan P. Losey and Marcia K. O'Malley, "Enabling robots to infer how end-users teach and learn through human-robot interaction," *IEEE Robotics and Automation Letters*, vol. 4, no. 2, pp. 1956-1963, 2019.
4. Dylan P. Losey and Marcia K. O'Malley, "Trajectory deformations from physical human-robot interaction," *IEEE Transactions on Robotics*, vol. 34, no. 1, pp. 126-138, 2018.
3. Dylan P. Losey, Craig G. McDonald, Edoardo Battaglia, and Marcia K. O'Malley, "A review of intent detection, arbitration, and communication aspects of shared control for physical human-robot interaction," *Applied Mechanics Reviews*, vol. 70, no. 1, 2018.
2. Dylan P. Losey, Andrew Erwin, Craig G. McDonald, Fabrizio Sergi, and Marcia K. O'Malley, "A time domain approach to control of series elastic actuators: Adaptive torque and passivity-based impedance control," *IEEE/ASME Transactions on Mechatronics*, vol. 21, no. 4, pp. 2085-2096, 2016. **(Best Paper Award)**.
1. Ali Utku Pehlivan, Dylan P. Losey, and Marcia K. O'Malley, "Minimal assist-as-needed controller for upper limb robotic rehabilitation," *IEEE Transactions on Robotics*, vol. 32, no. 1, pp. 113-124, 2016.

## Refereed Conference Proceedings

27. Shahabedin Sagheb, Ye-Ji Mun, Neema Ahmadian, Benjamin A. Christie, Andrea Bajcsy, Katherine Driggs-Campbell, and Dylan P. Losey, "Towards robots that influence humans over long-term interaction," *IEEE International Conference on Robotics and Automation (ICRA)*, 2023 (in review).
26. Sagar Parekh, Soheil Habibian, and Dylan P. Losey, "RILI: Robustly influencing latent intent," *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2022.

25. Antonio Alvarez Valdivia, Ritish Shailly, Naman Seth, Francesco Fuentes, Dylan P. Losey, and Laura H. Blumenschein, "Wrapped haptic display for communicating physical robot learning," *IEEE/RAS International Conference on Soft Robotics (RoboSoft)*, 2022.
24. Ehsan Yousefi, Dylan P. Losey, and Inna Sharf, "Assisting operators of articulated machinery with optimal planning and goal inference," *IEEE International Conference on Robotics and Automation (ICRA)*, 2022.
23. Shaunak A. Mehta, Sagar Parekh, and Dylan P. Losey, "Learning latent actions without human demonstrations," *IEEE International Conference on Robotics and Automation (ICRA)*, 2022.
22. Ananth Jonnavittula and Dylan P. Losey, "Communicating robot conventions through shared autonomy," *IEEE International Conference on Robotics and Automation (ICRA)*, 2022.
21. Ananth Jonnavittula and Dylan P. Losey, "Learning to share autonomy across repeated interaction," *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2021. **(Best RoboCup Paper Finalist)**
20. Siddharth Karamcheti, Albert J. Zhai, Dylan P. Losey, and Dorsa Sadigh, "Learning visually guided latent actions for assistive teleoperation," *Learning for Dynamics & Control (LADC)*, 2021.
19. Ananth Jonnavittula and Dylan P. Losey, "I know what you meant: Learning human objectives by (under) estimating their choice set," *IEEE International Conference on Robotics and Automation (ICRA)*, 2021.
18. Mengxi Li, Alper Canberk, Dylan P. Losey, and Dorsa Sadigh, "Learning human objectives from sequences of physical corrections," *IEEE International Conference on Robotics and Automation (ICRA)*, 2021.
17. Annie Xie, Dylan P. Losey, Ryan Tolsma, Chelsea Finn, and Dorsa Sadigh, "Learning Latent Representations to Influence Multi-Agent Interaction," *Conference on Robot Learning (CoRL)*, 2020. **(Best Paper Award)**
16. Mengxi Li, Dylan P. Losey, Jeannette Bohg, and Dorsa Sadigh, "Learning user-preferred mappings for intuitive robot control," *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2020.
15. Hong Jun Jeon, Dylan P. Losey, and Dorsa Sadigh, "Shared autonomy with learned latent actions," *Robotics: Science and Systems (RSS)*, 2020. **(Best Student Paper Finalist)**
14. Dylan P. Losey, Krishnan Srinivasan, Ajay Mandlekar, Animesh Garg, and Dorsa Sadigh, "Controlling assistive robots with learned latent actions," *IEEE International Conference on Robotics and Automation (ICRA)*, 2020.
13. Minae Kwon, Erdem Biyik, Aditi Talati, Karan Bhasin, Dylan P. Losey, and Dorsa Sadigh, "When humans aren't optimal: Robots that collaborate with risk-aware humans," *ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, pp. 43-52, 2020. **(Best Paper Honorable Mention)**
12. Dylan P. Losey, Mengxi Li, Jeannette Bohg, and Dorsa Sadigh, "Learning from my partner's actions: Roles in decentralized robot teams," *Conference on Robot Learning (CoRL)*, 2019.
11. Erdem Biyik, Malayandi Palan, Nicholas C. Landolfi, Dylan P. Losey, and Dorsa Sadigh, "Asking easy questions: A user-friendly approach to active reward learning," *Conference on Robot Learning (CoRL)*, 2019.
10. Dylan P. Losey and Dorsa Sadigh, "Robots that take advantage of human trust," *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2019.

9. Dylan P. Losey and Marcia K. O'Malley, "Including uncertainty when learning from human corrections," *Conference on Robot Learning (CoRL)*, pp. 123-132, 2018.
8. Andrea Bajcsy, Dylan P. Losey, Marcia K. O'Malley, and Anca D. Dragan, "Learning from physical human corrections, one feature at a time," *ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, 2018.
7. Andrea Bajcsy, Dylan P. Losey, Marcia K. O'Malley, and Anca D. Dragan, "Learning robot objectives from physical human interaction," *Conference on Robot Learning (CoRL)*, pp. 217-226, 2017.
6. Dylan P. Losey and Marcia K. O'Malley, "Effects of discretization on the K-width of series elastic actuators," *IEEE International Conference on Robotics and Automation (ICRA)*, pp. 421-426, 2017.
5. Ali Utku Pehlivan, Dylan P. Losey, Chad G. Rose, and Marcia K. O'Malley, "Maintaining subject engagement during robotic rehabilitation with a minimal assist-as-needed (mAAN) controller," *IEEE International Conference on Rehabilitation Robotics (ICORR)*, pp. 62-67, 2017.
4. Dylan P. Losey, Laura H. Blumenschein, and Marcia K. O'Malley, "Improving the retention of motor skills after reward-based reinforcement by incorporating haptic guidance and error augmentation," *IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics (BioRob)*, pp. 865-871, 2016.
3. Dylan P. Losey, Craig G. McDonald, and Marcia K. O'Malley, "A bio-inspired algorithm for identifying unknown kinematics from a discrete set of candidate models by using collision detection," *IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics (BioRob)*, pp. 418-423, 2016. **(Best Student Paper Award Finalist)**
2. Ben D. Kramer, Dylan P. Losey, and Marcia K. O'Malley, "SOM and LVQ classification of endovascular surgeons using motion-based metrics," *Workshop on Self-Organizing Maps (WSOM)*, pp. 227-237, 2016.
1. Dylan P. Losey, Peter A. York, Philip J. Swaney, Jessica Burgner, and Robert J. Webster III, "A flexure-based wrist for needle-sized surgical robots," *SPIE Medical Imaging*, pp. 86711G, 2013.