

Dylan P. Losey

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Research Interests	Human-robot interaction, machine learning, and control theory, with applications in personal and assistive robots.	
Current Position	Virginia Tech Assistant Professor Department of Mechanical Engineering	August 2020 – Present
Education	Stanford University Postdoctoral Scholar in Computer Science Advisor: Dorsa Sadigh	2019 – 2020
	Rice University 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
	Vanderbilt University B.E. in Mechanical Engineering	2014
Honors & Awards	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
Teaching	ME 4824: Introduction to Human-Robot Interaction Course Developer and Instructor, Virginia Tech	Spring 2022
	ME 5824 / CS 5844: Algorithmic Human-Robot Interaction Course Developer and Instructor, Virginia Tech	Spring 2022
	ME 4524: Robotics and Automation Instructor, Virginia Tech	Spring 2021, Fall 2021
	ME 4015/16: Engineering Design and Project Advisor, Virginia Tech	Fall 2020, Spring 2021
Advising & Mentoring	Current Graduate Students Ananth Jonnavittula, Soheil Habibian, Shaunak Mehta, Sagar Parekh, Shahab Sagheb	
	Past Undergraduate Students James Mullen (Ph.D. student at University of Maryland)	
Outreach	Women in Mechanical Engineering Tea (WeMET) I started and sponsor this program at Virginia Tech. WeMET provides an opportunity for 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
	Stanford AI Mentor 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
	AI4ALL 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
	TOMODACHI-STEM 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: <i>Emergent Behaviors in Human-Robot Systems</i>	2020
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Editorial Board

Stanford Artificial Intelligence Lab (SAIL) Blog	2019 – 2020
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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

Commonwealth Cyber Initiative (CCI) , Integrated Security Seminar <i>Robots that Learn to Influence Humans</i>	2022
UC Berkeley , CITRIS People and Robots Seminar Series	2022
Purdue University , Robotics Seminar <i>Interactive, Inclusive, and Revealing Robot Learners</i>	2021
UIUC , Human-Centered Autonomy Lab	2021
Virginia Tech , Center for Human-Computer Interaction	2021
University of Virginia , ESE Colloquium	2021
UC Berkeley , InterACT Lab <i>Towards Inclusive and Revealing Robot Learners</i>	2021
UC Berkeley , Learning for Dynamics and Control Group <i>Latent Roles and Strategies in Multi-Agent Interaction</i>	2020
ICRA , Workshop on Interactive Robot Learning <i>Personalizing Robots through Learned Latent Actions</i>	2020
University of North Carolina , Department of Computer Science <i>Personalizing Robots with Mechanics and Learning</i>	2020

University of Washington , Department of Mechanical Engineering	2020
Boston University , Department of Mechanical Engineering	2020
Notre Dame , Department of Aerospace and Mechanical Engineering	2020
Virginia Tech , Department of Mechanical Engineering	2020
Stanford University , Robotics Seminar	2020
Amazon Research Awards <i>Controlling Assistive Robots with Learned Latent Actions</i>	2019
MIT , Computer Science & Artificial Intelligence Lab <i>Personalizing Robots with Physics and Intelligence</i>	2019
Harvard University , Materials Science and Mechanical Engineering	2019
Boston University , Center for Information & Systems Engineering	2019
UIUC , Departments of Mechanical Engineering & Computer Science <i>Responding to Physical Human-Robot Interaction</i>	2019
Stanford University , Robotics Seminar	2019

Journal Papers

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

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 (in review).
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.