Dylan P. Losey

Contact

213D Goodwin Hall
635 Prices Fork Road
Blacksburg, VA 24061
losey@vt.edu
https://dylanlosey.com/

Research Interests

Human-robot interaction, machine learning, and control theory, with applications in personal and assistive robots.

Current Position

Virginia Tech
Assistant Professor   August 2020 – Present
Department of Mechanical Engineering

Education

Stanford University
Postdoctoral Scholar in Computer Science   2019 – 2020
Advisor: Dorsa Sadigh

Rice University
Ph.D. in Mechanical Engineering   2018
M.S. in Mechanical Engineering   2016
Dissertation: *Responding to Physical Human-Robot Interaction*
Advisor: Marcia K. O'Malley

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 Spring 2022
Course Developer and Instructor, Virginia Tech

ME 5824 / CS 5844: Algorithmic Human-Robot Interaction Spring 2022
Course Developer and Instructor, Virginia Tech

ME 4524: Robotics and Automation Spring 2021, Fall 2021, Fall 2022
Instructor, Virginia Tech

ME 4015/16: Engineering Design and Project Fall 2020, Spring 2021, Fall 2022
Advisor, Virginia Tech

Advising & Mentoring

Current Ph.D. Students
Ananth Jonnavittula, Soheil Habibian, Shaunak Mehta, Sagar Parekh, Shahab Sagheb

Current M.S. Students
Benjamin Christie, Joshua Hoegerman

Past Undergraduate Students
James Mullen (Ph.D. student at University of Maryland)

Outreach

Women in Mechanical Engineering Tea (WeMET) 2022 – Present
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.

Stanford AI Mentor 2019 – 2020
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.

AI4ALL 2019 – 2020
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.

TOMODACHI-STEM 2018
I mentored a female undergraduate student from Japan throughout a mechantronics research project as a part of this Rice University program meant to provide an introduction to higher education and opportunities for cultural engagement.

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 Proposal Panels
- 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	
	UC Berkeley, Learning for Dynamics and Control Group	2020
	Latent Roles and Strategies in Multi-Agent Interaction	

ICRA, Workshop on Interactive Robot Learning	2020
Personalizing Robots through Learned Latent Actions	
University of North Carolina, Department of Computer Science	2020
Personalizing Robots with Mechanics and Learning	
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	2019
Controlling Assistive Robots with Learned Latent Actions	
MIT, Computer Science & Artificial Intelligence Lab	2019
Personalizing Robots with Physics and Intelligence	
Harvard University, Materials Science and Mechanical Engineering	2019
Boston University, Center for Information & Systems Engineering	2019
UIUC, Departments of Mechanical Engineering & Computer Science	2019
Responding to Physical Human-Robot Interaction	
Stanford University, 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*, vol. 11, no. 4, pp. 1-28, 2022.

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

28. Shaunak A. Mehta, Yeunhee Kim, Joshua Hoegerman, Michael D. Bartlett, and Dylan P. Losey, "RISO: Combining rigid grippers with soft switchable adhesives," *IEEE/RAS International Conference on Soft Robotics (RoboSoft)*, 2023 (in review).

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 (L4DC)*, 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.