Reuben M. Aronson

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Research Overview

I build human-robot interaction algorithms for collaborative manipulation to improve assistive technologies.

Key words: Assistive robotics, human-robot interaction, collaborative manipulation, intent recognition, nonverbal behavior

Education

Ph.D.	Robotics Institute, Carnegie Mellon University
Robotics	Advisor: Henny Admoni
2022	Area of study: Human-Robot Interaction
M.S.	Robotics Institute, Carnegie Mellon University
Robotics	Advisor: Henny Admoni
2018	Area of study: Human-Robot Interaction
B.S.	Massachusetts Institute of Technology
Mechanical	Thesis: *Design of Clamping Mechanism for*
Engineering	*Securing Sections of Unmanned Submarine*
2012	Advisor: Douglas Hart

Work experience

Postdoctoral Scholar, Tufts University Advisor: Prof. Elaine Short Medford, MA	2022-present
Mechanical Engineer, Naval Research Laboratory (Contractor with Exelis, Inc.) Washington, DC	2012–2015

Publications

Peer-Reviewed Journal Articles

J3 Newman, B. A. , **Aronson, R. M.** , Kitani, K. , and Admoni, H. (2022). Helping People Through Space and Time: Assistance as a Perspective on Human-Robot Interaction. *Frontiers in Robotics and AI*, 8:410

J2 Newman*, B. A. , **Aronson*, R. M.** , Srinivasa, S. S. , Kitani, K. , and Admoni, H. (2022). HARMONIC: A Multimodal Dataset of Assistive Human-Robot Collaboration. *The International Journal of Robotics Research*, 41(1):3–11

J1 Jia, Z. , Bhatia, A. , **Aronson, R. M.** , Bourne, D. , and Mason, M. T. (2018). A survey of automated threaded fastening. In *IEEE Transactions on Automation Science and Engineering*, pages 1–13

Peer-Reviewed Conference Papers

C9 Allen, K. H. , Balaska, A. K. , **Aronson, R. M.** , Rogers, C. , and Short, E. S. (2023). Barriers and benefits: The path to accessible makerspaces. In *Proceedings of the 25th International ACM SIGACCESS Conference on Computers and Accessibility*, ASSETS '23, New York, NY, USA. Association for Computing Machinery

Best student paper nominee

C8 Yu, H. , **Aronson, R.** , Allen, K. , and Short, E. (2023). From "thumbs up" to "10 out of 10": Reconsidering scalar feedback in interactive reinforcement learning. In *2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*

C7 **Aronson, R. M.** and Admoni, H. (2022). Gaze Complements Control Input for Goal Prediction During Assisted Teleoperation. In *Robotics: Science and Systems*

C6 **Aronson, R. M.** , Almutlak, N. , and Admoni, H. (2021). Inferring Goals with Gaze during Teleoperated Manipulation. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*

C5 Luria, M. , Pusateri, J. , Oden Choi, J. , **Aronson, R.** , Yildirim, N. , and Steenson, M. W. (2020). Medieval robots: The role of historical automata in the design of future robots. In *Companion Publication of the 2020 ACM Designing Interactive Systems Conference*, DIS' 20 Companion, page 191–195, New York, NY, USA. Association for Computing Machinery

C4 **Aronson, R. M.** and Admoni, H. (2019). Semantic gaze labeling for human-robot shared manipulation. In *ACM Symposium on Eye Tracking Research & Applications*

C3 Cheng, X. , Jia, Z. , Bhatia, A. , **Aronson, R. M.** , and Mason, M. T. (2018). Sensor selection and stage & result classifications for automated miniature screwdriving. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*

C2 **Aronson, R. M.** , Santini, T. , Kübler, T. C. , Kasneci, E. , Srinivasa, S. S. , and Admoni, H. (2018). Eye-hand behavior in human-robot shared manipulation. In *ACM/IEEE International Conference on Human-Robot Interaction (HRI)*
Acceptance rate: 23%

C1 **Aronson, R. M.** , Bhatia, A. , Jia, Z. , Guillame-Bert, M. , Bourne, D. , Dubrawski, A. , and Mason, M. T. (2016). Data-driven classification of screwdriving operations. In *International Symposium on Experimental Robotics*

Peer-Reviewed Workshop Papers

W4 Sheidlower, I. , **Aronson, R.** , and Short, E. (2023). Modifying rl policies with imagined actions: How predictable policies can enable users to perform novel tasks. In *AAAI Fall Symposium on Artificial Intelligence for Human-Robot Interaction (AI-HRI)*

W3 **Aronson, R. M.** and Admoni, H. (2020). Eye gaze for assistive manipulation. HRI '20, page 552–554, New York, NY, USA. Association for Computing Machinery

W2 **Aronson, R. M.** and Admoni, H. (2018). Gaze for error detection during human-robot shared manipulation. In *RSS Workshop: Towards a Framework for Joint Action*

W1 **Aronson, R. M.** , Bhatia, A. , Jia, Z. , and Mason, M. T. (2017). Data collection for screwdriving. In *RSS Workshop on (Empirically) Data-Driven Manipulation*

Patents

P1 Ao, X. S. , Doria, S. L. , Xu, J. C. , and **Aronson, R. M.** (2013). Fluid density stratification location system, device and method. *U. S. Patent No. 9,343,055*

Teaching Experience

Mechanics of Manipulation (graduate), Teaching Assistant Carnegie Mellon University	2016
Calculus 1 and 2, Differential Equations, Physics 2, Linear Algebra (undergraduate), Teaching Assistant MIT Experimental Studies Group (ESG)	2009–2012

Mentoring

Karen Zhang, CMU Undergrad Research	2019-present
Nadia AlMutlak, RI Summer Scholars Program (*Publications: C6)*	2019-2020
Krish Vaswani, CMU Summer Undergrad Research Apprenticeship	2019
Maggie Collier, RI Summer Scholars Program *Now a PhD Student at Robotics Institute, Carnegie Mellon University*	2018

Invited Talks

Workshop on Emerging Test Methods & Metrics for Accessible HRI at HRI 2023	Mar 2023
Tufts Computer Science Department Colloquium	Oct 2022

Awards

Participant, HRI Pioneers Workshop	2020
Uber Presidential Fellowship	2016–2017
Fiekowsky Excellence in Teaching Award (ESG)	2012
Member, Burchard Scholars (MIT humanities honor society)	2011

Service

Reviewer for AAMAS 2023–2024, AURO 2018, HRI 2018–2024, HUMANOIDS 2016–2017, 2019, ICRA 2021–2022, 2024, IEEE VR 2019, IROS 2018, 2023, RA-L 2021, RO-MAN 2021, RSS 2019, 2022-2023, THRI 2020–2022, UIST 2019	
Organizer, All Things Attention workshop at NeurIPS 2022 `http://attention-learning-workshop.github.io`	2022
Co-founder and organizer, Tufts HRI Colloquium (weekly series)	2022-2023
Co-founder and organizer of the CMU HRI Reading Group `http://harp.ri.cmu.edu/reading-group/` *Organize weekly presentations, regularly present papers and facilitate discussions*	2018–2021
Ph. D. qualifier committee member for Eric Huang, Ankit Bhatia	

Founding member of the **SCS4All PhD Initiative**, which advocates for and supports PhD students at the CMU School of Computer Science	2017–2019
Founding member of **CMU Tech4Society** (`https://tech4society.group`), which provides technical support to local nonprofit and activist groups in the Pittsburgh area	2016–2019