

HENNY ADMONI

Robotics Institute, Carnegie Mellon University
5000 Forbes Avenue
Pittsburgh PA 15213 USA

henny@cmu.edu
<http://hennyadmoni.com>
516-448-5998

RESEARCH OVERVIEW

I build **intelligent robots that detect, interpret, and respond to human needs** expressed through verbal and nonverbal behaviors. My robots provide **social and physical assistance** in complex activities like learning new information or preparing a meal. My research draws from the areas of robotics, artificial intelligence, machine learning, computer vision, and cognitive science.

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

EDUCATION

Ph.D. Computer Science 2016	Yale University Thesis: <i>Nonverbal Communication in Socially Assistive Human-Robot Interaction</i> Advisor: Brian Scassellati Area of study: Social Robotics
M.A. Computer Science 2009	Wesleyan University Thesis: <i>Demonstrations of Dynamical Intention for Hybrid Agents</i> Advisor: Eric Aaron Area of study: Intelligent Agents
B.A. Computational Cognitive Science (self-designed) 2008	Wesleyan University Thesis: <i>Decision Making and Learning in Hybrid Dynamical Agents</i> Advisors: Eric Aaron, Andrea Patalano, John Kirn Areas of study: Computer Science, Cognitive Psychology, Neuroscience

RESEARCH POSITIONS

Postdoctoral Fellow 2015–present	Robotics Institute, Carnegie Mellon University Personal Robotics Lab (PI: Siddhartha Srinivasa)
Research Assistant 2009–2015	Department of Computer Science, Yale University Social Robotics Lab (PI: Brian Scassellati)

AWARDS AND HONORS

Google Anita Borg Memorial Scholarship Highly competitive \$10,000 scholarship for Computer Science women	2014
Palantir Scholarship for Women in Technology Highly competitive scholarship for Computer Science women, \$2,500	2014
National Science Foundation Graduate Research Fellowship	2009–2012
Department of Homeland Security Graduate Fellowship (declined)	2009

Wesleyan University Hughes Research Fellowship
Provided funding for academic year and summer research (awarded multiple times)

2007–2008

Department of Homeland Security ISEF Scholar
\$20,000 scholarship awarded at the Intel International Science and Engineering Fair

2004–2008

PUBLICATIONS

Peer-Reviewed Journal Articles

- J5** Scalise, R., Li, S., **Admoni, H.**, Rosenthal, S., and Srinivasa, S. S. (in review). Natural language instructions for human-robot collaborative manipulation. *The International Journal of Robotics Research*
- J4** **Admoni, H.** and Scassellati, B. (2017). Social eye gaze in human-robot interaction: A review. *Journal of Human-Robot Interaction*
- J3** Castro-González, A., **Admoni, H.**, and Scassellati, B. (2016). Effects of form and motion on judgments of social robots' animacy, likability, trustworthiness and unpleasantness. *International Journal of Human-Computer Studies*, 90:27–38
Impact factor: 1.41
- J2** Scassellati, B., **Admoni, H.**, and Matarić, M. (2012). Robots for use in autism research. *Annual Review of Biomedical Engineering*, 14:275–294
Impact factor: 10.95
Cited 302 times (as of 12/2016)
- J1** Aaron, E. and **Admoni, H.** (2010). Action selection and task sequence learning for hybrid dynamical cognitive agents. *Robotics and Autonomous Systems*, 58(9):1049–1056
Impact factor: 1.16

Peer-Reviewed Conference Papers

- C15** Pellegrinelli, S., **Admoni, H.**, Javdani, S., and Srinivasa, S. S. (2016). Human-robot shared workspace collaboration via hindsight optimization. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 831–838
Acceptance rate: 48%
- C14** Li, S., Scalise, R., **Admoni, H.**, Srinivasa, S. S., and Rosenthal, S. (2016). Spatial references and perspective in natural language instructions for collaborative manipulation. In *IEEE International Symposium on Robot and Human Interactive Communication*, pages 44–51
Acceptance rate: 47%
- C13** Suman, A., Marvin, R., Grigore, E. C., **Admoni, H.**, and Scassellati, B. (2016). Robots can induce mimicry in humans depending on previous behavior. In *IEEE International Symposium on Robot and Human Interactive Communication*
Acceptance rate: 47%
- C12** **Admoni, H.**, Weng, T., and Scassellati, B. (2016). Modeling communicative behaviors for object references in human-robot interaction. In *IEEE International Conference on Robotics and Automation (ICRA)*, pages 3352–3359
Acceptance rate: 35%
- C11** **Admoni, H.**, Weng, T., Hayes, B., and Scassellati, B. (2016). Robot nonverbal behavior improves task performance in difficult collaborations. In *ACM/IEEE International Conference on Human-Robot*

Interaction (HRI), pages 51–58
Acceptance rate: 25%

- C10 Admoni, H.** and Scassellati, B. (2014). Data-driven model of nonverbal behavior for socially assistive human-robot interactions. In *ACM International Conference on Multimodal Interaction (ICMI)*, pages 196–199
Acceptance rate: 39%
- C9 Admoni, H.**, Datsikas, C., and Scassellati, B. (2014). Speech and gaze conflicts in collaborative human-robot interactions. In *Annual Conference of the Cognitive Science Society (CogSci)*, pages 104–109
Acceptance rate: 41%
- C8 Nawroj, A.**, Toneva, M., **Admoni, H.**, and Scassellati, B. (2014). An exploration of social grouping in robots: Effects of behavioral mimicry, appearance, and eye gaze. In *Annual Conference of the Cognitive Science Society (CogSci)*
Acceptance rate: 41%
- C7 Admoni, H.**, Dragan, A., Srinivasa, S. S., and Scassellati, B. (2014). Deliberate delays during robot-to-human handovers improve compliance with gaze communication. In *ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, pages 49–56
Acceptance rate: 24%
- C6 Admoni, H.**, Hayes, B., Feil-Seifer, D., Ullman, D., and Scassellati, B. (2013). Are you looking at me? Perception of robot attention is mediated by gaze type and group size. In *ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, pages 389–396
Acceptance rate: 25%
- C5 Admoni, H.**, Hayes, B., Feil-Seifer, D., Ullman, D., and Scassellati, B. (2013). Dancing with myself: The effect of majority group size on perceptions of majority and minority robot group members. In Knauff, M., Pauen, M., Sebanz, N., and Wachsmuth, I., editors, *Annual Conference of the Cognitive Science Society (CogSci)*
- C4 Admoni, H.** and Scassellati, B. (2012). A multi-category theory of intention. In Miyake, N., Peebles, D., and Cooper, R. P., editors, *Annual Conference of the Cognitive Science Society (CogSci)*
- C3 Admoni, H.**, Bank, C., Tan, J., and Toneva, M. (2011). Robot gaze does not reflexively cue human attention. In Carlson, L., Hölscher, C., and Shipley, T., editors, *Annual Conference of the Cognitive Science Society (CogSci)*, pages 1983–1988
- C2 Aaron, E.**, Mendoza, J.-P., and **Admoni, H.** (2011). Integrated dynamical intelligence for interactive embodied agents. In *Proceedings of the International Conference on Agents and Artificial Intelligence (ICAART)*
Acceptance rate: 27%
- C1 Aaron, E.** and **Admoni, H.** (2009). A framework for dynamical intention in hybrid navigating agents. In *Proceedings of the International Conference on Hybrid Artificial Intelligence Systems (HAIS)*, volume LNCS 5572, pages 218–225
Acceptance rate: 41%

Peer-Reviewed Workshop Papers

- W8 Admoni, H.** and Srinivasa, S. S. (2016). Predicting user intent through eye gaze for shared autonomy. In *Proceedings of the AAAI Fall Symposium: Shared Autonomy in Research and Practice*, pages 298–303. AAAI Press
- W7 Holladay, R.**, Herlant, L., **Admoni, H.**, and Srinivasa, S. S. (2016). Visibility optimization in manipulation tasks for a wheelchair-mounted robot arm. In *RO-MAN Workshop on Human-Oriented Approaches for Assistive and Rehabilitation Robotics (HUMORARR)*

- W6 Admoni, H.** and Scassellati, B. (2015). Eye gaze in collaborative human-robot interaction. In *Proceedings of the Human Robot Teaming Workshop at HRI*
- W5 Admoni, H.** and Scassellati, B. (2014). Nonverbal behavior modeling for socially assistive robots. In *Proceedings of the AAAI Fall Symposium: Artificial Intelligence and Human-Robot Interaction (AI-HRI)*. AAAI Press
- W4 Admoni, H.** and Scassellati, B. (2014). The role of robots in socially assistive applications. In *Proceedings of the Rehabilitation and Assistive Robotics Workshop at IROS*
- W3 Admoni, H.** and Scassellati, B. (2014). Demo: Toward a data-driven generative behavior model for human-robot interaction. In *Proceedings of the Workshop on Mobile Augmented Reality and Robotic Technology-Based Systems (MARS) at MobiSys*, pages 19–20
- W2 Admoni, H.** and Scassellati, B. (2012). Robot gaze is different from human gaze: Evidence that robot gaze does not cue reflexive attention. In *Proceedings of the “Gaze in Human-Robot Interaction” Workshop at HRI*
- W1 Aaron, E.** and **Admoni, H.** (2009). Approaches to learning for hybrid dynamical cognitive agents. In *Proceedings of the International Workshop on Hybrid Control of Autonomous Systems (HYCAS)*, pages 83–90

Theses

- T3 Admoni H.** 2016. Nonverbal Communication in Socially Assistive Human-Robot Interaction. PhD thesis, Yale University.
- T2 Admoni H.** 2009. Demonstrations of Dynamical Intention for Hybrid Agents. Master’s thesis, Wesleyan University.
- T1 Admoni H.** 2008. Decision Making and Learning in Hybrid Dynamical Agents. Undergraduate Honors thesis, Wesleyan University.

TEACHING

<p>Manipulation Algorithms, Carnegie Mellon University Instructor (co-taught with Dr. Katharina Muelling) Enrollment: 20 graduate students</p> <p>This advanced graduate-level course covered the theory and algorithms that enable robots to physically manipulate their world. I designed the course with my co-instructor to cover the fundamentals of manipulation and highlight manipulation challenges in human environments. I conducted lectures about human-aware manipulation algorithms, manipulation for collaborative robotics applications, and how to design user study evaluations of robotic systems. I also guided students in reading and presenting scientific literature and conducting final projects that investigate an aspect of manipulation in the real world.</p>	2016
<p>Intelligent Robotics, Yale University Teaching Assistant</p> <p>Graded problem sets, conducted weekly office hours, and ran review sessions for this graduate and undergraduate elective.</p>	2011, 2013
<p>CS and the Modern Intellectual Agenda, Yale University Teaching Assistant</p> <p>Conducted office hours and helped students one-on-one with graded writing assignments.</p>	2010

<p>Automata Theory and Formal Languages, Wesleyan University Teaching Assistant Conducted office hours and graded problem sets for this graduate and undergraduate advanced elective course.</p>	2007, 2009
<p>Human and Machine Inference, Wesleyan University Teaching Assistant Conducted office hours and graded problem sets for this non-major elective.</p>	2009
<p>Introduction to Computer Science, Wesleyan University Teaching Assistant Conducted weekly lab sessions, held office hours, and graded problem sets for this introduction to the major.</p>	2006, 2007

INVITED TALKS

<p>Technical University Munich, HRI PC Meeting Research Symposium Human Aware Assistive Robotics</p>	Nov 2016
<p>Carnegie Mellon University, Capacity Building for Accessibility Workshop Assistive Wheelchair-Mounted Robot Arms</p>	Nov 2016
<p>Rensselaer Polytechnic Institute (RPI), EECS Colloquium Recognizing Human Intent for Assistive Robotics</p>	Oct 2016
<p>RSS 2016, Workshop on Human-Robot Interaction Understanding Human Intent for Shared Autonomy</p>	June 2016
<p>University of Washington, Robotics Colloquium Recognizing Human Intent for Assistive Robotics</p>	April 2016
<p>Food and Drug Administration, Research Meeting Shared Autonomy for Assistive Robot Manipulators</p>	April 2016
<p>Cornell University, Robotics Seminar Nonverbal Communication for Human-Robot Interaction</p>	April 2015
<p>IROS 2014, Rehabilitation and Assistive Robotics Workshop Roles of Robots in Socially Assistive Applications</p>	Sept 2014
<p>MobiSys 2014, Mobile Augmented Reality and Robotic Technology Systems Workshop Toward a Data-Driven Generative Behavior Model for Human-Robot Interaction</p>	June 2014
<p>Wesleyan University, Computer Science Departmental Colloquium The Role of Eye Gaze in Social Robotics</p>	Feb 2014
<p>Yale University, Davenport College Graduate Research Forum Social Robotics</p>	Oct 2013

GRANTS

Multi-Modal Control of an Intelligent Assistive Robot Arm (in review) Principal Investigator Paralyzed Veterans of America Research Foundation 2017–2018	\$100,000
Learning Deep Sensorimotor Policies for Shared Autonomy Key personnel, contributed to grant development and writing National Robotics Initiative PIs: Sergej Levine and Siddhartha Srinivasa 2016–2019	\$499,792
Promoting AI at the RSS 2016 Workshop on Human-Robot Interaction Grant Awardee Artificial Intelligence Journal, Funding Opportunities for Promoting AI Research Provided travel fellowships to two students to attend RSS 2016 2016	€3,000
Interaction and Learning for Hybrid Dynamical Agents Principal Investigator National Science Foundation Graduate Research Fellowship Program 2009–2012	\$120,000
Travel Grants ACM SIGAI Career and Network Conference at AAAI, 2015 Rising Stars in EECS, 2015 NSF grant to attend IROS, 2014 CRA-W/CDC Broadening Participation in AI Program at AAAI, 2014 HRI Student Volunteer, 2013 HRI Pioneers, 2012 NSF grant to attend Grace Hopper Celebration of Women in Computing, 2012	

MENTORING

Co-authored publication numbers refer to the publication lists above.

Shervin Javdani	2015–2016, CMU PhD student <i>Publications: C15</i>
Laura Herlant	2015–2016, CMU PhD student <i>Publications: W7</i>
Stefanos Nikolaidis	2015–2016, CMU PhD student
Rosario Scalise	2015–2016, CMU Masters student <i>Publications: C14</i>
Shen Li	2015–2016, CMU Masters student <i>Publications: C14</i>
Rachel Holladay	2015–2016, CMU undergraduate <i>Publications: W7</i>
Wei Parker Gu	2016, CMU undergraduate
Thomas Weng	2015, Yale undergraduate <i>Computer Science Department Research Award, 2015</i> <i>Publications: C11, C12</i>

Rebecca Marvin	2014–2015, Yale undergraduate <i>Publications: C13</i>
Apurv Suman	2014–2015, Yale undergraduate <i>Publications: C13</i>
Natalie Warren	2014–2015, Yale undergraduate
Christopher Datsikas	2013–2015, Yale undergraduate <i>Publications: C9</i>
Daniel Ullman	2012–2014, Yale undergraduate <i>Publications: C6, C5</i>
Mariya Toneva	2011, Yale undergraduate <i>Publications: C3</i>
Caroline Bank	2011, Yale undergraduate <i>Publications: C3</i>
Joshua Tan	2011, Yale undergraduate <i>Publications: C3</i>

SERVICE

Organizing Committee

International Conference on Human-Robot Interaction (HRI) 2018 Student Volunteers Co-Chair	2017–2018
International Journal of Robotics Research (IJRR), Special Issue on HRI Co-Editor	2016
Human Robot Interaction Workshop at RSS 2016 Co-Organizer	2015–2016
HRI Pioneers Workshop at HRI 2013 Program Committee Chair	2012–2013

Program Committee

ACM/IEEE International Conference on Human-Robot Interaction (HRI)	2017
Pioneers Workshop at HRI	2017
IEEE Symposium on Robot and Human Interactive Communication (RO-MAN)	2016
International Joint Congress on Artificial Intelligence (IJCAI)	2016
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)	2016
AAAI Conference on Artificial Intelligence (AAAI)	2016
IEEE Workshop on Advanced Robotics and its Social Impacts (ARSO)	2014
Workshop for Mobile Assistive and Robotic Technology-Based Systems (MARS) at Mobisys	2014
Human Robot Collaboration Workshop at RSS 2013	2013

Refereeing: Grant Agencies

National Science Foundation (NSF) | 2016

Refereeing: Conferences and Journals

ACM/IEEE International Conference on Human-Robot Interaction (HRI) | 2011–2016
IEEE International Conference on Robotics and Automation (ICRA)
Interaction Studies | 2015–2016
2016, 2013
ACM Transactions on Interactive Intelligent Systems | 2015
International Journal of Social Robotics (IJSR) | 2015
Video Session at HRI | 2015
IEEE Symposium on Robot and Human Interactive Communication (RO-MAN) | 2015, 2011
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) | 2012–2015
IEEE Transactions on Human-Machine Systems | 2013–2015
Journal of Autism and Developmental Disorders | 2014
IEEE/RAS International Conference on Humanoid Robots (Humanoids) | 2014
Late Breaking Reports at HRI | 2014
Journal of Human-Robot Interaction (JHRI) | 2013
Autism: The International Journal of Research and Practice | 2013
Transactions on Autonomous Mental Development | 2013
Gaze and Speech Workshop at HRI | 2013
International Joint Congress on Artificial Intelligence (IJCAI) | 2011
International Conference on Social Robotics (ICSR) | 2011

Other Service

Graduate Affiliate, Davenport College, Yale University | 2013–2015
Mentor, Women in Science at Yale | 2012–2015
Judge, New Haven Science Fair | 2011–2015

SELECTED OUTREACH

This list highlights a selection of the many outreach events I have conducted.

Family Day, DARPA Offices, Washington DC | 2016
Presented our novel shared autonomy algorithms for assistive care with an interactive robot demo to approximately 700 DARPA affiliates and their guests.

Capacity Building Initiative Workshop: Accessibility at CMU | 2016
Helped organize a full-day workshop increasing disability awareness and highlighting resources and research for accessibility at CMU, attended by approximately 70 people from around the US.

<p>Yale Social Robotics Lab open houses, Yale University, New Haven CT Robotics demonstrations including Nao, Keepon, and person tracking via Kinect at twice annual lab open houses for the public, which drew about 100 adults and children from the greater New Haven community each.</p>	2012–2015
<p>Yale Celebration of Women in Computing Day, Yale University, New Haven CT Helped organize full day event highlighting women in computing at Yale for about 100 people from Yale and the community. My role included moderating a graduate student panel and organizing faculty speakers.</p>	2014
<p>World Science Festival, NYU Kimmel Center, New York NY Public demonstration of social robots detecting and responding to eye gaze with over 3,000 visitors.</p>	2014
<p>In-school demonstration, Bethany Community School, Bethany CT Visit to the Girls Excelling in Math and Science (GEMS) after-school club including robot demonstration and Q&A for about 30 girls aged 9–12.</p>	2014

SELECTED MEDIA COVERAGE

<p>Meet HERB your robot butler, Cities Rising: Rebuilding America series, Yahoo News with Katie Couric</p>	2016
<p>Ahead of its Time—Research in the US, Deutsche Welle Business Magazine</p>	2016
<p>Four robots at your service, Les Années Lumière show, Radio Canada</p>	2016