

Chien-Ming Huang, Ph.D.

Postdoctoral Associate
Department of Computer Science
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Research Interests

I develop robot systems, computational methods, and design principles to enable close, continuous, and personalized robot-assisted support to augment human capabilities.

Interests: human-robot interaction (HRI), robotics, artificial intelligence, human-computer interaction (HCI)

Education

Ph.D. in Computer Science, University of Wisconsin–Madison	2010–2015
Thesis: Human–Robot Joint Action: Coordinating Attention, Communication, and Actions Committee: Bilge Mutlu (Chair), Maya Cakmak, Mark Craven, Jerry Zhu, Michael Zinn	
M.S. in Computer Science, Georgia Institute of Technology	2008–2010
Thesis: Joint Attention in Human–Robot Interaction Committee: Andrea Thomaz (Chair), Rosa Arriaga, Henrik Christensen	
B.S. in Computer Science, National Chiao Tung University	2002–2006

Research Experience

Postdoctoral Associate, Social Robotics Laboratory, Yale University, USA	11.2015–Present
PI: Brian Scassellati NSF Expedition in Computing on Socially Assistive Robotics Publications: [C.9, S.5]	
Research Assistant, Human–Computer Interaction Laboratory, UW–Madison, USA	05.2011–10.2015
PI: Bilge Mutlu Publications: [J.1–3, C.2–4, C.6–8, S.2–3, T.2]	
Research Intern, Intelligent Robotics and Communication Laboratory, ATR, Japan	02.2013–05.2013
PI: Takayuki Kanda Publication: [C.5]	
Research Assistant, Socially Intelligent Machines Lab, Georgia Institute of Technology, USA	09.2009–08.2010
PI: Andrea Thomaz Publications: [C.1, S.1, T.1]	
Research Assistant, Mobile Robot Laboratory, Georgia Institute of Technology, USA	05.2009–08.2009
PI: Ronald Arkin Publication: [P.1]	
Research Assistant, Institute of Information Science, Academia Sinica, Taiwan	09.2007–08.2008
PI: Chun-Nan Hsu	

Awards

Best paper award runner-up, Robotics: Science and Systems (RSS)	2013
Best student poster runner-up, Robotics: Science and Systems (RSS)	2013
Computer Science departmental summer fellowship, UW-Madison	2011
Student travel grants: RSS (2013, 2014), ICMI (2013), CHI (2012), HRI (2012)	
Academic achievement award, National Chiao Tung University, Taiwan	2005

Publications

Paper In Submission

- U.1 Sauppé, A., **Huang, C.-M.** and Szafir, D. (In submission). Integrating Human-Robot Interaction Education at the K-12 Level.

Refereed Journal Articles

- J.3 **Huang, C.-M.**, Andrist, S., Sauppé, A., and Mutlu, B. (2015). Using Gaze Patterns to Predict Task Intent in Collaboration. *Frontiers in Psychology*.
- J.2 **Huang, C.-M.** and Mutlu, B. (2014). Multivariate Evaluation of Interactive Robot Systems. *Autonomous Robots*, 37(4), 335-349.
- J.1 **Huang, C.-M.** and Mutlu, B. (2013). The Repertoire of Robot Behavior: Enabling Robots to Achieve Interaction Goals through Social Behavior. *Journal of Human-Robot Interaction*, 2(2), 80-102.

Refereed Conference Full Papers

- C.9 Ramachandran, A., **Huang, C.-M.** and Scassellati, B. (In press). Give Me a Break! Personalized Timing Strategies to Promote Learning in Robot-Child Tutoring. Accepted to the 2017 ACM/IEEE International Conference on Human-Robot Interaction (HRI'17).
Acceptance Rate: 24%
- C.8 **Huang, C.-M.** and Mutlu, B. (2016). Anticipatory Robot Control for Efficient Human-Robot Collaboration. In Proceedings of the 2016 ACM/IEEE International Conference on Human-Robot Interaction (HRI'16).
Acceptance Rate: 25%
- C.7 **Huang, C.-M.**, Cakmak, M., and Mutlu, B. (2015). Adaptive Coordination Strategies for Human-Robot Handovers. In Proceedings of the 2015 Robotics: Science and Systems Conference (RSS'15).
Acceptance Rate: 26%
Invited presentation at AAAI'16 (Robotics special track)
- C.6 Sauppé, A., Szafir, D., **Huang, C.-M.**, and Mutlu, B. (2015). From 9 to 90: Engaging Learners of All Ages. In Proceedings of ACM SIGCSE.
Acceptance Rate: 36%
- C.5 **Huang, C.-M.**, Iio, T., Satake, S., and Kanda, T. (2014). Modeling and Controlling Friendliness for an Interactive Museum Robot. In Proceedings of the 2014 Robotics: Science and Systems Conference (RSS'14).
Acceptance Rate: 32%
- C.4 **Huang, C.-M.** and Mutlu, B. (2014). Learning-based Modeling of Multimodal Behaviors for Humanlike Robots. In Proceedings of the 2014 ACM/IEEE International Conference on Human-Robot Interaction (HRI'14).
Acceptance Rate: 24%
- C.3 **Huang, C.-M.** and Mutlu, B. (2013). Modeling and Evaluating Narrative Gestures for Humanlike Robots. In Proceedings of the 2013 Robotics: Science and Systems Conference (RSS'13).
Acceptance Rate: 30%
Best paper award runner-up (5/183)

C.2 **Huang, C.-M.** and Mutlu, B. (2012). Robot Behavior Toolkit: Generating Effective Social Behaviors for Robots. In Proceedings of the 2012 ACM/IEEE International Conference on Human-Robot Interaction (HRI'12).
Acceptance Rate: 25%

C.1 **Huang, C.-M.** and Thomaz, A. L. (2011). Effects of Responding to, Initiating and Ensuring Joint Attention in Human-Robot Interaction. In Proceedings of the 20th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN'11).

Doctoral Consortia

D.3 **Huang, C.-M.** (2013). Designing Effective Multimodal Behaviors for Robots: A Data-Driven Perspective. In Proceedings of the 15th ACM on Interaction Conference on Multimodal Interaction (ICMI'13).

D.2 **Huang, C.-M.** (2012). Designing Effective Behaviors for Educational Embodied Agents. In Extended Abstracts of the ACM/SIGCHI Conference on Human Factors in Computing Systems (CHI'12).
Acceptance Rate: 23%

D.1 **Huang, C.-M.** (2012). Generating Effective Social Behaviors for Robots. In Proceedings of the HRI Pioneers Workshop.
Acceptance Rate: 28%

Symposium & Workshop Papers

S.5 Strohkorb, S., **Huang, C.-M.**, Ramachandran, A., and Scassellati, B. (2016). Establishing Sustained, Supportive Human-Robot Relationships: Building Blocks and Open Challenges. 2016 AAAI Spring Symposium.

S.4 Sauppé, A. and **Huang, C.-M.** (2015). Teaching Human-Robot Interaction Using the CSTA Recommendations. In HRI Education Workshop: How to design and teach courses in Human-Robot Interaction (HRI'15).

S.3 **Huang, C.-M.** and Mutlu, B. (2014). Modeling Human-Robot Interactions as Systems of Distributed Cognition. In AAAI Fall Symposium on Artificial Intelligence and Human-Robot Interaction (AI-HRI).

S.2 Mutlu, B., Terrell, A., and **Huang, C.-M.** (2013). Coordination Mechanisms in Human-Robot Collaboration. In Proceedings of the Workshop on Collaborative Manipulation (HRI'13) (Invited paper).

S.1 **Huang, C.-M.** and Thomaz, A. L. (2010). Joint Attention in Human-Robot Interaction. In AAAI Fall Symposium on Dialog with Robots.

Posters

Po.2 Wu, S.-P. and **Huang, C.-M.** (2014). Time-efficient Programming Language Acquisition in Online Multimodal Self-training Environments. In WARF Discovery Competition, Madison, WI.

Po.1 **Huang, C.-M.** and Byom, L. (2012). Did I get that right? Perception of Social Cues by Adults with Traumatic Brain Injury. In WARF Discovery Competition, Madison, WI.

Theses

T.2 **Huang, C.-M.** (2015). Human-Robot Joint Action: Coordinating Attention, Communication, and Actions. Doctor of Philosophy (Ph.D.) Thesis. Department of Computer Sciences, University of Wisconsin–Madison.

T.1 **Huang, C.-M.** (2010). Joint Attention in Human-Robot Interaction. Master of Science (M.S.) Thesis. College of Computing, Georgia Institute of Technology.

Patent

P.1 Jung, H.-R., Lee, J. K., Moshkina, L., Arkin, R., Park, S. H., and **Huang, C.-M.** Affective Model Device and Method for Deciding the Behavior of an Affective Model Device. USA patent US8458112 B2.

Teaching Experience

Instructor

Social Robotics, Grandparents University (Wisconsin Alumni Association) 07.2014

Teaching Assistant

CS 302 Introduction to Programming, University of Wisconsin–Madison Spring 2011
Overall evaluation: 4.51 / 5.00 (78 students)

CS 367 Introduction to Data Structures, University of Wisconsin–Madison Fall 2010
Overall evaluation: N/A

Guest Lecturer

CPSC 472 Intelligent Robotics, Yale University 09.2016

CPSC 472 Intelligent Robotics, Yale University 12.2015

CS 570 Introduction to Human-Computer Interaction, University of Wisconsin–Madison 04.2014

Research Mentoring

Aditi Ramachandran, Yale University 04.2016-Present
Graduate research project: personalized robot-child tutoring [C.9]

Juliette Grantham, Yale University 09.2016-Present
Undergraduate senior project: interactive visualization for sequential data

Christopher Datsikas, Yale University Spring 2016
Undergraduate senior project: effects of responding to joint attention on persuasion

Yuye Wang, University of Wisconsin–Madison Fall 2012
Undergraduate semester project: generation of natural gaze saccade

Xao Yang, University of Wisconsin–Madison Fall 2012
Undergraduate semester project: modeling effective physician-patient communication

Invited Talks

IT.8 Designing Interactive Robots for Everyday People 03.2016
Department of Computer Science, University of North Carolina at Chapel Hill

IT.7 Adaptive Coordination Strategies for Human-Robot Handovers 02.2016
AAAI Robotics track (Invited RSS presentation), AAAI'16

IT.6 User Study on Hand-Over (Panalist) 07.2015
Human-Robot Hand-Over Workshop, RSS'15

IT.5 Designing Robotic Systems to Assist Everyday Users 04.2015
Microsoft Research

IT.4 Designing Robotic Systems to Assist Everyday Users 04.2015
Department of Computer Science, University of Minnesota, Twin Cities

IT.3 Human-Centered Social Robotics 11.2014
Human-Centered Computing Group, University of Maryland, Baltimore County

IT.2 Towards Socially Interactive Robots 08.2014
Multimodal Signal Processing Laboratory, University of Texas–Dallas

IT.1 Enabling Human-Robot Joint Actions 04.2014
Google Inc.

Service & Leadership

Organizer

Workshop on Socially and Physically Assistive Robotics for Humanity (RSS'16)	2016
Workshop on Long-Term Child-Robot Interaction (RO-MAN'16)	2016

Program Committee & Associate Editor

AAAI Conference on Artificial Intelligence (AAAI)	2017
International Workshop on Advanced Robotics and its Social Impacts (ARSO)	2017
International Symposium on Robot and Human Interactive Communication (RO-MAN)	2016
International Conference on Human-Agent Interaction (HAI)	2014, 2016
International Conference on Social Robotics (ICSR)	2016

Conference Paper Referee

International Conference on Human-Robot Interaction (HRI)	2012-2017
International Conference on Robotics and Automation (ICRA)	2017
International Conference on Intelligent Robots and Systems (IROS)	2014
International Symposium on Robot and Human Interactive Communication (RO-MAN)	2013-2015
International Conference on Humanoid Robots	2014
International Conference on Human Factors in Computing Systems (CHI)	2012, 2016-2017
International Conference on Multimodal Interaction (ICMI)	2012
International Conference on Human-Agent Interaction (HAI)	2014
International conference on Tangible, Embedded and Embodied Interaction	2016

Journal Article Referee

International Journal of Social Robotics
Journal of Human-Robot Interaction
Pattern Recognition Letters
Interaction Studies
International Journal of Human-Computer Interaction
IEEE Transactions on Affective Computing
IEEE Transactions on Autonomous Mental Development
Journal of Intelligent and Robotic Systems

Press

UW professor develops robotic dishwashing arm (The Badger Herald)	2015
A new robot helper could make daily chores astronomically more fun (Tech Insider)	2015
Teach Your Robot to Do the Dishes (MIT Technology Review)	2015
Bridging the uncanny valley between humans, robots (UW-Madison News)	2014
Developing Robots That Can Teach Humans (Science Nation)	2012