

# Sean Andrisc

Microsoft Research AI

Homepage: [www.seanandrisc.com](http://www.seanandrisc.com)

Building 99  
14820 NE 36th Street  
Redmond, WA 98052  
☎ 1.715.309.8102  
✉ [sandrisc@microsoft.com](mailto:sandrisc@microsoft.com)

## Research Interests

Physically situated interaction  
Socially situated interaction  
Human-robot interaction  
Embodied conversational agents  
Computational Microsociology

## Employment

- 2016 – present **Researcher**, *Microsoft Research*, Redmond, WA.  
Member of the Perception and Interaction group.  
Conducting research on social robots and other situated interactive systems deployed “in-the-wild.”  
Developing the open source Platform for Situated Intelligence with a team of software engineers.
- 2010 – 2016 **Graduate Researcher**, *UW–Madison Department of Computer Sciences*, Madison, WI.  
Conducted research as part of the Human-Computer Interaction and Visual Computing laboratories.  
Dissertation centered on effective social gaze behaviors for human-robot and human-agent interaction.
- Summer 2015 **Research Intern**, *Microsoft Research*, Redmond, WA.  
Investigated methods by which social robots can distinguish users’ intentions and shape interactions.
- Spring 2014 **Graduate Research Fellow**, *ENSTA ParisTech*, Palaiseau, France.  
Recipient of the Chateaubriand Research Fellowship offered by the Embassy of France in the United States, funding five months of research in France on socially assistive robots.
- Fall 2012 **Research & Development Lab Associate**, *Disney Research Pittsburgh*, Pittsburgh, PA.  
Researched multiparty turn-taking with groups of children interacting with an embodied conversational agent capable of using subtle verbal and nonverbal social cues.
- 2008 – 2010 **Undergraduate Research Assistant**, *University of Minnesota / Medtronic*, Minneapolis, MN.  
Developed novel real time volumetric visualizations of cardiac activity for physicians to view and manipulate during surgery while mapping a patient’s heart with cardiac lead implantation.
- 2009 – 2010 **Researcher**, *MinERS (Minnesota Emergency Response Squad)*, Minneapolis, MN.  
Developed artificial intelligence strategies for agents in the RoboCup Rescue Agent Simulation.

## Education

- 2010 – 2016 **PhD in Computer Science**, *University of Wisconsin–Madison*.  
Department of Computer Sciences  
*Dissertation title*: Gaze Mechanisms for Situated Interaction with Embodied Agents  
*Committee*: Bilge Mutlu (co-chair), Michael Gleicher (co-chair), Kevin Ponto, David Shaffer, Adriana Tapus
- 2010 – 2012 **Masters of Science in Computer Science**, *University of Wisconsin–Madison*.  
Department of Computer Sciences

2006 – 2010 **Bachelors of Science in Computer Science**, *University of Minnesota–Twin Cities*.  
Summa Cum Laude  
High Distinction  
Minor in Mathematics

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## Teaching Experience

- Spring 2015 **Instructor (Introduction to Human-Computer Interaction)**, *UW–Madison*.  
Lectured 63 students on basic HCI principles, methods, and applications.  
Mentored student teams on designing and executing class projects.  
Teaching evaluation: 4.52/5.00
- Fall 2013 **After School CS Club Leader**, *Thoreau Elementary School*, Madison, WI.  
Service learning project teaching computer science concepts to 4th–5th grade students with Scratch.
- 2008 – 2009 **Honors Tutor**, *University of Minnesota Honors Program*, Minneapolis, MN.  
Worked one-on-one with students to provide assistance in math, physics, and computer science.
- 2008 – 2009 **Orientation Counselor**, *University of Minnesota Honors Program*, Minneapolis, MN.  
Advised incoming freshmen, helping them to schedule classes and start thinking about research.

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## Publications

### Dissertation

- **Andrist, S.** (2016). *Gaze Mechanisms for Situated Interaction with Embodied Agents* (Doctoral dissertation). University of Wisconsin-Madison, WI, USA.

### Journal Articles

- **Andrist, S.**, Ruis, A. R., Shaffer, D. W. (2018). A network analytic approach to gaze coordination during a collaborative task. In *Computers in Human Behavior*. 89. 339–348.
- **Andrist, S.**, Bohus, D., Mutlu, B., Schlangen, D. (2016). Turn-Taking and Coordination in Human-Machine Interaction (Introduction). In *AI Magazine*. 37:4. 5–6.
- **Andrist, S.**, Collier, W., Gleicher, M., Mutlu, B., and Shaffer, D. (2015). Look Together: Analyzing Gaze Coordination with Epistemic Network Analysis. *Frontiers in Psychology*. 6:1016. 1–15.
- Huang, C.-M., **Andrist, S.**, Saupé, A., and Mutlu, B. (2015). Using Gaze Patterns to Predict Task Intent in Collaboration. *Frontiers in Psychology*. 6:1049. 1–12.
- Pejsa, T., **Andrist, S.**, Mutlu, B., and Gleicher, M. (2015). Gaze and Attention Management for Embodied Conversational Agents. *ACM Transactions on Interactive and Intelligent Systems (TiiS)*. 5(1), Article 3. 34 pages.
- Ruhland, K., Peters, C. E., **Andrist, S.**, Badler, J. B., Badler, N. I., Gleicher, M., Mutlu, B. and McDonnell, R. (2015). A Review of Eye Gaze in Virtual Agents, Social Robotics and HCI: Behaviour Generation, User Interaction and Perception. *Computer Graphics Forum*.

### Book Chapters

- Mutlu, B., **Andrist, S.**, and Saupé, A. (2014). Enabling Human-Robot Dialogue. In J. Markowitz (Ed.) *Robots that Talk and Listen*. De Gruyter.

## Refereed Full Conference Papers

- **Andrist, S.**, Bohus D., Kamar E., Horvitz E. (2017). What Went Wrong and Why? Diagnosing Situated Interaction Failures in the Wild. In: Kheddar A. et al. (eds), *Proceedings of the International Conference on Social Robotics (ICSR '17)*. Springer. 293–303.
- **Andrist, S.**, Gleicher, M., Mutlu, B. (2017). Looking Coordinated: Bidirectional Gaze Mechanisms for Collaborative Interaction with Virtual Characters. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI '17)*. ACM. New York, NY, USA. 2571–2582. [**Best of CHI Honorable Mention Award**]
- **Andrist, S.**, Mutlu, B., and Tapus, A. (2015). Look Like Me: Matching Robot Personality via Gaze to Increase Motivation. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems (CHI '15)*. ACM. New York, NY, USA. 3603–3612. [**Best of CHI Honorable Mention Award**]
- **Andrist, S.**, Ziadee, M., Boukaram, H., Mutlu, B., and Sakr, M. (2015). Effects of Culture on the Credibility of Robot Speech: A Comparison between English and Arabic. In *Proceedings of the Tenth Annual ACM/IEEE International Conference on Human-Robot Interaction (HRI '15)*. ACM. New York, NY, USA. 157–164.
- **Andrist, S.**, Tan, X. Z., Gleicher, M., and Mutlu, B. (2014). Conversational Gaze Aversion for Humanlike Robots. In *Proceedings of the 2014 ACM/IEEE International Conference on Human-Robot Interaction (HRI '14)*. ACM. New York, NY, USA. 25–32. [**Best Paper Award Nominee**]
- Ruhland, K., **Andrist, S.**, Badler, J. B., Peters, C. E., Badler, N. I., Gleicher, M., Mutlu, B., and McDonnell, R. (2014). “Look Me in the Eyes”: A Survey of Eye and Gaze Animation for Virtual Agents and Artificial Systems. In *Eurographics 2014 - State of the Art Reports (EG '14 STARS)*.
- **Andrist, S.**, Mutlu, B., and Gleicher, M. (2013). Conversational Gaze Aversion for Virtual Agents. In R. Aylett, B. Krenn, C. Pelachaud, & H. Shimodaira (Eds.), *Proceedings of the 13th International Conference on Intelligent Virtual Agents (IVA '13)*. Springer Berlin Heidelberg. 249–262. [**Highly Commended Paper**]
- **Andrist, S.**, Spannan, E., and Mutlu, B. (2013). Rhetorical Robots: Making Robots More Effective Speakers Using Linguistic Cues of Expertise. In *Proceedings of the 8th ACM/IEEE International Conference on Human-Robot Interaction (HRI '13)*. IEEE Press. Piscataway, NJ, USA. 341–348.
- Leite, I., Hajishirzi, H., **Andrist, S.**, and Lehman, J. (2013). Managing Chaos: Models of Turn-taking in Character-multichild Interactions. In *Proceedings of the 15th International Conference on Multimodal Interaction (ICMI '13)*. ACM. New York, NY, USA. 43–50.
- **Andrist, S.**, Pejisa, T., Mutlu, B., and Gleicher, M. (2012). Designing Effective Gaze Mechanisms for Virtual Agents. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '12)*. ACM. New York, NY, USA. 705–714.
- Nanjanath, M., Erlandson, A., **Andrist, S.**, Ragipindi, A., Mohammed, A., Sharma, A., and Gini, M. (2010). Decision and Coordination Strategies for RoboCup Rescue Agents. In *Proceedings of the Second International Conference on Simulation, Modeling, and Programming for Autonomous Robots (SIMPAN '10)*. 473–484.

## Refereed Short Conference Papers

- Bohus, D., **Andrist, S.**, Jalobeanu, M. (2017). Rapid development of multimodal interactive systems: a demonstration of platform for situated intelligence. In *Proceedings of the 19th ACM International Conference on Multimodal Interaction (ICMI '17)*. ACM. 493–494. [**Best Demo Award**]
- **Andrist, S.**, Bohus, D., Yu, Z., Horvitz, E. (2016). *Are You Messing with Me? Querying about the Sincerity of Interactions in the Open World*. In Proceedings of the 2016 ACM/IEEE International Conference on Human-Robot Interaction (HRI '16 Late-breaking Reports). ACM. New York, NY, USA.

- Bellamy, R. K. E., **Andrist, S.**, Bickmore, T., Churchill, E. F., Erickson, T. (2017). *Human-Agent Collaboration: Can an Agent be a Partner?*. In Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA '17). ACM. New York, NY, USA. 1289-1294.
- **Andrist, S.**, Bohus, D., Yu, Z., and Horvitz, E. (2016). Are You Messing with Me? Querying about the Sincerity of Interactions in the Open World. In *Proceedings of the 2016 ACM/IEEE International Conference on Human-Robot Interaction (HRI '16 Late-breaking Reports)*. ACM. New York, NY, USA.
- **Andrist, S.**, Leite, I., and Lehman, J. (2013). Fun and Fair: Influencing Turn-taking in a Multi-party Game with a Virtual Agent. In *Proceedings of the 12th International Conference on Interaction Design and Children (IDC '13)*. ACM. New York, NY, USA. 352–355.

## Refereed Workshop Papers

- Bohus, D., **Andrist, S.**, Horvitz, E. (2017). A study in scene shaping: Adjusting F-formations in the wild. In *Proceedings of the 2017 AAAI Fall Symposium: Natural Communication for Human-Robot Collaboration*.
- **Andrist, S.** (2013). Controllable Models of Gaze Behavior for Virtual Agents and Humanlike Robots. In *Proceedings of the 15th ACM International Conference on Multimodal Interaction (ICMI '13), Doctoral Consortium*. ACM. New York, NY, USA. 333–336.
- Leite, I., Hajishirzi, H., **Andrist, S.**, and Lehman, J. (2013). Take or Wait? Learning Turn-Taking from Multiparty Data. In *AAAI Conference on Artificial Intelligence (Late-Breaking Developments)*.
- **Andrist, S.**, Pejisa, T., Mutlu, B., and Gleicher, M. (2012). A Head-Eye Coordination Model for Animating Gaze Shifts of Virtual Characters. In *Proceedings of the 14th International Conference on Multimodal Interaction (ICMI '12), 4th Workshop on Eye Gaze in Intelligent Human Machine Interaction (Gaze-In '12)*. ACM. New York, NY, USA.

## Patents

- *Eye-Gaze Based Initiation and Maintenance of Engagement with Personal Digital Assistants*. (Microsoft).  
Ryen White, Andy Wilson, Gregg Wygonik, Nirupama Chandrasekaran, **Sean Andrist**. (pending, Submitted Oct 2017).

## Honors

- 2017 ICMI Best Demo Award
- 2017 Best of CHI Honorable Mention Award
- 2016 Graduate Student Research Award from UW Madison Department of Computer Sciences
- 2015 First Place Winner (out of 23) in the UW Graduate School's *Three Minute Thesis* Competition
- 2015 Best of CHI Honorable Mention Award
- 2014 HRI Best Paper Award Nominee
- 2014 Chateaubriand Research Fellowship
- 2013 IVA Highly Commended Paper Award
- 2013 Travel scholarship to IVA conference in Edinburgh, UK: 2013
- 2012 National Science Foundation (NSF) Graduate Research Fellowship (Honorable Mention)
- 2010-2011 Grace Wahba Fellowship
- 2006-2007 ShopKo and Lando Scholarships

## Intern Supervision

- 2018 *Hooman Hedayati* (University of Colorado Boulder) – Exploring data-driven approaches to recognizing F-formations in the open world.

- 2018 *Dimosthenis Kontogiorgos* (KTH Royal Institute of Technology) – Inferring interaction success and quality from observed user reactions to situated social robot behaviors.  
Co-mentored with Dan Bohus.
- 2017 *Siddhartha Banerjee* (Georgia Tech) – Interaction, engagement, and activity recognition for mobile robot platforms.  
Co-mentored with Dan Bohus.

## Professional Activities

### Invited Talks and Panels

- 2018 **Invited Speaker**, *HCII Seminar Series*,  
Carnegie Mellon University.  
"Situated Interaction in the Open World: New Systems and Challenges"
- 2018 **Invited Speaker**, *AI Seminar Series: Augmented Intelligence*,  
University of Washington.  
"Situated Interaction in the Open World: New Systems and Challenges"
- 2018 **Contributed Presentation**, *Social Robotics: Challenges, Opportunities, and New Directions*,  
UW CSE MSR Summer Institute.  
"Just Let the Robot Do Its Job! Situated Interaction Challenges in the Open World"
- 2017 **Panelist**, *CHI 2017*, Denver, CO.  
"Human-Agent Collaboration: Can an Agent be a Partner?"  
Co-panelists: Rachel K. E. Bellamy (IBM Research), Timothy Bickmore (Northeastern University), Elizabeth F. Churchill (Google), Thomas Erickson (IBM Research)
- 2017 **Invited Speaker**, *Human Factors and Applied Cognition Brown Bag Lecture*,  
George Mason University.  
"Gaze Mechanisms for Situated Interaction with Embodied Agents"
- 2016 **Invited Speaker**, *UW CSE Robotics Colloquium*,  
University of Washington.  
"Gaze Mechanisms for Situated Interaction with Embodied Agents"
- 2016 **Invited Poster**, *Computing Research: Addressing National Priorities and Societal Needs*,  
Computing Community Consortium (CCC), Washington, D.C.  
"Situated Gaze Mechanisms for Embodied Agents"
- 2014 **Invited Participant**, *HRI Pioneers Workshop*, Bielefeld, Germany.  
"Coordinative Gaze Mechanisms for Social Robots"
- 2013 **Invited Participant**, *ICMI Doctoral Consortium*, Sydney, Australia.  
"Controllable Models of Gaze Behavior for Virtual Agents and Humanlike Robots"

### Organization and Service

- 2019 **Senior Program Committee Member**.  
International Conference on Intelligent Virtual Agents (IVA).
- 2018 **Institute Organizer**, UW CSE MSR Summer Institute.  
Topic: *Social Robotics: Challenges, Opportunities, and New Directions*.  
Cosponsored by the Paul G. Allen School of Computer Science & Engineering at the University of Washington and Microsoft Research.  
Co-organizers: Dan Bohus (MSR), Maya Cakmak (University of Washington), Siddhartha Srinivasa (University of Washington).

- 2018 **Special Session Organizer**, SIGDIAL 2018, Melbourne, Australia.  
Topic: *Physically Situated Dialogue (RoboDIAL)*.  
As part of the annual conference of the joint ACL/ISCA Special Interest Group on Discourse and Dialogue.  
Co-organizers: Stephanie Lukin (Army Research Lab), Matthew Marge (Army Research Lab), Jesse Thomason (University of Texas at Austin), Zhou Yu (University of California, Davis).
- 2018 **Program Committee Member**.  
ACM/IEEE International Conference on Human-Robot Interaction (HRI).  
Also served on program subcommittee for the Pioneers Workshop.
- 2017 **Session Organizer and Chair**, Microsoft Research Faculty Summit.  
Topic: *Integrative-AI*.  
Co-organizers: Dan Bohus (MSR), Ece Kamar (MSR), Eric Horvitz (MSR).
- 2017 **Program Committee Member – Demo Track**.  
International Conference on Intelligent Virtual Agents (IVA).
- 2016 **Special Issue Editor**, AI Magazine.  
Topic: *Turn-taking and Coordination in Human-Machine Interaction*.  
Co-editors: Dan Bohus (MSR), Bilge Mutlu (University of Wisconsin–Madison), David Schlangen (Bielefeld University).
- 2015 **Symposium Organizer**, AAAI Spring Symposium, Stanford, CA.  
Topic: *Turn-taking and Coordination in Human-Machine Interaction*  
Co-organizers: Dan Bohus (MSR), Eric Horvitz (MSR), Bilge Mutlu (University of Wisconsin–Madison), David Schlangen (Bielefeld University).
- 2013 **Student Volunteer**.  
ACM/IEEE International Conference on Human-Robot Interaction (HRI).

### Referee for Conference Proceedings

ACM/IEEE Human-Robot Interaction Conference (HRI)  
 ACM/SigCHI Conference on Human Factors in Computing (CHI)  
 ACM Conference on Computer-Supported Collaborative Work and Social Computing (CSCW)  
 ACM International Conference on Multimodal Interaction (ICMI)  
 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)  
 IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)  
 International Conference on Social Robotics (ICSR)  
 International Conference on Intelligent Virtual Agents (IVA)

### Referee for Journal Articles

ACM Transactions on Human-Robot Interaction (THRI)  
 ACM Transactions on Interactive Intelligent Systems (TiiS)  
 Artificial Intelligence Review  
 Computers in Human Behavior  
 Frontiers in Robotics and AI  
 IEEE Robotics and Automation Letters (RA-L)  
 IEEE Robotics and Automation Magazine (RAM)  
 International Journal of Robotics Research (IJRR)  
 International Journal of Social Robotics (IJSR)  
 Nature Scientific Reports

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## Selected Press

Wired (UK), 2016: [This robot changes how it looks depending on your personality](#)  
IEEE Spectrum (US), 2016: [This robot changes how it looks at you to match your personality](#)  
Popular Science (US), 2014: [Robots seem more thoughtful if they glance away while they talk](#)  
New Scientist (UK), 2014: [The robot tricks to bridge the uncanny valley](#)  
IEEE Spectrum (US), 2014: [What robot behavior makes people feel uncomfortable?](#)  
Science Nation (US), 2012: [Robots that can teach humans](#)

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## Professional References

### **Eric Horvitz, Managing Director**

Microsoft Research  
Building 99  
14820 NE 36th Street  
Redmond, WA 98052  
horvitz@microsoft.com

### **Andy Wilson, Principal Researcher**

Microsoft Research  
Building 99  
14820 NE 36th Street  
Redmond, WA 98052  
awilson@microsoft.com

### **Bilge Mutlu, Associate Professor**

Department of Computer Sciences  
University of Wisconsin–Madison  
1210 W. Dayton Street  
Madison, WI 53706  
bilge@cs.wisc.edu

### **Dan Bohus, Senior Researcher**

Microsoft Research  
Building 99  
14820 NE 36th Street  
Redmond, WA 98052  
dbohus@microsoft.com

### **Michael Gleicher, Professor**

Department of Computer Sciences  
University of Wisconsin–Madison  
1210 W. Dayton Street  
Madison, WI 53706  
gleicher@cs.wisc.edu

### **Adriana Tapus, Professor**

Robotics and Computer Vision Lab  
ENSTA–ParisTech  
828 Blvd des Marechaux  
91120, Palaiseau, France  
adriana.tapus@ensta-paristech.fr