Pragathi Praveena

Human-Robot and Human-Computer Interaction Researcher

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Research Overview

I design and build intelligent, interactive systems that **support collaboration in group settings**—such as teams, families, and classrooms—where individuals often bring different goals, abilities, or constraints. These differences make collaboration powerful, but they can also create miscommunication, inefficiency, and conflict. Using a human-centered approach, I develop robotic and AI systems that mediate these differences to improve collective outcomes, while respecting human diversity.

Current Position

2024 — Present **Postdoctoral Fellow**, Robotics Institute, Carnegie Mellon University
PI: Reid Simmons

Education

2017 — 2024 **M.S. and Ph.D. in Computer Sciences**, University of Wisconsin–Madison, USA
Dissertation Title: Towards Effective Robotic Groupware
Committee: Bilge Mutlu (co-chair), Michael Gleicher (co-chair), Michael Zinn, Robert Radwin

2011 — 2015 **Bachelor of Technology in Electrical Engineering**, Indian Institute of Technology Madras, India

Grants

2023 **Google Award for Inclusion Research**
Co-authored research proposal with Bilge Mutlu (PI), **$60,000**
Topic: Supporting Social Participation for Older Adults through Robotic Telepresence

2023 **Collaboration with Boeing Research & Technology**
Co-authored research proposal with Bilge Mutlu (PI) and Michael Hagenow, **~$60,000**
Topic: Exploring Opportunities for Robotic Assistance in Remote Worker Training

2023 **Expanding Our Vision Award, McPherson Eye Research Institute, UW–Madison**
Co-authored research proposal with Bilge Mutlu (PI), **$10,000**
Topic: Designing Interfaces to Enhance the Experience of Remote Vision through Robotic Cameras

Honors & Awards

2024 **Rising Stars in EECS**, Massachusetts Institute of Technology *(19% acceptance)*

2024 **Best Paper Award**, AAAI Fall Symposium on Unifying Representations for Robot Application Development

2023 **ACM SIGCHI Gary Marsden Travel Award**
Selective award for full support to attend ACM Conference on Human Factors in Computing Systems (CHI)

2023 **HRI Pioneer**, ACM/IEEE Conference on Human-Robot Interaction (HRI)
Fully funded participant in selective doctoral consortium *(25% acceptance)*

2020 **RSS Pioneer**, Robotics: Science and Systems (RSS)
Fully funded participant in selective doctoral consortium *(32% acceptance)*

2020 **Best Paper Award Finalist** *(top 5%)*, ACM/IEEE Conference on Human-Robot Interaction (HRI)

2016 **Xerox Patent Award**, Awarded by Xerox to the lead inventor on a filed patent

2015 **Institute Blues** *(top 3 in ~800 graduates)*, IIT Madras
Motorola Prize *(#1 in ~150 EE and CS graduates),* IIT Madras
Recognized for exceptional overall achievement during undergraduate studies

2014 **French Government Charpak Scholarship**
Two months of support for research experience at École Normale Supérieure, Paris

Work & Research Experience

2024 — Present **Postdoctoral Fellow**, Robotics Institute, **Carnegie Mellon University**
Led collaborative research project at NSF AI-CARING Institute

2017 — 2024 **Graduate Researcher**, People and Robots Lab, **University of Wisconsin–Madison**
Designed, built, and evaluated human-robot interfaces to enable remote and collaborative work

2015 — 2017 **Junior Research Scientist**, Data Analytics Lab, **Xerox Research Centre India**
Developed and evaluated novel algorithms to estimate respiratory patterns using a webcam
Patents licensed by a California-based baby monitor startup

Spring 2015 **Undergraduate Researcher**, Assistive Technology Lab, **Indian Institute of Technology Madras**

Summer 2014 **Undergraduate Researcher**, Group for Neural Theory, **École Normale Supérieure, France**

Summer 2013 **Project Intern**, Electrical and Electronics Maintenance, **Bosch India**

Publications

* *indicates equal contribution* *indicates students I mentored*

Journal Articles/Refereed Full Conference Papers

[P16] UIST '25 Hu, Y., Sato, A. J., Du, J., Ye, C., Zhu, A., **Praveena, P.**, & Mutlu, B. "NarraGuide: an LLM-based Narrative Mobile Robot for Remote Place Exploration." *ACM Symposium on User Interface Software and Technology.*

[P15] DIS '24 Lee, C. P., **Praveena, P.**, & Mutlu, B. "REX: Designing User-centered Repair and Explanations to Address Robot Failures." *ACM Conference on Designing Interactive Systems.*

[P14] IEEE Access '24 Wang, Y., **Praveena, P.**, & Gleicher, M. "A Design Space of Control Coordinate Systems in Telemanipulation." *IEEE Access.*

[P13] CSCW '23 **Praveena, P.**, Wang, Y., Senft, E., Gleicher, M., & Mutlu, B. "Periscope: A Robotic Camera System to Support Remote Physical Collaboration." *Proceedings of the ACM on Human-Computer Interaction, 7*(CSCW2).

[P12] ICRA '23 Wang, Y., **Praveena, P.**, Rakita, D., & Gleicher, M. "RangedIK: An Optimization-Based Robot Motion Generation Method for Ranged-Goal Tasks." *IEEE International Conference on Robotics and Automation.*

[P11] IROS '22 Senft, E.*, Hagenow, M.*, **Praveena, P.**, Radwin, R., Zinn, M., Gleicher, M., & Mutlu, B. "A Method for Automated Drone Viewpoints to Support Remote Robot Manipulation." *IEEE/RSJ International Conference on Intelligent Robots and Systems.*

[P10] Human Factors '22 Ramesh, B., Konstant, A., **Praveena, P.**, Senft, E., Gleicher, M., Mutlu, B., Zinn, M., & Radwin, R.G. "Manually Acquiring Targets from Multiple Viewpoints Using Video Feedback." *Human Factors.*

[P9] HRI '22 **Praveena, P.**, Molina, L., Wang, Y., Senft, E., Mutlu, B., & Gleicher, M. "Understanding Control Frames in Multi-Camera Robot Telemanipulation." *ACM/IEEE International Conference on Human-Robot Interaction.*

[P8] HRI '20 **Praveena, P.**, Rakita, D., Mutlu, B., & Gleicher, M. "Supporting Perception of Weight through Motion-induced Sensory Conflicts in Robot Teleoperation." *ACM/IEEE International Conference on Human-Robot Interaction.* 🎖 [Best Paper Award Finalist]

[P7] ICRA '19 **Praveena, P.**, Rakita, D., Mutlu, B., & Gleicher, M. "User-Guided Offline Synthesis of Robot Arm Motion from 6-DoF Paths." *IEEE International Conference on Robotics and Automation.*

[P6] HRI '19 **Praveena, P.**, Subramani, G., Mutlu, B., & Gleicher, M. "Characterization of Input Methods for Human-to-robot Demonstrations." *ACM/IEEE International Conference on Human-Robot Interaction.*

[P5] TSP '17 Prathosh, A.P., **Praveena, P.**, Mestha, L.K., & Bharadwaj, S. "Estimation of Respiratory Pattern from Video Using Selective Ensemble Aggregation." *IEEE Transactions on Signal Processing.*

[P4] BIBE '16 Chatterjee, A., Prathosh, A.P., **Praveena, P.**, & Upadhya, V. "Real-time Visual Respiration Rate Estimation with Dynamic Scene Adaptation." *IEEE International Conference on Bioinformatics and Bioengineering.*

[P3] BIBE '16 Chatterjee, A., Prathosh, A.P., **Praveena, P.**, & Upadhya, V. "A Vision Based Method for Real-time Respiration Rate Estimation Using a Recursive Fourier Analysis." *IEEE International Conference on Bioinformatics and Bioengineering.*

[P2] BIBE '16 Upadhya, V., Chatterjee, A., Prathosh, A.P., & **Praveena, P.** "Respiration Monitoring through Thoraco-Abdominal Video with an LSTM." *IEEE International Conference on Bioinformatics and Bioengineering.*

[P1] EMBC '16 Chatterjee, A., Prathosh, A.P., & **Praveena, P.** "Real-time Respiration Rate Measurement from Thoracoabdominal Movement with a Consumer Grade Camera." *IEEE International Conference of the Engineering in Medicine and Biology Society.*

Juried Short Conference Papers/Workshop Papers/Extended Abstracts

[S8] AAAI FSS '24 Zhou, Z., Jin, Y., & **Praveena, P.** "Statewise: A Petri Net-Based Visual Editor for Specifying Robotic Systems." *AAAI Fall Symposium on Unifying Representations for Robot Application Development.* 🎖 [Best Paper Award]

[S7] UIST '24 **Praveena, P.**, Sato, A. J., Koike, A., Zhou, R., White, N. T., & Nakagaki, K. "HRI and UIST: Designing Socially Engaging Robot Interfaces." *Adjunct Proceedings of the 37th Annual ACM Symposium on User Interface Software and Technology.*

[S6] HRI '24 Hwang, Y., Sato, A. J., **Praveena, P.**, White, N. T., & Mutlu, B. "Understanding Generative AI in Robot Logic Parametrization." *Workshop at ACM/IEEE International Conference on Human-Robot Interaction on End-User Development for Human-Robot Interaction.*

[S5] AAAI FSS '23 **Praveena, P.**, Schoen, A., Gleicher, M., Porfirio, D., & Mutlu, B. "Petri Nets for the Iterative Development of Interactive Robotic Systems." *AAAI Fall Symposium on Unifying Representations for Robot Application Development.*

[S4] CSCW '23 Meng, H., Wang, Y., **Praveena, P.**, Gleicher, M., & Mutlu, B. "Demonstrating Periscope: A Robotic Camera System to Support Remote Physical Collaboration." *Demonstration at ACM Conference On Computer-Supported Cooperative Work and Social Computing.*

[S3] CHI '23 **Praveena, P.***, Cagiltay, B.*, Gleicher, M., & Mutlu, B. "Exploring the Use of Collaborative Robots in Cinematography." *Late-Breaking Work at ACM Conference on Human Factors in Computing Systems.* 🎖 [ACM SIGCHI Gary Marsden Travel Award]

[S2] HRI '23 **Praveena, P.**, Gleicher, M., & Mutlu, B. "Designing Robotic Camera Systems to Enable Synchronous Remote Collaboration." *Extended Abstract at ACM/IEEE International Conference on Human-Robot Interaction.* 🎖 [HRI Pioneer]

[S1] RSS '20 **Praveena, P.**, Mutlu, B., & Gleicher, M. "Human-Robot Interfaces for Physical Interactions." *Extended Abstract at Robotics: Science and Systems.* 🎖 [RSS Pioneer]

Patents

[P2] "System and method for extracting a periodic signal from video." 2019. US Patent 10,192,307.
[P1] "Determining respiration rate from a video of a subject breathing." 2018. US Patent 9,861,302.

Teaching Experience

Fall 2025 **Guest Lecturer**, Introduction to HRI, CMU *(Upcoming)*
Interactive session on HRI for 10 graduate students; IoR: Henny Admoni

Fall 2025 **Guest Lecturer**, Robotics for Creative Practice, CMU
Interactive session on HRI for 10 undergraduate students; IoR: Garth Zeglin

Fall 2024 **Organizer**, HRI x UIST: Designing Socially Engaging Robot Interfaces, UIST @ CMU
Interactive session on HRI for 20 participants

Summers 2018, 2019 **Guest Lecturer**, Social Robotics, Grandparents University, UW–Madison
Lecture + lab session for ~20 children and grandparents; modernized lab component

Fall 2017 **Teaching Assistant**, ECE 203: Signals, Information and Computation, UW–Madison
Flipped-classroom instruction, office hours, and online Q&A support for ~200 students

2014 — 2015 **President and Instructor**, Web Operations Club, Centre for Innovation, IIT Madras
Year-long series of workshops, multi-day camps, and hackathons for 400+ students

Mentoring

Graduate Students

2023 — 2025	**Nathan White**	PhD CS UW–Madison
2023 — 2024	**Yaxin Hu**; Paper: C12	PhD CS UW–Madison
2023 — 2024	**Dakota Sullivan**	PhD CS UW–Madison
2023 — 2024	**Yuna Hwang**; Paper: S6	PhD CS UW–Madison
2023 — 2024	**Christine Lee**; Paper: C11	PhD CS UW–Madison
2022 — 2023	**Yeping Wang**; Paper: C10, J4	PhD CS UW–Madison
2025 — Present	**Sarah Lim**	METALS HCII CMU
2023 — Present	**Zejun Zhou**; Paper: S7	MS CS Brown University, BS CS UW–Madison
2024 — 2025	**Nikhil Kruthiventi**	MS CS UW–Madison, BS CS UW–Madison

Undergraduate Students

2025 — Present	**Stella Chen**	BS Neuroscience CMU
2025 — Present	**Zhaowei Zhang**	BS CS CMU
2025 — Present	**Unmesh Chakravarty**	BS CS CMU
2025 — Present	**Avantika Gupta**	BS CS CMU
2025 — Present	**Preetham Manapuri**	BS CS CMU
2025	**Rebecca Wang**	BS Mathematical Sciences CMU
2025	**Cyprien Riboud-Seydoux**	BS CS CMU
2025	**Jasmine Xu**	BS CS CMU
2025	**Sofian Syed**	BS CS CMU
2024	**Glenda Tan**	BS CS CMU
2024	**Pranavi Kondapalli**	BS CS CMU
2024	**Ryan Ding**	BS CS CMU
2024	**Jessica Han**	BS CS CMU
2024	**Taenam Kim**	BS CS UW–Madison
2023 — 2024	**Rainy Jin**; Paper: S7	BS CS UW–Madison
2023 — 2024	**Sydney Scalzo**	BS CS UW–Madison
2022 — 2023	**Haoming Meng**; Paper: S4	BS CS UW–Madison
2022	**Lily Reback**	BS Psychology UW–Madison
2022	**Alexander Peseckis**	BS CS UW–Madison
2022	**William Cong**	BS CS UW–Madison
2021 — 2022	**Gia-phong Nguyen**	BS CS UW–Madison
2021 — 2022	**Sage Livingstone**	BS CS UW–Madison
2020 — 2021	**Luis Molina**; Paper: C8	Research Staff UW–Madison
2019 — 2020	**Jack Yang**	BS CS UW–Madison
2019 — 2020	**Sayem Wani**	BS CS UW–Madison
2019 — 2020	**Joshua Mathews**	BS CS UW–Madison

Peer Mentoring

People and Robots Lab, UW–Madison
April 2022 — August 2023

I organized a peer mentorship program in which 2–3 graduate students met with a different student mentor each week. Through this program, I provided peer mentorship to 12 graduate students through **weekly sessions**.

Mentees: Yuna Hwang, Hailey Johnson, Amy Koike, Callie Kim, Christine Lee, Dakota Sullivan, Irene Ho, Bengisu Cagiltay, Yaxin Hu, Nathan White, Nitzan Orr, Kevin Welsh

Invited Talks

2025	Robotics Seminar, **Cornell University** *(Upcoming)*
2024	**Talking Robotics** YouTube Seminar *(Virtual)*
2024	Institute for Experiential Robotics Seminar Series, **Northeastern University**
2024	HRI Reading Group, **Tufts University**
2023	Adaptive Systems Section, **Naval Research Laboratory**
2023	Intuitive Computing Lab, **Johns Hopkins University**

2023 CS Departmental Research Symposium, **UW–Madison** 🎖 [Best Talk Award]
2021 LUCID Seminar, **UW–Madison** *(Virtual)*

Academic Service

Program Committee

2025 Computer-Supported Cooperative Work & Social Computing (CSCW) 🎖 [Special Recognition]
2024 Pioneers Workshop at ACM/IEEE International Conference on Human-Robot Interaction (HRI)

Referee Service

2021 — 2025 ACM/IEEE International Conference on Human-Robot Interaction (HRI)
2023 — 2025 ACM Conference on Human Factors in Computing Systems (CHI)
2023, 2025 Transactions on Human-Robot Interaction
2025 ACM Symposium on User Interface Software and Technology (UIST)
2024 ACM Conference on Designing Interactive Systems (DIS) 🎖 [Special Recognition]
2023 Computer-Supported Cooperative Work & Social Computing (CSCW)

Ad-hoc Reviewer

2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
2023 Automation in Construction
2022 IEEE Robotics and Automation Letters (RA-L)

Organization

2024 **Co-chair**, AAAI Fall Symposium on AI for Aging in Place, Arlington, VA, USA
Organized a 2.5-day multidisciplinary symposium

2024 **Lead Organizer**, HRI x UIST: Designing Socially Engaging Robot Interfaces, Pittsburgh, PA, USA
Organized a full-day interactive workshop on social robotics

2024 **Networking Chair**, HRI Pioneers Workshop, Boulder, CO, USA
Initiated the mentorship program

2021 **Social Chair**, RSS Pioneers Workshop, Virtual
Organized social activities on Gather.town

Outreach/Volunteering

2024 **Judge**, FIRST LEGO League, Aliquippa High School, PA, USA
2023 **Staff**, UW–Madison CS recruitment booth, Grace Hopper Celebration, Orlando, FL, USA
Summer 2022 **Organizer** (along with Yaxin Hu), Human-Centered Computing Reading Group, UW–Madison
2018 — 2023 **Volunteer**, Lab tours & demos for visiting school children, graduate students, & faculty candidates

Extra-Curricular

2019 **Morgridge Entrepreneurial Bootcamp**, UW–Madison
Selected to attend a one-week training program in technology entrepreneurship for graduate students

2018 **gALPHA Entrepreneurship Program**, UW–Madison
Selected to attend a four-week venture-creation program by *gener8tor*, a nationally ranked accelerator

2018 **Hackathon winner** *(#1 in 8 teams)*, EnerHack, UW–Madison

2014 **Hackathon winner** *(#1 in ~20 teams)*, Geek Up, IIT Madras; Invited to present at Google DevFest, Chennai