Pragathi Praveena

Group-Centered Robotics & AI Researcher

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Research Overview

I am a *group-centered* robotics and AI researcher. My research focuses on designing and studying AI systems for groups, including how these systems reshape the dynamics of the groups in which they are embedded. Creating effective AI for groups requires new methods for human-centered design and evaluation at the group level, because **collective outcomes are emergent properties** that cannot be reduced to the experiences of individual members alone. Group-centered AI matters because groups are fundamental to human thriving, and we need productive and responsible ways for AI to participate in them.

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, Michael Gleicher, 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 interdisciplinary research project on social world modeling to enable AI social reasoning

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

My research has been published in top-tier venues in robotics and HCI; * indicates equal contribution, indicates students I mentored.

In Preparation/Under Review

In Preparation **Praveena, P.**, Gupta, A., London, A. J., Dishop, C. R., Lee, A., Admoni, H., Kim, J., Woolley, A.W., Zimmerman, J., & Simmons, R. "AI Getting to Know You: Understanding Users via LLM-based Narrative Analysis."

In Preparation Tan, G. H.*, Han, J.*, Kondapalli, P.*, Ding, R.*, Puthuveetil, K., Tecson, M., **Praveena, P.**, Erickson Z., & Simmons, R. "Vision and Tracking in a Smart AI Kitchen for Older Adults."

Under Review White, N. T., **Praveena, P.**, Kruthiventi, N., & Mutlu, B. "Exploring the Potential of Multimodal LLMs for the Understanding of Qualitative Data."

In Preparation Sheidlower, I., Bu, F., Muslimani, C., Zhu, Y., **Praveena, P.**, & Booth, S. "Robot Lending Libraries: Empowering Society with Robots as Public Goods."

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

[T2] "System and method for extracting a periodic signal from video." 2019. US Patent 10,192,307.
[T1] "Determining respiration rate from a video of a subject breathing." 2018. US Patent 9,861,302.

Teaching Experience

I have guest lectured in HRI (delivering original lesson plans), served as TA for a core ECE course, and led technical design workshops.

Fall 2025 **Guest Lecturer**, Introduction to HRI, CMU
Two interactive sessions on HRI for ~10 graduate students

Fall 2025 **Guest Lecturer**, Robotics for Creative Practice, CMU
Interactive session on HRI for ~10 undergraduate students

Fall 2024 **Instructor**, HRI x UIST: Designing Socially Engaging Robot Interfaces, UIST @ CMU
Interactive full-day workshop on HRI for ~20 participants

Summers 2018, 2019 **Guest Lecturer**, Social Robotics, Grandparents University, UW–Madison
Lecture + lab sessions 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

I have mentored 40+ students (PhD, MS, BS) across UW–Madison and CMU.

Graduate Students

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

Undergraduate Students

2025 — Present	**Sude Ozkaya**	BS Cognitive Science CMU
2025 — Present	**Yudh Shukla**	BS Cognitive Science CMU
2025 — Present	**Stella Chen**	BS Neuroscience CMU
2025 — Present	**Zhaowei Zhang**	BS CS CMU
2025 — Present	**Avantika Gupta**	BS CS CMU
2025	**Unmesh Chakravarty**	BS CS CMU
2025	**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**	BS CS UW–Madison
2023 — 2024	**Sydney Scalzo**	BS CS UW–Madison
2022 — 2023	**Haoming Meng**	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**	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

I organized a peer mentorship program for 16 months 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.

2022 — 2023 **People and Robots Lab**, UW–Madison
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**
2024 **Talking Robotics** YouTube Seminar *(Virtual)*
2024 Robotics Seminar, **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 — 2026 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 (THRI)
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 **Co-organizer**, 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