

# PRAGATHI PRAVEENA

## HUMAN-ROBOT AND HUMAN-COMPUTER INTERACTION RESEARCHER

Robotics Institute, Carnegie Mellon University  
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## RESEARCH OVERVIEW

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My research focuses on designing intelligent, interactive systems that **enhance collaboration in group settings**. In teams, families, and classrooms, individuals bring different goals, abilities, and constraints—differences that can fuel collaboration but also create miscommunication, inefficiency, and conflict. Through human-centered design, I develop robotic and AI systems that mediate these differences to improve collective outcomes, while respecting human diversity.

## CURRENT POSITION

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

## EDUCATION

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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

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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

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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

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- 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

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

### UNDER REVIEW

- CHI '26 **Praveena, P.**, Gupta, A., London, A. J., Dishop, C. R., Lee, A., Admoni, H., Kim, J., Woolley, A.W., Zimmerman, J., Simmons, R. *ACM Conference on Human Factors in Computing Systems*.
- HRI '26 Tan, G. H.\*, Han, J.\*, Kondapalli, P.\*, Ding, R.\*, Puthuveetil, K., Tecson, M., **Praveena, P.**, Erickson Z., Simmons, R. *ACM/IEEE International Conference on Human-Robot Interaction*.

### 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.**, & Upadhyay, 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.**, & Upadhyay, 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 Upadhyay, 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.

## MENTORING

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

### GRADUATE STUDENTS

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

### UNDERGRADUATE STUDENTS

|                |                           |                              |
|----------------|---------------------------|------------------------------|
| 2025 — Present | <b>Stella Chen</b>        | BS Neuroscience CMU          |
| 2025 — Present | <b>Zhaowei Zhang</b>      | BS CS CMU                    |
| 2025 — Present | <b>Unmesh Chakravarty</b> | BS CS CMU                    |
| 2025 — Present | <b>Avantika Gupta</b>     | BS CS CMU                    |
| 2025 — Present | <b>Preetham Manapuri</b>  | BS CS CMU                    |
| 2025           | <b>Rebecca Wang</b>       | BS Mathematical Sciences CMU |

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|-------------|-------------------------------|---------------------------|
| 2025        | <b>Cyprien Riboud-Seydoux</b> | BS CS CMU                 |
| 2025        | <b>Jasmine Xu</b>             | BS CS CMU                 |
| 2025        | <b>Sofian Syed</b>            | BS CS CMU                 |
| 2024        | <b>Glenda Tan</b>             | BS CS CMU                 |
| 2024        | <b>Pranavi Kondapalli</b>     | BS CS CMU                 |
| 2024        | <b>Ryan Ding</b>              | BS CS CMU                 |
| 2024        | <b>Jessica Han</b>            | BS CS CMU                 |
| 2024        | <b>Taenam Kim</b>             | BS CS UW–Madison          |
| 2023 — 2024 | <b>Rainy Jin</b>              | BS CS UW–Madison          |
| 2023 — 2024 | <b>Sydney Scalzo</b>          | BS CS UW–Madison          |
| 2022 — 2023 | <b>Haoming Meng</b>           | BS CS UW–Madison          |
| 2022        | <b>Lily Reback</b>            | BS Psychology UW–Madison  |
| 2022        | <b>Alexander Peseckis</b>     | BS CS UW–Madison          |
| 2022        | <b>William Cong</b>           | BS CS UW–Madison          |
| 2021 — 2022 | <b>Gia-phong Nguyen</b>       | BS CS UW–Madison          |
| 2021 — 2022 | <b>Sage Livingstone</b>       | BS CS UW–Madison          |
| 2020 — 2021 | <b>Luis Molina</b>            | Research Staff UW–Madison |
| 2019 — 2020 | <b>Jack Yang</b>              | BS CS UW–Madison          |
| 2019 — 2020 | <b>Sayem Wani</b>             | BS CS UW–Madison          |
| 2019 — 2020 | <b>Joshua Mathews</b>         | 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.

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| 2022 — 2023 | <b>People and Robots Lab</b> , UW–Madison<br>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 |
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## TEACHING EXPERIENCE

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I have guest lectured in HRI, served as TA for a core ECE course, and led technical design workshops.

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|--------------------|---|
| Fall 2025          | <b>Guest Lecturer</b> , Introduction to HRI, CMU ( <i>Upcoming</i> )<br><i>Interactive session on HRI for 10 graduate students; IoR: Henny Admoni</i>                                     |
| Fall 2025          | <b>Guest Lecturer</b> , Robotics for Creative Practice, CMU<br><i>Interactive session on HRI for 10 undergraduate students; IoR: Garth Zeglin</i>   |
| Fall 2024          | <b>Instructor</b> , HRI x UIST: Designing Socially Engaging Robot Interfaces, UIST @ CMU<br><i>Interactive full-day workshop on HRI for ~20 participants</i>                              |
| Summers 2018, 2019 | <b>Guest Lecturer</b> , Social Robotics, Grandparents University, UW–Madison<br><i>Lecture + lab session for ~20 children and grandparents; modernized lab component</i>                  |
| Fall 2017          | <b>Teaching Assistant</b> , ECE 203: Signals, Information and Computation, UW–Madison<br><i>Flipped-classroom instruction, office hours, and online Q&amp;A support for ~200 students</i> |
| 2014 — 2015        | <b>President and Instructor</b> , Web Operations Club, Centre for Innovation, IIT Madras<br><i>Year-long series of workshops, multi-day camps, and hackathons for 400+ students</i>       |

## INVITED TALKS

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| 2025 | Robotics Seminar, <b>Cornell University</b> ( <i>Upcoming</i> )                    |
| 2024 | <b>Talking Robotics</b> YouTube Seminar ( <i>Virtual</i> )                         |
| 2024 | Institute for Experiential Robotics Seminar Series, <b>Northeastern University</b> |
| 2024 | HRI Reading Group, <b>Tufts University</b>   |
| 2023 | Adaptive Systems Section, <b>Naval Research Laboratory</b>                         |
| 2023 | Intuitive Computing Lab, <b>Johns Hopkins University</b>                           |
| 2023 | CS Departmental Research Symposium, <b>UW-Madison</b> 🏆 [Best Talk Award]          |
| 2021 | LUCID Seminar, <b>UW-Madison</b> ( <i>Virtual</i> )                                |

## ACADEMIC SERVICE

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### PROGRAM COMMITTEE

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|------|---|
| 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

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|-------------|---|
| 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 (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

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

### ORGANIZATION

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| 2024 | <b>Co-chair</b> , AAAI Fall Symposium on AI for Aging in Place, Arlington, VA, USA<br><i>Organized a 2.5-day multidisciplinary symposium</i>                                 |
| 2024 | <b>Lead Organizer</b> , HRI x UIST: Designing Socially Engaging Robot Interfaces, Pittsburgh, PA, USA<br><i>Organized a full-day interactive workshop on social robotics</i> |
| 2024 | <b>Networking Chair</b> , HRI Pioneers Workshop, Boulder, CO, USA<br><i>Initiated the mentorship program</i>   |
| 2021 | <b>Social Chair</b> , RSS Pioneers Workshop, Virtual<br><i>Organized social activities on Gather.town</i>  |

### OUTREACH/VOLUNTEERING

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| 2024        | <b>Judge</b> , FIRST LEGO League, Aliquippa High School, PA, USA   |
| 2023        | <b>Staff</b> , UW-Madison CS recruitment booth, Grace Hopper Celebration, Orlando, FL, USA                 |
| Summer 2022 | <b>Co-organizer</b> , Human-Centered Computing Reading Group, UW-Madison                                   |
| 2018 — 2023 | <b>Volunteer</b> , Lab tours & demos for visiting school children, graduate students, & faculty candidates |

## EXTRA-CURRICULAR

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- 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