PRERNA RAVI

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EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY | CAMBRIDGE, MA

Ph.D., Electrical Engineering and Computer Science (EECS) | 2022 - Present
- MIT Computer Science and Artificial Intelligence Laboratory (CSAIL)
- Advisor: Hal Abelson
- Mentors: Michiel Bakker (MIT Sloan), Cynthia Breazeal (MIT Media Lab), Eric Klopfer (MIT CMSW), David Karger (MIT CSAIL)

S.M., Electrical Engineering and Computer Science (EECS) | 2022 - 2024
- Thesis: *Large Language Model Tools for Project-Based Learning* [link]

GEORGIA INSTITUTE OF TECHNOLOGY | ATLANTA, GA

B.S., Computer Science | 2018 - 2022
- Advisors: Thad Starner and Neha Kumar
- GPA: 4.0 / 4.0 (Highest Honors)
- Thesis: *Leveraging Sign Language Recognition in Educational Games for Deaf Children*

RESEARCH STATEMENT

My research explores how AI systems can augment **group collaboration** and **deliberation** across diverse settings. I investigate group dynamics to design frameworks and interventions that support **equitable team participation**, foster **group trust** and **social connection**, and facilitate **consensus-building**. These insights inform applications in education, creative practice, and collective decision-making. I also develop critical AI literacy resources that empower stakeholders to engage in responsible and ethical AI practices.

Situated at the intersection of **Human-Computer Interaction (HCI)** and **Artificial Intelligence (AI)**, my work employs mixed methods experiments—combining computational, qualitative and quantitative approaches—and spans participatory design, system development, and empirical evaluation.

INDUSTRY RESEARCH INTERNSHIPS

Microsoft, Design Researcher Intern | *May 2023 – August 2023*
Co-designed generative AI tools *with and for* neurodivergent and motor disability groups within Microsoft's Windows + AI UX research team.

Google, Student Researcher Intern | *January 2022 – April 2022*
Developed new fingerspelling datasets and models for sign language recognition and integrated those into educational games for deaf children born to hearing parents. Advised by Dr. Thad Starner.
Google Research Blog at I/O 2023: Technologies for inclusive and fair ML applications | YouTube Video

SOFTWARE ENGINEERING INTERNSHIPS

Microsoft, Software Engineer Intern | *May 2022 – July 2022*
Built an end-to-end Office 365 Extension for Microsoft's Artifact Management System with ML-based recommendations, used for onboarding all legal matters (involving law firms for example), their stakeholders and documents into the Office 365 Infrastructure (used by 220,000 employees).

Microsoft, Software Engineer Intern | *May 2021 – July 2021*
Developed new intelligent solutions and microservices for the Office 365 Enterprise Records Management System used for storing, migrating, and retrieving 6M+ regulatory, legal, and business-critical electronic records spanning 100 countries for 160K+ employees. Trained ML models to automatically categorize records and extract their metadata.

Microsoft, Software Engineer Intern | *May 2020 – July 2020*
Designed a centralized telemetry service and data dashboards (for web platforms used by internal consultants tracking their projects and finances) to assist debugging and product improvement, thereby directly impacting 5000+ users.

PUBLICATIONS

Under Review

[R1] **Prerna Ravi***, Dong Won Lee*, Beatriz Flamia, Jasmine David, Brandon Hanks, Cynthia Breazeal, Emma Anderson, and Grace C. Lin. "Leveraging Large Language Models to Identify Conversation Threads in Collaborative Learning."

[R2] **Prerna Ravi**, Carúmey Stevens, Beatriz Flamia Azevedo, Jasmine David, Brandon Hanks, Hal Abelson, Grace Lin, and Emma Anderson. ""It started off as an equal group member but eventually became an outcast": Exploring Teachers' Perspectives on Using Conversational AI Agents for Group Collaboration."

[R3] Suyash Fulay*, **Prerna Ravi***, Emily Kubin, Shrestha Mohanty, Michiel Bakker, and Deb Roy. "AI for Collective Decision-Making: Enhancing Trust and Social Cohesion."

Peer-Reviewed Conference Papers

[C1] **Prerna Ravi**, John Masla, Gisella Kakoti, Grace Lin, Emma Anderson, Matt Taylor, Anastasia Ostrowski, Cynthia Breazeal, Eric Klopfer, and Hal Abelson. "Co-designing Large Language Model Tools for Project-Based Learning with K12 Educators." *Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI 2025).* 🏆 **Honorable Mention (Top 5%).**

[C2] Isabella Pu, **Prerna Ravi**, Linh Dinh, Chelsea Joe, Caitlin Ogoe, Zixuan Li, Cynthia Breazeal, and Anastasia Ostrowski. ""How can we learn and use AI at the same time?": Participatory Design of GenAI with High School Students." *Proceedings of the ACM Interaction Design and Children (IDC 2025).*

[C3] Grace Lin, Carúmey Stevens, Amalia Toutziaridi, **Prerna Ravi**, and Emma Anderson. "ABCDE: An Action-Oriented Framework for Collaborative Activities." *Proceedings of the 18th International Conference on Computer-Supported Collaborative Learning (CSCL 2025)*

[C4] Mak Ahmad, **Prerna Ravi**, David Karger, and Marc Facciotti. "How Adding Metacognitive Requirements in Support of AI Feedback Practice Exams Transforms Student Learning Behaviors" *Proceedings of the Twelfth ACM Conference on Learning at Scale (L@S 2025)* 🏆 **Best Paper Nomination**

[C5] John Masla, Christina Bosch, **Prerna Ravi**, Lydia Guterman, Sarah Wharton, Mary Cate Gustafson-Quiett, Samar Abu Hegly, Calvin Macatantan, Eric Klopfer, Cynthia Breazeal and Hal Abelson. "Supporting AI Fluency Teaching Through the Development of Assessments for Classroom Use." *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI 2025).*

[C6] **Prerna Ravi**, Robert Parks, John Masla, Hal Abelson, and Cynthia Breazeal. ""Data comes from the real world": A Constructionist Approach to Mainstreaming K12 Data Science Education". *Proceedings of the ACM Virtual Global Computing Education Conference V.1 (SIGCSE Virtual 2024).*

[C7] Safinah Ali, **Prerna Ravi**, Katherine Moore, Hal Abelson, and Cynthia Breazeal. "A Picture is Worth a Thousand Words: Co-designing Text-to-image Generation Learning Materials for K-12 with Educators". *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI 2024).*

[C8] Safinah Ali, **Prerna Ravi**, Daniella DiPaola, Randi Williams, and Cynthia Breazeal. "Constructing Dreams using Generative AI". *Proceedings of the AAAI Conference on Artificial Intelligence (AAAI 2024).*

[C9] David Kim, **Prerna Ravi**, Randi Williams, and Daeun Yoo. "App Planner: Utilizing Generative AI in K-12 Mobile App Development Education". *Proceedings of the ACM Interaction Design and Children (IDC 2024).*

[C10] **Prerna Ravi**, Annalisa J. Broski, Glenda Stump, Hal Abelson, Eric Klopfer, and Cynthia Breazeal. "Understanding Teacher Perspectives and Experiences after Deployment of AI Literacy Curriculum in Middle-school Classrooms". *Proceedings of the 16th annual International Conference of Education, Research and Innovation (ICERI 2023), IATED 2023.*

[C11] Alex Duncan, Ana Rusch, **Prerna Ravi**, and David Joyner. "The L@St Eight Years: A Review of Papers and Authors at Learning @ Scale". *Proceedings of the 10th ACM Conference on Learning @ Scale (L@S 2023).*

[C12] **Prerna Ravi**, Azra Ismail, and Neha Kumar. "The Pandemic Shift to Remote Learning under Resource Constraints". *Proceedings of the ACM on Human-Computer Interaction (CSCW 2021).*

[C13] Dhruva Bansal, **Prerna Ravi**, Matthew So, Pranay Agrawal, Ishan Chadha, Ganesh Murugappan, and Colby Duke. 2021. "CopyCat: Using Sign Language Recognition to Help Deaf Children Acquire Language Skills." *Extended Abstracts of the CHI Conference on Human Factors in Computing Systems (CHI 2021)* 🏆 **ACM CHI Student Research Competition Winner 2021**

Journal Papers

[J1] Ariel Blobstein, Marc T. Facciotti, Michele Igo, David Karger, **Prerna Ravi**, Kamali Sripathi, and Kobi Gal. "#let's-discuss: Analyzing Students' use of Emoji when interacting with course readings". *Intl. Journal of Artificial Intelligence in Education (IjAIED) 2024.*

Short Papers and Organized Workshops

[S1] **Prerna Ravi**, Annalisa J. Broski, Glenda Stump, Angela Daniel, Hal Abelson, Eric Klopfer, and Cynthia Breazeal. "An Art Teacher and AI: Creating Adaptable Curriculum for AI Literacy". *Play Make Learn Conference (PML 2023).*

[S2] Safinah Ali, **Prerna Ravi**, Katherine Moore, Cynthia Breazeal, and Hal Abelson. "Demystifying Text-to-Image Generation for K12 Educators." *In Workshops and Tutorials: International Society of Learning Sciences (ISLS 2023).*

[S3] Glenda Stump, **Prerna Ravi**, Annalisa J. Broski, Angela Daniel, Hal Abelson, Eric Klopfer, and Cynthia Breazeal. "Ethical by Design: Teaching Middle-school Students to Think Ethically About AI". *AI Literacy Workshop at the CHI Conference on Human Factors in Computing Systems (CHI 2023).*

GRANTS

- Empowering Learners with a Low-Barrier Mobile Data Science Toolkit | **Award amount: $300,000**
  - Learning Engineering Tools Competition, 2024
  - **Prerna Ravi** (Lead researcher and proposal writer), Robert Parks, Raechel Walker, David Kim, Hal Abelson (PI)

FELLOWSHIPS

- Teaching Development Fellow, Teaching and Learning Lab (TLL) MIT, 2024-2025

- Artificial Intelligence in Education (AIED) DEIA Fellow, 2024-2025 (w/ Prof. Victor Lee, Stanford GSE)
- MIT CIS/Starr Student Travel Fellow, 2024 (UNESCO HQ speaker)
- MIT Work of the Future Fellow, 2023-2024
- Ida M. Green Memorial Fellow, 2022-2023
- MIT Vice Chancellor's Inclusive Excellence Fellow, 2022-2023
- Adobe Research Women in Technology Scholar, 2021

AWARDS
- Best Paper Nomination, L@S 2025
- Best Paper Honorable Mention (top 5% of submissions), CHI 2025
- MIT Graduate Student Council (GSC) Travel Grant, 2025
- Winner - Learning Engineering Tools Competition, 2024
- Special Recognition for Outstanding Reviews, CHI 2024
- Kaufman Teaching Certificate, 2024
- Winner - ACM CHI Student Research Competition, 2021
- Georgia Tech Outstanding Junior (EDS Rising Senior) Award, 2020-2021
- Georgia Tech Outstanding Sophomore Award, 2019-2020
- Google Computer Science Research Mentorship (CSRMP), 2021
- President's Undergraduate Research Award (PURA), 2020
- Apple Women in Science and Engineering Scholarship, 2021
- Georgia Tech Faces of Inclusive Excellence Honoree, 2021
- Microsoft Invent Finalist, 2021
- Winner - Nunn School of International Affairs Paper Competition for Global Development, 2021
- Rewriting the Code Fellowship, 2020-2021
- Apple's Grace Hopper Conference Scholarship, 2020
- Honorable Mention, Microsoft Global Hackathon, 2020
- GT College of Computing Grace Hopper Conference Scholarship, 2019
- Faculty Honors for 4.0 GPA, 2018-2022

CURRENT PROJECTS
Scalable Deliberation for Collective Decision Making | *2025 – Present* | *Under review: CHI 2026*
Advisor: Michiel Bakker
Designing and evaluating a scalable AI-mediated system for collective decision-making that foregrounds personal experience, empathy-building, and participant agency. The system uses semi-structured AI interviews to elicit participants' backgrounds and lived experiences on polarizing topics. It then leverages large language models (LLMs) to generate policy recommendations, peer perspectives, and shared values followed by informed crowd voting. The study investigates how LLMs can be leveraged at various stages of civic decision-making processes to influence users' support for policy recommendations, trust in AI mediation, and perceived social connectedness across diverse viewpoints.

Collaborative AI for Learning (CAIL) | *2024 – Present* | *CSCL 2025, Under review: CHI 2026, jEDM 2025 | Project link: [link]*
Advisors: Eric Klopfer, Hal Abelson
CAIL serves as a conversational agent designed to (1) actively engage with student groups, modeling effective teamwork and fostering discussion to promote deeper learning; (2) support teachers in designing, implementing, and assessing collaborative activities. We program the system to encourage inclusive discussions by probing opinions from all students, offering suggestions to advance conversations, and providing resources to aid project completion. Our lines of inquiry span from the personas and interaction types of the agents to analytic tool development to formative and reflective assessments for learning. Also developed a new taxonomy for identifying effective collaboration used to train multimodal models and measure group productivity, distributed creativity, and learning outcomes.

SERVICE AND NON-PROFIT WORK
- **Organizing Committee** (Global co-chair), CHI 2026
- **Organizing Committee** (Diversity and Inclusion co-chair), UIST 2024
  - Introduced a new category of best paper awards to UIST for those fostering *Belonging and Inclusion* in the HCI community, organized diversity lunches for women and LGBTQ+ participants, spearheaded a panel of women leaders in HCI, and organized travel awards to support historically marginalized groups
- **Student Volunteer,** CHI 2025
- **Program Committee** (Associate Chair), CHI 2025: Late Breaking Work [10 reviews]
- **Program Committee** (Senior reviewer), ISLS 2025 [5 reviews]
- **Program Committee** (Associate Chair), CSCW 2024 [4 reviews]
- **Program Committee**, MIT AI + Education Summit 2024 [10 reviews]

- **Reviewer**, CHI 2024, 2025 [2 reviews] Special Recognition for Outstanding Reviews
- **Reviewer**, Journal of Education, 2025 [1 review]
- **Reviewer,** JMIR Applications of AI, 2024 [1 review]
- **Reviewer**, ACM Designing Interactive Systems (DIS) 2023 [1 review]

- **Feature Editor**, ACM XRDS Magazine, 2025 - Present
- Tech Vetter, MIT Solve Global Learning Challenge, 2024
- Workshops and Outreach, App Inventor Foundation
- Founder and President, UNICEF @ Georgia Tech, 2018-2022
- Executive Project Lead, CS + Social Good @ Georgia Tech, 2019-2022
- Training Manager, Robogals @ Georgia Tech, 2019-2020

TEACHING

Designed curricula and co-led instruction for the following courses:

Instructor	**6.S062 Generative Artificial Intelligence In K-12 Education** Massachusetts Institute of Technology, Fall 2023. Enrollment: MIT & Harvard graduate and undergraduate students
Instructor	**MAS.SX Text-to-Image Generation for K-12 Education** Massachusetts Institute of Technology, IAP 2023. Enrollment: MIT & Harvard graduate and undergraduate students, MIT staff
Instructor	**Impact and Application of Generative Artificial Intelligence within Education (Module on Text-to-image Generation)** IEEE Education Society hosted by Universidad Nacional de Educación a Distancia (UNED), Fall 2023 Massive Open Online Course (MOOC)
Head Teaching Assistant	**CS 1331 Introduction to Object Oriented Programming** Georgia Institute of Technology, Spring 2019 – Fall 2021. Enrollment: GT undergraduate students
Curriculum Developer	**Environmental Data Collection and Analysis using Micro:bits** Day of AI, 2024. Enrollment: Middle and high school teachers & students
Instructor + Curriculum Developer	**Data Science and AI with Micro:bits and MIT App Inventor** MIT Futuremakers Program 2024 Enrollment: Middle and high school students
Instructor	**Human Centered Design** Code.X, Summer 2021. Enrollment: Middle and high school students

INVITED TALKS

- **Co-design to Support Responsible Implementation of AI Tools in Education**
  UNESCO Headquarters, France 2025
- **Designing AI Tools for Collaborative Learning Environments**
  Stanford HCI Group
- **Large Language Model Tools for Project-based Learning**
  Lifelong Kindergarten Group, MIT Media Lab
- **Democratizing K12 Data Science Education through Student-Centered Interdisciplinary Curricula**
  UNESCO Headquarters, France 2024
- **The Future of Generative AI in Higher Education**
  81st Annual Conference of Louisiana Colleges & Universities (CLCU) 2024
- **How Might We Redefine Learning in the Age of AI?**
  Center for Constructive Communication (CCC), MIT Media Lab
- **AI is for Everyone: Transforming K-12 Learning and Education in the Era of AI**
  Center of Excellence in Teacher Education (CETE) at Tata Institute of Social Sciences (TISS), Mumbai, India
- **PopSign: Mobile Games to teach Sign Language**
  Imagine RIT 2022, Rochester, NY