Mara Ulloa

PhD Candidate
U.S. National Science Foundation GRFP Fellow
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Research Interests

I specialize in using Human-Computer Interaction (HCI) methodologies to design and evaluate human-centered Artificial Intelligence(AI)/Machine Learning(ML). My interdisciplinary doctoral research focuses on developing and applying participatory design methods to co-design AI across different contexts (e.g., healthcare and industry), emphasizing the perspective of the end user.

Research interests/experience: HCI; AI/ML + design; UX; digital interventions; behavioral science; participatory design methods; software engineering

Education

09/2021 - Present	**Northwestern University**, Evanston, IL Doctor of Philosophy (PhD), Computer Science, McCormick School of Engineering; GPA: 3.9/4.0 **Advisor**: Maia L. Jacobs, PhD **Research track**: Human-Computer Interaction (HCI)
09/2021 - 06/2023	**Northwestern University**, Evanston, IL Master of Science (MS), Computer Science, McCormick School of Engineering; GPA: 3.9/4.0
08/2018 - 05/2021	**Northeastern Illinois University**, Chicago, IL Bachelor of Science (BS), Computer Science, College of Business and Technology; GPA: 3.8/4.0
2017	**Harold Washington College**, Chicago, IL Associate in Arts (AA), General Studies; GPA: 3.8/4.0

Honors and Awards

2023 - 2027	National Science Foundation (NSF) Graduate Research Fellowship (GRFP)
2022	Segal Design Research Cluster Fellowship
2022	Northwestern University Social Justice Mini Grant
2021	Northeastern Illinois University (NEIU) Computer Science Scholarship
2020	Abraham Lincoln Civic Engagement Award from the State of Illinois
2020 - ∞	NEIU Ronald E. McNair Scholar
2018 – 2020	The National TheDream.US Scholarship
2017	Phi Theta Kappa Honor Society

Publications

Peer-Reviewed Publications	Cruz, S., Lu, C., **Ulloa M.**, Redding, A., Hester, J., Jacobs, M. "Perceptions of Wearable Health Tools Post-COVID 19 in Low-income Latine Communities" J*MIR mHealth and uHealth (JMU)*. USA, January 26, 2024.
	Ulloa, M., Rothrock, B., Ahmad F., Jacobs, M. "Invisible Clinical Labor Driving the Successful Integration of AI in Healthcare." F*rontiers in Computer Science.* USA, December 1, 2022.
Workshop papers	**Ulloa, M.**, Fernandes, G., Kamali, N., Soyemi E., Beltzer M., Kaveladze, B., Alshurafa, N.; Jacobs, M., "Co-Designing Patient-Facing Machine Learning for Prenatal Stress Reduction" *2024 CSCW: he 26th ACM Conference On Computer-Supported Cooperative Work And Social Computing - Supporting User Engagement in Testing, Auditing, and Contesting AI*. Minneapolis, MN, October 14 - 18, 2024.
Invited talks	**Ulloa, M.**, Fernandes, G., Kamali, N., Soyemi E., Beltzer M., Kaveladze, B., Alshurafa, N.; Jacobs, M., "Co-Designing Patient-Facing Machine Learning for Prenatal Stress Reduction" *2024 CRA WP IDEALS*. Minneapolis, MN, April 13, 2024.
Research Posters	**Ulloa, M.**, Cherukuru, N., "User Experience (UX) of Advanced 3D Data Visualization Software" *U.S. National Science Foundation (NSF) National Center for Atmospheric Research (NCAR)*. Boulder, Colorado, USA August 7, 2024.
	Ulloa, M., Kamali N.,Fernandes G., Soyemi e., Beltzer M., Kaveladze B., Alshurafa N., Jacobs, M., "Co-Designing Patient-Facing Machine Learning for Prenatal Stress Reduction" *The International Society for Research on Internet Interventions (ISRII)*. Limerick, Ireland, June 2 - 5, 2024.
	Ulloa, M., and Jacobs, M., "Embedding Mental Health Support into Community CS Programs" *2023 CRA WP Grad Cohort Workshop for Women*. San Francisco, California, USA, April 22, 2023.
	Ulloa, M., and Jacobs, M., "Embedding Mental Health Support into Community CS Programs" *2022 Lambert Conference on the Future of Human-Computer Interaction + Design*. Evanston, Illinois, USA, October 24, 2022.
	Ulloa, M., Clark, S., Hatheway B., Weber J., Foust E., Wasson S., Ho Y., "Developing a Real-Time Weather Museum Touchscreen" *The National Center for Atmospheric Research: SIParCS and NCAR-Wyoming Presentations*. Boulder, Colorado, USA July 29, 2020.
	Ulloa, M., Clark, S., Hatheway B., Weber J., Foust E., Wasson S., Ho Y., "Developing a Real-Time Weather Museum Touchscreen" *The National Center for Atmospheric Research Poster Presentations*. Boulder, Colorado, USA, July 30, 2020.
	Ulloa, M., Clark, S., Hatheway B., Weber J., Foust E., Wasson S., Ho Y., "Developing a Real-Time Weather Museum Touchscreen" *UCLA National McNair Conference*. Los Angeles, California, USA, July 29-31, 2020.
	Ulloa, M., Garcia J., Salem M., Gomez C., Adler R. F., Iacobelli F. , Trana R. "Creating a Large Cyberbullying Dataset from Multiple Sources to Improve the Accuracy of Cyberbullying Classifications" *2019 SACNAS The National Diversity in STEM Conference*. Honolulu, Hawaii, USA October 30 - November 3, 2019.
	Garcia J., **Ulloa, M.**, Salem M., Gomez C., Adler R. F., Iacobelli F. , Trana R. " Cyberbullying classification: Semantic Analysis of Text in Shared Image Memes" *2019 SACNAS The National Diversity in STEM Conference*. Honolulu, Hawaii, USA October 30 - November 3, 2019.

Garcia J., Salem M., **Ulloa, M.**, Gomez C., Adler R. F., Iacobelli F., Trana R. "Creating a Large Cyberbullying Classification: Analysis of Text in Social Media Memes" *11th Annual SCSE Student Research Symposium*. Chicago, Illinois, USA, September 27, 2019.

Related Work Experience

09/2021 - **Human-Computer Interaction (HCI) Researcher**
Present *Northwestern University* (NU), Evanston, IL

- Leading investigations by applying of diverse HCI research methods and frameworks (e.g., A/B testing, in-depth interviews, usability studies, surveys, thematic analysis, affinity diagrams, storyboards) to investigate human-AI interaction.
- Orchestrating multidisciplinary collaborations with principal investigators, research assistants, clinicians, health behavior scientists, and machine learning scientists to advance human-centered AI research.
- Designing robust research plans, meticulously collecting and analyzing reliable data, and distilling actionable insights for both expert and lay audiences to inform the development of intelligent systems.
- Rigorously identifying complex user needs, perspectives, goals, expectations, obstacles, and motivations to inform the design of intuitive and effective human-AI experiences.
- Conducting impactful multilingual research in both English and Spanish, expanding the reach and inclusivity of human-computer interaction studies.
- Authoring and co-authoring a range of academic artifacts, including research proposals, grant applications, manuscripts, workshop papers, research posters, and protocols, for peer-reviewed dissemination.
- Continuously cultivating advanced research skills through active engagement in symposiums, research talks, literature reviews, writing workshops, courses, and seminars, staying at the forefront of HCI and AI.
- Contributing substantively to research discussions in lab meetings with principal investigators, fellow graduate researchers, and visiting scholars, shaping ongoing project directions.

04/2025 - **Applied Research Scientist in Software Engineering**
Present *Microsoft*, Redmond, WA

- ○ Leading the design and execution of a three-month mixed-methods study to investigate the impact of generative AI in software engineering, specifically focusing on the understudied product manager role.
- ○ Conducted comprehensive exploratory research, gathering 885 quantitative and qualitative user surveys, telemetry data, and 15 in-depth interviews from both USA and international participants, complemented by thorough secondary research including literature reviews and internal company data analysis.
- ○ Applied advanced techniques, leveraging Python scripts for quantitative analysis and employing thematic analysis, diagramming, and collaborative design workshops for qualitative insights.
- ○ Presented research progress and key findings to diverse stakeholders, including Corporate Vice Presidents, Partner Managers, other Product Managers, and our research team demonstrating proficient written and verbal communication skills.
- ○ Disseminated research effectively through both academic artifacts (e.g., papers) and tailored communications for non-academic audiences, such as marketing, developers, and business + AI groups.
- ○ Collaborated cross-functionally with Microsoft Research members across the globe and provided support for projects led by other PhD Researchers, showcasing teamwork and the ability to follow written directions and seek help independently.
- ○ Provided critical, foundational insights into the relationship between product managers and generative AI, establishing the group's first comprehensive understanding in this area. Delivered clear, actionable next steps, with proposed interventions designed to extend impact (beyond product managers) across product and other user groups.

05/2024 - 08/2024	**User Experience (UX) Researcher of Advanced 3D Data Visualization Software** *U.S. National Science Foundation National Center for Atmospheric Research* (NSF NCAR), Boulder, CO

- Led a three-month exploratory UX research study, employing both primary (in-depth user interviews) and secondary research (literature reviews) to understand user needs within advanced data visualization software.
- Applied advanced UX methodologies, specifically Jobs-to-be-Done (JTBD) theory, to uncover end-user needs, preferences, and pain points related to complex data visualization software tools.
- Conducted over 10 user interviews, performing detailed data transcription and rigorous analysis to deliver actionable insights and recommendations to both the project team and broader organization.
- Fostered strong engagement with diverse stakeholders, actively/empathetically listening to their needs, concerns, and feedback to ensure research alignment and a deep understanding of the user experience context.
- Leveraged strong analytical skills to meticulously interpret qualitative research data, identify critical user trends, and synthesize findings into actionable conclusions for software development and product improvement.
- Presented comprehensive research findings through both oral presentations and poster sessions to the NSF NCAR community, advocating for user-centered design and contributing to community knowledge.
- Actively participated in weekly professional development workshops, enhancing skills in science communication, leadership, proposal writing, and data management and visualization.

03/2021 - 03/2024	**Coding Instructor and research collaborator** *We All Code* (WAC), Chicago, IL

- Delivered engaging six-hour workshops on programming fundamentals to youth (ages 7-18), utilizing both in-person and virtual modalities.
- Collaborated with the organization's founder to strategize student engagement and continuously enhance learning experiences, leading to improved outcomes.
- Designed compelling recruitment materials and newsletters, drafted grant proposals, and managed external communications to support program growth.
- Orchestrated dynamic classroom environments conducive to effective learning, warmly welcomed students and families, and effectively managed a team of mentors.
- Maintained and managed specialized classroom equipment, including robotics kits and laptops, ensuring seamless operation for our workshops.
- Distilled insights from team retrospectives to iteratively refine course content and instructional methods, ensuring continuous improvement in learning delivery.

08/2019 - **Computer Science Peer Leader**
05/2021 *Northeastern Illinois University* (NEIU), Chicago, IL
- Facilitated weekly workshops for over 35 undergraduate students, covering foundational Programming I and II concepts in both virtual and in-person settings.
- Collaborated with a team of peer leaders and faculty to optimize workshop content and delivery, significantly enhancing the learning experience for students.
- Mentored students by guiding them to essential campus resources and external opportunities, fostering their academic and professional development.
- Actively engaged in comprehensive Peer Leader training, developing advanced skills in instructional techniques, communication, and leadership.
- Consistently demonstrated strong communication, leadership, and organizational skills in managing workshops and supporting student success.

05/2020 - **Software Engineer Intern**
08/2020 *U.S. National Science Foundation National Center for Atmospheric Research* (NSF NCAR), Boulder, CO
- Engineered and deployed a new touchscreen interface in Java for real-time weather data visualization, utilizing prototypes to create a user-friendly and educational kiosk application installed at NCAR's Mesa Lab and NCAR Wyoming Supercomputing Center.
- Conducted virtual user interviews and facilitated communication with stakeholders to meticulously gather and define application requirements.
- Led team meetings, facilitating discussions, and meticulously transcribing detailed notes of plans, decisions, and options to ensure clear communication and progress.
- Participated in ten weekly science communication workshops, developing enhanced skills in presenting technical information and fostering collaboration through team-building discussions.
- Presented project outcomes and technical insights through both poster and oral presentations to the scientific communities at NCAR and the National Oceanic and Atmospheric Administration (NOAA).

08/2019 - **Computer Science Society President**
05/2021 *Northeastern Illinois University* (NEIU), Chicago, IL
- Attended meetings with faculty advisor and other officers on implementation of student-led biweekly workshops
- Led team responsible for maintaining the society's website
- Designed informative recruitment materials for workshops
- Coordinated workshops provided by a team of officers on tools such as GitHub and JavaScript fundamentals

05/2019 - **Undergraduate Research Assistant**
11/2019 *Northeastern Illinois University* (NEIU), Chicago, IL
- Applied text classification algorithms that identified text as harmful or non-harmful with 87% accuracy with the goal of improving the accuracy of cyberbullying algorithmic classifications
- Independently leaned Python and writing python scripts to retrieve and classify new socially relevant text images from existing datasets
- Engaged in weekly career development workshops
- Researched various subjects that were related to the project and presented information to mentors and team
- Presented findings at SACNAS National Conference and NEIU's Student Center for Science Engagement Symposium

Related Skills

Methodologies	User interviews, Qualitative analysis, Thematic analysis, Co-design, Prototyping, Design sessions, Storyboards, Usability testing, Jobs-to-be-done, Heuristic evaluation, Affinity diagramming
Programming	Java, Python, HTML, CSS, SQL
UX Tools	NinjaMock, Figma, Miro
Version Control	GitHub
Languages	English, Spanish

Service

Conference Service	**Reviewer** — ACM CHI: Conference on Human Factors in Computing Systems 2024
	Reviewer — ACM TOCHI: Transactions on Computer-Human Interaction 2024
	Reviewer — ACM CHI: Conference on Human Factors in Computing Systems 2023
	JEDI (Justice, Equity, Diversity, & Inclusion) **Ambassador** — UbiComp/ISWC 2023
	Volunteer — ACM IDC: Interaction Design and Children 2023
University Service	NU The Graduate School Office of Diversity and Inclusion (ODI) Diversity Peer Mentor
	NU CS Diversity, Equity and Inclusion Minute — Presenter
	NU Future of Health and Computing Collective (FHCC) — Student Committee
	NU CS Graduate Women in Computing (GWiC) — Board Member
	NU CS PhD Student Visit Day — Planning Committee
	NU SROP Pathways to the Professoriate & Navigating Graduate School — Panelist
	NU CS PhD Student Visit Day — Planning Committee
	NU Computer Science Social Initiative (CSSI) — Board Member
	NEIU Alumni Panel — Panelist
	NEIU SCSE, TRIO, and McNair Graduate School Panel — Panelist
Community Service	We All Code
	Pancreatic Cancer Action Network
	Chicago Canine Rescue
	Cornerstone Autism Services
	Friendship Center
	NEIU Food Pantry
	Leukemia & Lymphoma Society
	Lurie Children's Hospital

Press

2024 **PhD Student Spotlight: Mara Ulloa**

2024 **The AI Will See You Now**

2023 **Patient-Focused AI System Seeks to Reduce Stress during Pregnancy**

2023 **Building Mentoring Relationships and Peer Networks at CRA-WP Grad Cohort for Women**

2022 **Supporting Mental and Emotional Health Within Computer Science Education**

2022 **Mara Ulloa Awarded NSF Graduate Research Fellowship**

2020 **CS major Mara Ulloa named Lincoln Academy Student Laureate**

Affiliations

Center for Advancing Safety of Machine Intelligence (CASMI)
Computer Science Society
McNair Scholars Program
Phi Theta Kappa Honor Society
Society for Advancement of Chicanos/Hispanics & Native Americans in Science (SACNAS)
The Lincoln Academy of Illinois

Student Mentoring

Niharika G. Menon, MS Computer Science (Northwestern University, class of 2024)

Elizabeth Soyemi, BA Public Health (Brown University, Class of 2026)