

PhD Candidate  
Department of Computer Science  
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## Research Interests

I specialize in using Human-Computer Interaction (HCI) methodologies to design and evaluate user-centered technologies. My doctoral research focuses on co-designing machine learning (ML) solutions for healthcare, emphasizing the end user's perspective.

## Education

- 09/2021 - **Northwestern University**, Evanston, IL  
Present 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) / Interfaces
- 09/2021 - **Northwestern University**, Evanston, IL  
06/2023 Master of Science (MS), Computer Science, McCormick School of Engineering; GPA: 3.9/4.0
- 08/2018 - **Northeastern Illinois University**, Chicago, IL  
05/2021 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 (NU) Social Justice Mini Grant
- 2021 Northeastern Illinois University (NEIU) Computer Science Scholarship
- 2020 Abraham Lincoln Civic Engagement Award
- 2020 Ronald E. McNair Scholar
- 2018 – 2020 The National TheDream.US Scholarship
- 2017 Phi Theta Kappa Honor Society

## Publications

- Peer-Reviewed Publications **Ulloa, M.**, Kamali N., Fernandes G., Soyemi, E., Beltzer M., Alshurafa, N., Jacobs, M., "Patients' Expectations of ML-driven JITAI Support for Maternal Stress Management" [UNDER REVIEW]  
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" *JMIR 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." *Frontiers 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: the 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.

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## Related Work Experience

### 09/2021 - **Graduate Human-Computer Interaction (HCI) Researcher**

Present *Northwestern University (NU)*, Evanston, IL

- Developing expertise in HCI research methods and frameworks (e.g., interviews, usability studies, thematic analysis, affinity diagrams, storyboards)
- Collaborating with principal investigator/PhD advisor, other research assistants, clinicians, health behavior scientists, and machine learning scientists
- Defining research plans, collecting reliable data, as well as analyzing and distilling its insights with experts and lay audiences
- Identifying user needs, perspectives, goals, expectations, obstacles, and motivations
- Conducting multilingual (i.e., English, Spanish) research
- Authoring research proposals, grant applications, manuscripts, and protocols with research team
- Actively improving research skills via symposiums, research talks, literature review trainings, writing workshops and courses
- Attend lab meetings with principal investigator, other graduate researchers and visitors and contribute to research discussions

### 05/2024 - **Graduate User Experience (UX) Researcher**

08/2024 *U.S. National Science Foundation (NSF) National Center for Atmospheric Research (NCAR) (NSF NCAR)*, Boulder, CO

- Conducting exploratory-primary research (such as interviews) and secondary research (such as literature reviews)
- Applying UX methodologies (i.e., Jobs-to-be-done, JTBD theory) to understand end user needs, preferences, and pain points with advanced data visualization software tools
- Effectively engaging with stakeholders, ensuring a deep understanding of their needs, concerns, and feedback in the context of UX research
- Performing user interviews, data transcription and analysis to deliver insights and recommendations to the team and organization
- Demonstrating strong verbal and written communication skills, including empathetic listening
- Applying analytical skills to interpret research data, identify trends, and draw actionable conclusions
- Actively contributing to weekly professional development workshops on topics such as science communication, leadership training, proposal writing, and data management and visualization
- Synthesizing research findings and delivering oral and poster presentations to the NSF NCAR community

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03/2021 - **Instructor and research collaborator**

Present *We All Code* (WAC), Chicago, IL

- Teaching six-hour workshops on programming fundamentals to youth (ages 7 - 18) in person or virtually
- Attending meetings with the organization's founder to develop student engagement strategies and improving learning experiences of the students
- Design recruitment materials, newsletters, write grants and communications
- Arrange classroom for effective learning, welcome students and their families, and manage team of mentors
- Maintain class equipment (e.g., robots and laptops)
- Distill leanings from team retro to improve future courses

08/2019 - **Computer Science Peer Leader**

05/2021 *Northeastern Illinois University* (NEIU), Chicago, IL

- Lead weekly virtual and in-person workshops on programming I and II concepts for first-year undergraduate students
- Collaborated with other peer leaders and faculty in optimizing programming workshops
- Guided students to campus resources and external opportunities
- Participated in combined virtual and in-person Peer Leader training
- Demonstrated strong communication, leadership, and organizational skills

05/2020 - **Software Engineer Intern**

08/2020 *U.S. National Science Foundation (NSF) National Center for Atmospheric Research (NCAR)* (NSF NCAR), Boulder, CO

- Designed and developed a new touchscreen interface that displays real-time weather data to deliver a user- friendly and educational kiosk application to be installed at NCAR's Mesa Lab and NCAR Wyoming Supercomputing Center
- Lead virtual user interviews and communicate with stakeholders with the goal of gathering application requirements
- Took an active role in team meetings, engaging with all parties and transcribing detailed notes of plans, decisions and options discussed
- Participated in ten weekly science communication workshops while engaging in group and team building discussions
- Gave a poster and oral presentation to the NCAR and National Oceanic and Atmospheric Administration (NOAA) scientific community

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

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## Research projects

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01/2022 - **Co-designing patient-facing machine learning for prenatal stress reduction**

Present *Northwestern University (NU), Evanston, IL*

- Examine ways pregnant people want to interact with next-day machine learning stress predictions, explanations, and recommendations
- Lead 20 co-design design sessions with a diverse population of patients
- Develop innovative co-design approaches to engage research participants virtually
- Design a storyboards of the patient-facing DST that visualizes distinct layers of machine learning, such as predictions, explanations, bias, uncertainty and risk
- Conduct usability testing to assess the functionality of the application
- Carry out independent literature reviews on user-centered design, prenatal stress, machine learning for healthcare, Just-in-time interventions
- conduct multilingual (i.e., English, Spanish) research interviews
- Analyze interview and survey data to distill findings via manuscripts and presentations

12/2022 - **Technology-enabled prevention service for at-risk youth**

Present *Northwestern University (NU), Chicago, IL*

**Principal investigator:** Ashley Knapp, PhD

- Iteratively design and evaluate a technology-enabled prevention service for anxiety with youth and community partners
- Perform literature review on elements to incorporate in digital mental health tools in order to support wellness of adolescents
- Collaborate with research team across distinct domains on design of the mental health web application being developed

03/2022 - **Design of Digital Tools for Youth Mental Well-being**

Present *We All Code, YWCA (WAC), Chicago, IL*

- Leading longitudinal participatory design studies with students from local non-profit organizations offering free programming resources to youth from diverse backgrounds
- Identifying the social support and mental health needs of students and how digital interventions can support those needs
- Designing Community-Based Participatory Research (CBPR) interventions with participation from students (ages 12 - 18)

01/2022 - **Iterative design of clinician-facing machine learning tools**

11/2022 *Northwestern University (NU), Evanston, IL*

- Assessing user experience following a machine learning pilot in Northwestern Medicine's Electronic Health Record
- Leading qualitative semi-structured interviews with end-users (clinicians and members of the technical team) involved in the development of AI tool used to identify patients with advanced heart failure
- Independently coding themes from audio-recordings and discussing with research team
- The overarching goal of this work is to inform the integration of AI-powered tools into medical settings, with a focus on how to overcome sociotechnical challenges

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05/2019 - **Improving the accuracy of cyberbullying algorithmic classifications**

11/2019 *Northeastern Illinois University (NEIU), Chicago, IL*

- Applied text classification algorithms that identified text as harmful or non-harmful with 87% accuracy
- Used 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	<b>Reviewer</b> — ACM CHI: Conference on Human Factors in Computing Systems 2024
Service	<b>Reviewer</b> — ACM TOCHI: Transactions on Computer-Human Interaction 2024
	<b>Reviewer</b> — ACM CHI: Conference on Human Factors in Computing Systems 2023
	<b>JEDI</b> (Justice, Equity, Diversity, & Inclusion) <b>Ambassador</b> — UbiComp/ISWC 2023
	<b>Volunteer</b> — ACM IDC: Interaction Design and Children 2023
University	NU The Graduate School Office of Diversity and Inclusion (ODI) Diversity Peer Mentor
Service	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	We All Code
Service	Pancreatic Cancer Action Network
	Chicago Canine Rescue
	Cornerstone Autism Services
	Friendship Center
	NEIU Food Pantry
	Leukemia & Lymphoma Society
	Lurie Children's Hospital

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## 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**

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## 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

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## Student Mentoring

Niharika G. Menon, MS Computer Science (Northwestern University, class of 2024)  
Elizabeth Soyemi, BA Public Health (Brown University, Class of 2026)

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