

Aimen Gaba

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Research Interests

Human-Centered AI, Responsible AI, Human-Computer Interaction (HCI), Data Visualization, Natural Language Processing, Accessibility.

Education

University of Massachusetts Amherst

Amherst, MA, USA

PhD in Computer Science

Sep 2021 - May 2026 (expected)

- **Thesis:** Advancing Responsible & Trustworthy AI Using Human-Centered Methods
- **Advisors:** Dr. Cindy Xiong Bearfield, Dr. Yuriy Brun
- Achieved PhD candidacy with **distinction**

University of Massachusetts Amherst

Amherst, MA, USA

MS in Computer Science, GPA: 3.9

Sep 2021 - Dec 2023

- **Courses:** Advanced Methods in HCI, Introduction to Neural Networks, Making Sense of Visual Information, Research Methods

Work Experience

Adobe Research

College Park, MD, USA

May 2024 - Aug 2024

Research Scientist/Engineer Intern

- **Team:** Document Intelligence Lab
- Designed a novel prototype integrating **Search and Generative AI**; partnered with **3 cross-functional teams** to test 2 early-stage concepts in document-grounded workflows.
- Led a **20+ participant mixed-methods study**, combining **usability interviews** and **likert-scale usability ratings**; applied **thematic analysis** to extract qualitative insights and **ANOVA** to uncover statistically significant differences in user preferences across tasks
- Findings informed **key design and prioritization decisions**.

University of Massachusetts Amherst

Amherst, MA, USA

Graduate Researcher

Sep 2021 - Present

- Conducted **24 in-depth interviews** with participants across diverse gender identities to explore the impact of bias in **large language models (LLMs)** on trust and decision-making; **developed design guidelines** for fairness and inclusivity in AI systems.
- Analyzed how **visualization design** impacts user trade-offs between fairness and accuracy in ML-assisted decisions; conducted a **survey** with 1500+ participants, applying ANOVA and **logistic regression** to identify gender-based decision patterns.
- Created a visualization design framework for ambiguous natural language comparison queries; derived **design implications** from 16 interviews with visualization experts & non-experts, and validated the framework through a **preference-ranking study** with 70+ participants.

Carnegie Mellon University

Pittsburgh, PA, USA

Jul 2023 - Aug 2023

Visiting Researcher

- Initiated and led a **longitudinal speculative design study** empowering blind participants as designers of assistive technologies; conducted 18 interviews and a **4-week-long remote design study** with 12 participants, providing accessible materials and structured support to facilitate self-directed prototyping and innovation.

Publications

Bias, Accuracy, and Trust: Gender-Diverse Perspectives on Large Language Models

arXiv 2025

Aimen Gaba, Emily Wall, Tejas Ramkumar Babu, Kyle Hall, Yuriy Brun, and Cindy Xiong Bearfield

In preparation (FAccT'26)

Beyond “Disability-Centered:” Empowering Blind-Led Innovation of Assistive Technology

ASSETS 2026

Aimen Gaba, Frank Elavsky, Lucas Nadolskis, Patrick Carrington, Dominik Moritz, and Cindy Xiong Bearfield

In Preparation

My Model is Unfair, Do People Even Care? Visual Design Affects Trust and Perceived Bias in Machine Learning

IEEE VIS

Aimen Gaba, Zhanna Kaufman, Jason Cheung, Marie Shvakel, Kyle Hall, Yuriy Brun, and Cindy Xiong Bearfield

Oct 2023

Reasoning Affordances with Tables and Bar Charts

Cindy Xiong, Elsie Lee Robbins, Icy Zhang, Aimen Gaba, and Steven Franconeri

IEEE TVCG

Oct 2023

Comparison Conundrum and the Chamber of Visualizations: An Exploration of How Language Influences Visual Design

Aimen Gaba, Vidya Setlur, Arjun Srinivasan, Jane Hoffswell, and Cindy Xiong

IEEE VIS

Oct 2022

How Do We Measure Trust in Visual Data Communication?

Hamza Elhamdadi, Aimen Gaba, Yea-Seul Kim, and Cindy Xiong

IEEE BELIV

Oct 2022

Capturing the Gist: How Data Approximation Algorithms Align with Human Perception in Time-Series Visualizations

Yishu Ji, Aimen Gaba, Reid Laughton, Duen Horng (Polo) Chau, and Cindy Xiong Bearfield

IEEE TVCG 2026

Under Review

Tulna: A Chain-of-Thought Approach for Interpreting Natural Language Comparisons in Visual Analytics

Vidya Setlur, Kylie Lin, Aimen Gaba, and Cindy Xiong Bearfield

In Preparation

Teaching Experience

University of Massachusetts Amherst

Amherst, MA, USA

Teaching Assistant, COMPSCI 625: Advanced Methods in Human-Computer Interaction

Spring 2026

- Making course schedule, and assignments. Provide substantive feedback on research projects and evaluating students' weekly scholarly analyses.

University of Massachusetts Amherst

Amherst, MA, USA

Teaching Assistant, CS 490U: Introduction to UX Research

Spring 2022 & Spring 2023

- Led multiple guest lectures for a class of 50+ students, focusing on UX research practices and R for data analysis. Evaluated 30+ student projects and provided personalized feedback. Supported student learning through weekly office hours and ongoing Q&A.

Lahore University of Management Sciences

Lahore, Pakistan

Teaching Assistant, CS 320: Computer Organization and Assembly Language

Fall 2017

- Served as the sole Teaching Assistant for 20+ students; designed and graded assignments, quizzes, and final projects involving Assembly language, and Proteus. Conducted weekly lab sessions and held regular office hours to provide technical guidance.

Mentoring Experience

Current **Yishu Ji**, CS PhD Student at Georgia Institute of Technology

2024-25 **Tejaswini Ramkumar Babu**, Senior CS undergraduate at Georgia Institute of Technology

2022-23 **Jason Cheung**, Senior CS undergraduate at UMass Amherst

2021-22 **Shubham Mishra**, CS Master's student at UMass Amherst

2021-22 **Nisarga Patel**, CS undergraduate at UMass Amherst

Honors & Awards

2025 **MIT Rising Star in EECS**, MIT

Boston, USA

2025 **UMass Dissertation Writing Fellowship**, University of Massachusetts Amherst

Amherst, USA

2024 **GHC Scholar (UMass CICS Scholarship)**, Grace Hopper Celebration

Philadelphia, USA

2023 **Tapia Scholar (UMass CICS Scholarship)**, ACM Richard Tapia Conference

Dallas, USA

2022 **CRA Scholar**, CRA-WP for IDEALS

San Diego, USA

2022 **\$10,000 Research Scholarship**, Adobe Research

Amherst, USA

2021 **\$4,000 CICS PhD Scholarship**, University of Massachusetts Amherst

Amherst, USA

Program Committee & Reviewing

ACM FAccT	Full paper reviewer, 2026
EURO VIS	Full paper reviewer, 2026
ACM CHI	Full paper reviewer, 2024 & 2026
IEEE VIS	Full paper reviewer (2023), BELIV Workshop reviewer (2024)
Info Plus	Program Committee (PC) member, 2025
Pacific VIS	Visual Data Storytelling Contest reviewer, 2025

Service

Current	Responsible Technology Coalition Leadership , University of Massachusetts Amherst	Amherst, USA
2023-24	Faculty Hiring Graduate Representative , University of Massachusetts Amherst	Amherst, USA
2021-23	CSWomen Social Events Coordinator , University of Massachusetts Amherst	Amherst, USA
2022	Visiting Graduate Student with Jamie Morgenstern , University of Washington	Seattle, USA
2022	Student Volunteer at Undergraduate Research Night , University of Massachusetts Amherst	Amherst, USA
2021	Student Volunteer , IEEE VIS	Virtual Conference

Skills

Human Factors	HFE Principles, Task & Workflow Analysis, Perception & Decision-Making, Accessibility (WCAG/POUR), Standards Familiarity
User Research	Mixed-Methods Research, Formative & Summative Design, Interviews, Surveys, Cognitive Walkthroughs, Participant Recruitment
Programming	Python (Pandas, NumPy), R, Vega-Lite, C++, JavaScript, D3, HTML/CSS
Analysis	Statistical Analysis (ANOVA, t-test, Regression), Thematic Analysis, Affinity Mapping, Survey Analysis, Bootstrapping
Tools	Qualtrics, NVivo, Figma, Tableau, R Studio, Miro, Adobe Suite, Android Studio, Canva, Keynote