Aimen Gaba

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Research Interests

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

Education

University of Massachusetts Amherst *Amherst, MA, USA*

PhD in Computer Science *Sep 2021 - Apr 2026 (expected)*

- **Thesis:** Towards Responsible & Trustworthy AI Using Human-Centered Evaluation
- **Advisors:** Dr. Cindy Xiong Bearfield, Dr. Yuriy Brun
- **Interests:** HCI, Human-Centered AI, Responsible AI, Data Visualization, Human Perception, Natural Language
- 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*

Research Scientist/Engineer Intern *May 2024 - Aug 2024*

- **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 12 interviews with visualization experts & non-experts, and validated the framework through a ***preference-ranking study*** with $70+$ participants.

Carnegie Mellon University *Pittsburgh, PA, USA*

Visiting Researcher *Jul 2023 - Aug 2023*

- 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

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*

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

Aimen Gaba, Vidya Setlur, Arjun Srinivasan, Jane Hoffswell, and Cindy Xiong *Oct 2022*

How Do We Measure Trust in Visual Data Communication? *IEEE BELIV*

Hamza Elhamdadi, Aimen Gaba, Yea-Seul Kim, and Cindy Xiong *Oct 2022*

Reasoning Affordances with Tables and Bar Charts — *IEEE TVCG*
Cindy Xiong, Elsie Lee Robbins, Icy Zhang, Aimen Gaba, and Steven Franconeri — *Oct 2023*

Bias, Accuracy, and Trust: Gender-Diverse Perspectives on Large Language Models — *CSCW 2026*
Aimen Gaba, Emily Wall, Tejas Ramkumar Babu, Kyle Hall, Yuriy Brun, and Cindy Xiong Bearfield — *Under Review (Second stage)*

How Do Blind Individuals Perceive, Design, & Innovate Assistive Technology Using Human-Centered Design — *ACM CHI 2026*
Aimen Gaba, Frank Elavsky, Lucas Nadolskis, Dominik Moritz, and Cindy Xiong Bearfield — *Under Review*

Tulna: A Chain-of-Thought Approach for Interpreting Natural Language Comparisons in Visual Analytics — *IEEE VIS 2026*
Vidya Setlur, Aimen Gaba, Kylie Lin, and Cindy Xiong Bearfield — *In Preparation*

Capturing the Gist: How Data Approximation Algorithms Align with Human Perception in Time-Series Visualizations — *IEEE TVCG 2026*
Yishu Ji, Aimen Gaba, Reid Laughton, Duen Horng (Polo) Chau, and Cindy Xiong Bearfield — *In Preparation*

Honors & Awards

2025	**MIT Rising Star in EECS**, MIT	*Boston, USA*
2025	**UMass Dissertation 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*

Teaching Experience

University of Massachusetts Amherst — *Amherst, MA, USA*
Teaching Assistant — *Spring 2022 & Spring 2023*

- **Course**: Introduction to UX Research (CS 490U)
- 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 — *Fall 2017*

- **Course**: Computer Organization and Assembly Language (CS320)
- 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
2022-23	**Jason Cheung**, Senior CS undergrad at UMass Amherst
2021-22	**Shubham Mishra**, CS Master's student at UMass Amherst
2021-22	**Nisarga Patel**, CS undergrad at UMass Amherst

Program Committee & Reviewing

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

Programming	Python (Pandas, NumPy), R, Vega-Lite, C++, JavaScript, D3, HTML/CSS
User Research	Mixed-Methods Research (Qualitative & Quantitative), Study Design, User Interviews, Surveys, Usability Testing, UX Design
Analysis	Statistical Analysis (ANOVA, t-test, Regression), Bootstrapping, Thematic Analysis, Survey Analysis
Tools	Figma, Tableau, R Studio, Adobe InDesign, Adobe Photoshop, Android Studio, Canva, Miro, Keynote