

# Aimen Gaba

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## Research Focus

Human-Computer Interaction, UX Research, Information Visualization, Machine Learning, Fairness and Bias, User Perception, Responsible AI.

## Education

### University of Massachusetts Amherst

Amherst, MA, USA

PhD in Computer Science

Sep 2021 - May 2025 (expected)

- **Advisors:** Dr. Cindy Xiong Bearfield, Dr. Yuriy Brun
- **Thesis:** Natural Language and Visual Design can Influence Trust and Bias Perception in AI
- **Interests:** HCI, Data Visualization, Ethical AI, Trust in AI, Natural Language, Human perception, Fairness and Bias
- Achieved PhD candidacy with **distinction**

### University of Massachusetts Amherst

Amherst, MA, USA

MS in Computer Science, GPA: 3.9

Sep 2021 - Dec 2023

- **Thesis:** How Visualization Design Affects Trust & Perceived Bias in Machine Learning
- **Courses:** Advanced Methods in HCI, Introduction to Neural Networks, Making Sense of Visual Information, Research Methods

### Lahore University of Management Sciences

Lahore, Pakistan

BS in Computer Science

Aug 2014 - Jun 2018

- **Interests:** HCI, Affective Computing, Context-Aware Tools, Ed-Tech, Health Informatics
- **Courses:** Human-Computer Interaction, Computer Graphics, Topics in Interactive Computing

## Work Experience

### Adobe Research

College Park, MD, USA

Research Scientist/Engineer Intern

May 2024 - Aug 2024

- **Team:** Document Intelligence Lab under supervision of Dr. Ani Nenkova, Dr. Alexa F Siu, and Dr. Jack Wang
- Designed a novel prototype to include Search and Generative AI assistance in document-grounded user workflows and conducted extensive user interview studies to evaluate user preferences for generative vs. extractive responses
- **Skills:** User Interviews, Prototyping, Design Sprints, User Study Design, Quantitative Analysis

### University of Massachusetts Amherst

Amherst, MA, USA

Research Assistant

Sep 2021 - Present

- Developed design recommendations for ML visualizations and visual analytics tools by investigating the impact of visualization design on fairness vs. accuracy trade-offs for decision making and identifying gender differences in decision making patterns
- Examined the impact of bias in large language models (LLMs) on trust and decision making among individuals of diverse gender identities
- Created a visualization design framework for ambiguous natural language comparisons, informing design implications through user interviews and empirical validation
- Advised by Dr. Emily Wall, Dr. Kyle Wm. Hall, Dr. Yuriy Brun, and Dr. Cindy Xiong Bearfield. Ongoing collaboration with **Tableau Research** under Dr. Vidya Setlur
- **Skills:** User-centered Design, Participant Recruitment & Interviews, Survey Design, Quantitative & Qualitative Analysis, Cognitive heuristics

### Carnegie Mellon University

Pittsburgh, PA, USA

Visiting Researcher

Jul 2023 - Aug 2023

- Investigated how blind and low-vision individuals approach technology and innovation when given the opportunity to lead design efforts by employing speculative design methods (ongoing collaboration with Frank Elavsky and Dr. Dominik Moritz)
- **Skills:** Study Design, User Interviews, Thematic Analysis, Longitudinal Study, Speculative design, Human factors

### Tower Technologies (Pvt.) Ltd

Lahore, Pakistan

UX/UI Designer

Jun 2019 - Mar 2020

- Constructed user personas and storyboards by conducting user research, formulated the solution with user flow diagrams and brainstorming, built the lo-fi prototypes and wire-frames, and eventually hi-fi prototypes iteratively tested by the users.
- **Skills:** User Experience (UX), Design Thinking, Adobe Photoshop, Lo-fi & Hi-fi Prototyping, Leadership

### United We REACH

Lahore, Pakistan

Management Trainee Officer

Aug 2018 - Jan 2019

- Collaborated with a four-person team to develop a CNN model that utilised YOLO as a foundation to improve the accuracy of ambient lighting conditions in the Mobile net architecture.
- **Skills:** RStudio with RMarkdowns, ggplots2, Statistical analysis in R.

## Teaching Experience

### University of Massachusetts Amherst

Teaching Assistant

Amherst, MA, USA

Spring 2022 & Spring 2023

- **Course:** Introduction to UX Research (CS 490U)
- **Instructor:** Dr. Cindy Xiong Bearfield
- Delivered lectures on UX research principles and practices, as well as guiding students in using the R statistical software for data analysis. In addition to grading assignments and projects, I provided detailed feedback to support student learning. I also assisted the students by clarifying concepts and answering questions to ensure a deeper understanding of the course material.

### Lahore University of Management Sciences

Teaching Assistant

Lahore, Pakistan

Fall 2017

- **Course:** Computer Organization and Assembly Language (CS320)
- **Instructor:** Dr. Mohammad Jahangir Ikram
- Led the course staff as the Teaching Assistant. Designed and evaluated final course projects, assignments, and quizzes using Assembly language, C++, and Proteus.

## Publications

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

IEEE VIS, Melbourne, Australia

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, Oklahoma, USA

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

Oct 2022

### How Do We Measure Trust in Visual Data Communication?

IEEE BELIV, Oklahoma, USA

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

Oct 2022

### Reasoning Affordances with Tables and Bar Charts

IEEE TVCG, Melbourne, Australia

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

Jan 2023

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

Under Review

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

Feb 2025

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

In Preparation

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

UIST 2025

### Understanding How Blind and Low-Vision Users Perceive, Design, and Innovate in Assistive Technology

In Preparation

Aimen Gaba, Frank Elavsky, Dominik Moritz, and Cindy Xiong Bearfield

CHI 2025

## Awards & Honors

Current	<b>Responsible Technology Coalition Leadership Team Member</b> , University of Massachusetts Amherst	Amherst, USA
2024	<b>GHC Scholar (UMass CICS Scholarship)</b> , Grace Hopper Celebration	Philadelphia, USA
2021-23	<b>CSWomen Social Events Coordinator</b> , University of Massachusetts Amherst	Amherst, USA
2023	<b>Tapia Scholar (UMass CICS Scholarship)</b> , ACM Richard Tapia Conference	Dallas, USA
2022	<b>CRA Scholar</b> , CRA-WP for IDEALS	San Diego, USA
2022	<b>Visiting Graduate Student with Jamie Morgenstern</b> , University of Washington	Seattle, USA
2022	<b>Student Volunteer at Undergraduate Research Night</b> , University of Massachusetts Amherst	Amherst, USA
2021	<b>\$10,000 Research Scholarship</b> , Adobe Research	Amherst, USA
2021	<b>\$4,000 CICS PhD Scholarship</b> , University of Massachusetts Amherst	Amherst, USA

## Skills

<b>Programming</b>	Python (Pandas, NumPy), Vega-Lite, R, C++, HTML/CSS, D3, JavaScript
<b>User Research</b>	Qualitative Analysis, Quantitative Analysis, User Experience (UX) Design, User Interviews, User Surveys
<b>Analysis</b>	Statistical Analysis (ANOVA, t-test, Regression), Bootstrapping, Thematic analysis
<b>Soft Skills</b>	Time Management, Teamwork, Problem-solving, Documentation, Engaging Presentation