

# Aimen Gaba

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## Personal Profile

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My research interests lie at the intersection of Human-Computer Interaction and Data Visualization. Specifically, I investigate how to make visualization recommendation systems that use natural language queries better. I am also interested in exploring the idea of fairness and trust in ML models.

## Education

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### University of Massachusetts Amherst

MS/PhD in Computer Science, GPA: 3.89

Amherst, USA

Sept 2021 - Current

- **Interests:** HCI, Data Visualization, Natural Language Interface, Fairness in ML Models.
- **Courses:** Advanced Methods in HCI, Introduction to Neural Networks, Making Sense of Visual Information, Research Methods

### Lahore University of Management Sciences

BS in Computer Science

Lahore, Pakistan

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

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### University of Massachusetts Amherst

Research Assistant

Amherst, USA

Sep 2021 - Jan 2023

- I work with **Dr. Cindy Xiong** on natural language recommendation systems and how they can better understand the ambiguity and complexity of comparison queries to recommend a visualization that best aligns with the user's intent. I also collaborate with **Dr. Yuriy Brun** to investigate how perceived fairness in ML models influences users' trust in these models.
- **Skills:** R, Python, Survey design, Statistical Analysis, User Interviews, HTML/CSS, JavaScript, D3

### University of Massachusetts Amherst

Teaching Assistant

Amherst, USA

Jan 2022 - Jun 2022

- TA for **Introduction to UX Research (CS490U)** taught by Dr. Cindy Xiong.
- **Skills:** RStudio with RMarkdowns, ggplots2, Statistical analysis in R.

### Tower Technologies (Pvt.) Ltd

UX/UI Designer

Lahore, Pakistan

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:** Adobe Photoshop, Lowfi & Hi-gi Prototyping, Leadership, User studies, Tool Evaluation.

### Educative Inc.

Developer Advocate

Lahore, Pakistan

Feb 2019 - Jun 2019

- Designed a course on front-end development in AngularJS, with coding challenges, illustrations, and a final course project to create an interactive to-do list web app. Spearheaded the creation of a course teaching the basics of recursion in Java step-by-step to solve hard coding challenges.
- **Skills:** AngularJS, Java, Teamwork, Communication

## Publications

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### 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, Oklahoma, USA

Oct 2022

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

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

IEEE BELIV, Oklahoma, USA

Oct 2022

### Reasoning Affordances with Tables and Bar Charts

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

IEEE TVCG

Jan 2023

## Additional Project Experience

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## Trust and Fairness in Machine Learning Models

Amherst, USA

University of Massachusetts Amherst

May 2022 - Current

- Research with **Dr. Cindy Xiong** and **Dr. Yuriy Brun** to look into how individuals' trust in machine learning models varies as their accuracy and fairness are varied, particularly investigating gender fairness.
- **Skills:** R (ggplot2), Python (pandas), Statistical Analysis, Survey design, Study design, Documentation.

## QuickBuy: Aiding Fast Decision Makers with Online Shopping

Amherst, USA

University of Massachusetts Amherst

Jan 2022 - May 2022

- A tool that allows ordering products while shopping online with minimal cognitive load using psychological heuristics. Using this tool, users reported less information overload and mental fatigue as compared to online retailers such as Amazon.
- **Skills:** Prototyping, Framer, Teamwork, Technical Writing, Literature Review, Evaluation

## Raabta: Augmentative and Alternative Communication (AAC) for Special Children

Lahore, Pakistan

Lahore University of Management Sciences

Jan 2018 - May 2018

- A tool to explore context-aware augmented and alternative communication (AAC) systems for children with intellectual disabilities, with a primary focus on Autism and Cerebral Palsy. Thorough literature review, interviews and focus groups were carried out to understand the needs of special children, speech therapists, and teachers. The effectiveness of the tool was evaluated through questionnaire and informal interviews.
- **Skills:** Prototyping, HTML/CSS, JavaScript, iBeacons, User study, Literature Review.

## BloodHub: Connecting Donors to Patients

Lahore, Pakistan

Lahore University of Management Sciences

Sep 2016 - Dec 2016

- Designed and developed an **Android application** to connect blood donors to patients in Pakistan. The application implemented an optimum working platform developed through an in-depth analysis of user study, using the design process for analysis, prototyping, testing, and implementation.
- **Skills:** Android Studio, XML, JavaScript, Lowfi & Hifi prototyping, User studies, Study Evaluation.

## Achievements

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Current	<b>CSWomen Social Events Coordinator</b> , UMass Amherst	Amherst, USA
2022	<b>Attendee</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>Student Volunteer</b> , IEEE VIS	Virtual Conference
2021	<b>\$10,000 Scholarship</b> , Adobe Research	Amherst, USA
2021	<b>\$4,000 CICS PhD Scholarship</b> , University of Massachusetts Amherst	Amherst, USA

## Skills

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<b>Programming</b>	Python (Pandas, PyTorch, NumPy), R(ggplot2), C++, HTML/CSS, JavaScript.
<b>Miscellaneous</b>	Shell (Bash/Zsh), $\LaTeX$ (Overleaf/R Markdown), Tableau, Microsoft Office, Firebase, Git.
<b>Soft Skills</b>	Time Management, Teamwork, Problem-solving, Documentation, Engaging Presentation.