

# Rukhshan Haroon

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## EDUCATION

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**Tufts University**, Medford, MA, USA.

*Ph.D. in Computer Science*, Sept. 2022 - June 2027 (expected)

Focus Area: Accessibility, Human-centered AI

Advisor: [Fahad R. Dogar](#)

**Lahore University of Management Sciences (LUMS)**, Lahore, Pakistan.

*B.Sc. in Computer Science*, Sept. 2018 - May 2022

Advisors: [Zartash Uzmi](#) and [Fareed Zaffar](#)

## WORK EXPERIENCE AND PROJECTS

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### Research Assistant, Tufts University — June 2023 to present

#### 1. TwIPS: A Large Language Model (LLM) Powered Texting Interface to Simplify Conversational Nuances for Autistic Users

TwIPS can predict user reactions, rephrase messages and analyze their tone to clarify emotional and non-literal nuances to autistic users and reduce the effort required to mask one's communication style.

#### 2. AltText+: Transforming Web Accessibility Through Query-Responsive Alt Text

AltText+ augments alt text with LLMs to allow for dynamic responses to blind users' queries about images, enriching their visual narrative beyond the confines of a static and concise alt text.

#### 3. Training Neurotypicals for Empathetic Communication with Autistic Individuals

Through simulations with an AI-persona, we enhance neurotypical individuals' understanding of autistic needs and communication styles, moving away from interventions that adapt autistic behaviors.

### Research Assistant, LUMS — May 2020 to Sept. 2022

#### 1. Evaluating Software Debloating Paradigms and Their Compositions

Developed a scalable benchmarking framework for software debloating tools to analyze their memory footprint, vulnerability, and correctness.

#### 2. Exploring COVID-19's Gendered Impact on Healthcare Workers (HCWs)

Analyzed and gathered primary data from 600 surveys and 50 interviews to explore gender disparities among HCWs during the pandemic and propose tech-driven strategies to mitigate them.

## PUBLICATIONS

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**TwIPS: A Large Language Model Powered Texting Application to Simplify Conversational Nuances for Autistic Users.** To appear in ACM SIGACCESS Conference on Computers and Accessibility (ASSETS) 2024. [PDF](#)

**On the Frontline During the Covid-19 Pandemic: Gender Inequality and Experiences of Healthcare Workers in Pakistan.** ACM SIGCAS/SIGCHI Conference on Computing and Sustainable Societies (COMPASS) 2023, and ACM JCSS 2024. [PDF](#)

**SoK: A Tale of Reduction, Security, and Correctness - Evaluating Program Debloating Paradigms and Their Compositions.** ESORICS 2023. [PDF](#)

**Unpacking Misinformation Amid the COVID-19 Pandemic: A Mixed Methods Study.** IEEE Internet Computing, 2022. [PDF](#)

## SKILLS

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**Languages and Frameworks:** Unity, JavaScript, HTML, CSS, JSX, ReactJS, NodeJS, Python, Pytorch, scikit-learn, NumPy, Pandas, Keras, DynamoDB, MySQL, C#, C++, C, AWS Lambda, Docker.  
**Selected Coursework:** HCI for Disabilities, Deep Learning, Data Mining, Artificial Intelligence, Data Science, Advanced Programming, Data Structures, Algorithms, Probability, Statistics, Linear Algebra.

## HONORS AND AWARDS

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**Winner, Harvard XR DreamHack 2023:** Prototyped an application that dynamically calibrates the intensity of AR content based on users' sensory load to enhance its accessibility for autistic users.

**Dean's Honour List:** Awarded annually for academic excellence by LUMS from 2019-22.