# Zainab **Iftikhar**

Ph.D. Candidate · Human Computer Interaction · Machine Learning

✉ zainab_iftikhar@brown.edu | ○ zainabiftikhar | in zainab-iftikhar

## **Edu**cation

**Brown University, Dept. of Computer Science**                                                   *Providence, RI*

Ph.D. Computer Science                                                                           *Sep 2021 - May 2027*

- Advisor: Jeff Huang

**National University of Computer & Emerging Sciences (NUCES)**                          *Lahore, PK*

B.Sc. Computer Science                                                                            *Aug 2014 - May 2018*

- Cum Laude | Dean's List 2014-18
- Advisors: Mehreen Saeed & Mubasher Baig
- Thesis: Intelligent Mock Interviewer

## **Pub**lications

Conferences

- **Zainab Iftikhar**, Yumeng Ma, Jeff Huang. (2023) "Together but not together": Evaluating Typing Indicators for Interaction-Rich Communication. In Proceedings of the 2023 Conference on Human Factors in Computing Systems (CHI '23). ACM.

- **Zainab Iftikhar**, Qutaiba Rohan ul Haq, Osama Younus, Taha Sardar, Hammad Arif, Mobin Javed, Suleman Shahid (2021) Designing Parental Monitoring and Control Technology: A Systematic Review. In Human-Computer Interaction–INTERACT 2021: 18th IFIP TC 13 International Conference, Springer

- Suleman Shahid, **Zainab Iftikhar**, Rabiah Arshad, Omar Mubin, Abdullah Al Mahmud (2021) Child-Computer Interaction in the Global South: Designing for Children on the Margins. In Interaction Design and Children (IDC '21). ACM

- Mahmoud Elkhodr, Omar Mubin, **Zainab Iftikhar**, Maleeha Masood, Belal Alsinglawi, Suleman Shahid, Fady Alnajjar (2021) Technology, Privacy, and User Opinions of COVID-19 Mobile Apps for Contact Tracing: Systematic Search and Content Analysis. In Journal of Medical Internet Research (JMIR)

## **Res**earch Experience

**Brown HCI Lab**                                                                                  *Providence, RI*

PhD Student                                                                                       *Sep 2021 - Present*

- ***Responsible AI (RAI) for Therapeutic Support*** Conducting a comparative analysis of human and AI responses in therapeutic support. Evaluated quality, consistency, and privacy implications of responses, and addressed biases in AI algorithms.
- ***Analyzing Language Shifts in Therapeutic Sessions with ML*** Explored speech patterns, sentiment, and linguistic markers for insights into emotional states. Applied NLP algorithms and ML models to identify key markers, informing personalized mental healthcare
- ***Relationship Informatics: Leveraging Communication Data for Self-Reflection*** Built systems that utilize communication data to help individuals analyze their communication patterns, fostering awareness and understanding of relationship dynamics
- ***Designing Immersive Typing Indicators for Collaboration*** Developed and evaluated interactive typing indicators using NodeJS, enhancing online communication experiences to promote more immersive and collaborative task-based collaboration
- ***Empathy Detection in Online Support*** Utilized advanced machine learning techniques to create a multi-label classification model that identifies empathy and negative thought patterns in online text-based peer support sessions which led to improved understanding & support for users

**Human Computer Interaction for Inclusion, Well-being and Learning Lab**                  *Lahore, PK*

Research Associate                                                                                *Dec 2019 - Aug 2021*

- ***Using CBT and Storytelling to Improve Mental Health*** Implemented interactive storytelling and gamification features in an Android mHealth app to enhance self-guided therapy. Resulted in a significant 30% increase in user engagement, improving mental health outcomes.
- ***XAI for Effective COVID-19 Information Dissemination via Chatbot*** Pioneered the implementation of Pakistan's first eXplainable AI (XAI) chatbot for accurate and understandable COVID-19 information. Achieved 90% user satisfaction rate and successfully addressed over 10,000 inquiries.
- ***Empowering Women through Pakistan's First Legal Q&A System*** Developed Pakistan's first Q&A System for women's legal rights using Node.js, Python, and Angular. Empowered over 5,000 women, leading to a 50% increase in reported instances of taking legal action against violence

**Intelligent Interviewer: Mitigating Bias in Hiring with an AI Conversational Agent**       *Lahore, PK*

Senior Thesis | Outstanding Thesis Award                                                          *May 2017 - May 2018*

- Developed *Intelligent Mock Interviewer*, a AI powered conversational agent to address and mitigate bias in the recruitment process
- Implemented and evaluated machine learning models to assess candidate personality from visual and audio features using Viola Jones', Haar Cascades, OpenVokaturi and NLTK. Employed rigorous debiasing techniques and continuous monitoring to ensure fair and equitable decision-making

# Work Experience

**Human Computer Interaction for Inclusion, Well-being and Learning Lab** *Lahore, PK*
PRODUCT LEAD *Dec 2019 - Aug 2021*
- Designed, developed and evaluated social support healthcare apps for marginalized populations in Pakistan using mixed research methods
- Consultatively delivered five web-based and two Android applications by analyzing user requirements, prototyping wireframes, and presenting business cases and system specifications to multiple stakeholders

**Pantera Energy** *Lahore, PK*
SOFTWARE ENGINEER *July 2018 - Dec 2019*
- Developed Pantera energy Saver, using Flask, MongoDB and Angular, to optimize the performance of solar energy systems through data analysis and algorithmic improvements, resulting in a 10% increase in energy efficiency and 15% reduction in maintenance costs
- Developed Pantera's scalable solar energy monitoring and control system using SCADA and Python, resulting in improved real-time visibility and control for 500+ solar energy systems, and a 25% reduction in maintenance costs
- Build machine learning-based predictive maintenance algorithms, reducing system downtime by 20% and minimizing on-site maintenance visits by 30%

# Awards, Fellowships, & Grants

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|---|---|---|
| 2022 | **Travel Grant for CHI'22**, Brown University | *New Orleans, LA* |
| 2022 | **GHC Scholarship**, Grace Hopper Celebration of Women in Computing | *Florida, FL* |
| 2021 | **Travel Grant for INTERACT'21**, National Centre for Cyber Security | *Bari, IT* |
| 2020 | **Leadership Award**, Promoted to Product Lead, LUMS HCI Lab | *Lahore, PK* |
| 2019 | **Performance Excellence Award**, Pantera Energy | *Lahore, PK* |
| 2017 | **Finalist, IceAge - PROTO CLASH**, SWiTPCC - Simulating Wind Turbine Performance in Cold Climates | *Lahore, PK* |
| 2014 – 18 | **Academic Excellence Award (Silver Medalist) x3**, NUCES | *Lahore, PK* |

# Service

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| 2023 | **Session Chair**, ACM CHI | *Hamburg, DE* |
| 2022 – 23 | **PhD Student Representative (Diversity and Inclusion Initiative)**, Brown University | *Providence, RI* |
| 2022 – 23 | **Study Group Leader (NSF REU Site)**, Brown University | *Providence, RI* |
| 2021 – 23 | **Paper Reviewer (x3)**, ACM CHI (x3), ACM CSCW (x1) | *Providence, RI* |
| 2020 | **FWS And Roots Millennium Schools**, Autism Educator | *Lahore, PK* |

# Teaching Experience

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| Spring '21 | **Computer Networks**, Instructor | *Lahore, PK* |
| Spring '21 | **Topics in Human-Computer Interaction**, Teaching Assistant, LUMS | *Lahore, PK* |
| 2019 – 20 | **Design & Analysis of Algorithms**, Teaching Assistant, NUCES | *Lahore, PK* |
| Spring'19 | **Artificial Intelligence**, Teaching Assistant, NUCES | *Lahore, PK* |
| Spring'18 | **Human Computer Interaction**, Teaching Assistant, NUCES | *Lahore, PK* |

# Mentoring

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| 2022 – 23 | **Yumeng Ma**, Distributed Research Experiences for Undergraduates (DREU) | *Providence, RI* |
| Fall '22 | **Jieyun Li**, Brown HCI Lab | *Providence, RI* |
| Fall '22 | **Andrew Li**, Brown University (Fall UTRA) | *Providence, RI* |
| Spring '22 | **Yitian Cao**, ExploreCSR | *Providence, RI* |
| 2021 – 22 | **Sara Syed**, Brown HCI Lab | *Providence, RI* |
| 2021 | **Abdul Moeed Asad**, LUMS HCI Lab (Now at Purdue) | *Lahore, PK* |
| 2021 | **Ali Asghar Aamir**, LUMS HCI Lab (Now at Purdue) | *Lahore, PK* |
| 2021 | **Mehreen Masood**, LUMS HCI Lab (Now a Ph.D. Student at UC Irvine) | *Lahore, PK* |

# Skills

Python, JAVA, C++, JavaScript, SQL, React, Angular, Amazon Redshift, AWS Lambda, Heroku, TensorFlow, PyTorch, NLTK, Vokaturi, Figma, Quantitative Analysis (server logs, user behavior, surveys), Qualitative Analysis (contextual inquiry, grounded theory)