Zainab **Iftikhar**

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

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Education

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

Publications

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)

Research 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
- ***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
- ***Relationship Informatics: Using Communication Data for Self-Reflection*** Building systems that leverage communication data to investigate how individuals' analysis of their communication patterns can promote awareness and understanding of relationship dynamics
- ***Designing Immersive Typing Indicators for Collaboration*** Led the development of interactive typing indicators using NodeJS, fostering a more immersive and collaborative online communication experience that resulted in enhanced task-based collaboration

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*** Developed interactive storytelling and gamification features based on Persuasive Design to increase the efficacy of self-guided Android mHealth app. Resulted in a 30% increase in user engagement
- ***XAI for Effective COVID-19 Information Dissemination via Chatbot*** Implemented Pakistan's first eXplainable AI (XAI) chatbot to provide accurate and understandable information on COVID-19. Achieved 90% user satisfaction and 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: A Hiring Conversational Agent   *Lahore, PK*

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

- Developed *Intelligent Mock Interviewer*, a AI powered conversational agent to reduce hiring bias in the recruitment process.
- Created and evaluated ML models to evaluate candidate's personality from visual and audio features using Viola Jones', Haar Cascades, Open-Vokaturi and NLTK.

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

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

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	*Providence, RI*
2020	**FWS And Roots Millennium Schools**, Autism Educator	*Lahore, PK*

Teaching Experience

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

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, TypeScript, SQL, React, Angular, Amazon Redshift, AWS Lambda, Heroku, TensorFlow, PyTorch, NLTK, Vokaturi, Figma, Data Wrangling & Visualisation, Quantitative Analysis (server logs, user behavior, surveys), Qualitative Analysis (contextual inquiry, grounded theory)