

WARDA USMAN

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RESEARCH INTERESTS

I study the digital privacy and security decisions of non-expert end-users, with the goal to make cybersecurity accessible to all. My research builds on the fields of *human-computer interaction*, *security and privacy*, and *computational social science* to study and remedy the inequities in access to digital security, privacy, and safety.

EDUCATION

PhD Computer Science

Aug 2020-Present

Brigham Young University, Provo, Utah

GPA: 3.99/4.00

Expected Graduation: June 2025

BS Computer and Information Sciences

Oct 2015-Jun 2019

Pakistan Institute of Engineering and Applied Sciences (PIEAS)

Cum Laude

Key courses learned: Data communication, UI/UX design in web development, discrete mathematics, computer security, algorithm analysis, operating systems, software engineering, theory of automata, computer networking, operations research, calculus and analytical geometry, and database systems.

RESEARCH PROJECTS

W. Usman, M. Wilson, J. Hu, D. Zappala, “Being Private About Privacy: Studying Threat Models of Low-SES Women in Pakistan”, 2022 (**interview study**; in progress)

Pakistani women face unique challenges of privacy and security due to their social norms and values. These challenges are even more prominent for women with low socio-economic status (SES). We studied the threat models held by these women to find out that they vary dramatically from the western world.

W. Usman, D. Zappala, “Understanding User Rationales and Mental Models for Adopting Secure Email”, 2022 (a **survey and interview study**; in progress)

We designed a study focused on understanding why people choose to adopt secure email services and what makes them different from those who do not choose to do so. We conducted hour-long interviews with users of secure email and ran a survey that measured the quantitative differences between users and non-users in terms of privacy and security attitudes.

J. Conners, **W. Usman**, D. Zappala, “Exploring User Perceptions and Mental Models of Physical and Digital Security”, 2022 (**in-depth interview study**; in progress)

We studied user perceptions of physical and digital security and how they interconnect. We conducted hour-long interviews with users of smart locks for their homes, users of regular locks, users of passwords and users of hardware tokens to understand the mental models of security people have in general. We are currently in process of analyzing the results to help gain generalizable insight into grassroots adoption of 2FA and hardware tokens as replacements for passwords.

W. Usman, D. Zappala, “Towards More Inclusive Technology: Understanding Social Media Privacy Concerns of Men vs. Women in Pakistan”, 2022 (**focus groups and interview study**; in progress)

Pakistan stands 4th to last on the gender gap index as of 2021. In such a society with disparate roles for women and men, the privacy concerns and needs of the two genders must vary drastically too. We designed and ran a study focused on discovering the privacy issues people in Pakistan have while using social media, and how much these concerns differ with gender. Our results show a privacy paradox in women – they are more concerned about their privacy but do not take much action, while men take

more action but do not seem as concerned. Further, we noticed a disconnect in women between the word 'privacy' and the actual privacy-preserving actions: the seemed to hate the word privacy and said they did not need it, while taking some privacy-preserving actions and not connecting it to the idea of privacy.

WORK EXPERIENCE

Graduate Research Assistant

Jan 2021- Present

Internet Research Lab - BYU

- Contributed to research on adoption and usability testing of secure technologies
- Designed and ran several comparison tests, surveys, and interview studies
- Conducted inductive/deductive analyses on qualitative data, and statistical analyses on quantitative data from surveys
- Designed an in-depth qualitative interview study, from research planning, creation of research materials (including the moderator guidelines, survey, and interview questions), to conducting 1:1 hour-long interviews; thematic analyses of the interview transcripts currently in progress

CS Undergrad Student Mentor Supervisor

Jan 2021-Present

BYU CS Office of Inclusion, Diversity, and Equity

- Oversaw groups of undergraduate mentors to assist CS students in academic counseling and course assistance
- Worked closely with CS department, Dean of CS, and other faculty

STEM Mentor

Jan 2020-July 2020

Oxbridge Innovative Solutions

- Worked as a STEM Mentor, Trainer, and Educator
- Led a team of four members to teach programming to primary school children

Intern

Jan 2019-Aug 2019

Higher Education Commission (HEC) Pakistan

- Worked on a research project aimed at Traffic Congestion Management.
- Contributed in designing an economic web-based system with the goal to reduce traffic congestion by forecasting the conditions of street sections in Pakistan in real-time

Co-founder

Nov 2018-Jun 2019

Seekh-Lo

- Won 500,000 PKR in an elevation pitch competition to create whiteboard animations in local languages of Pakistan
- Hired and supervised a team of ten students to create the videos on education and conducted in-school workshops
- Coached students on importance of education (done in Urdu/Hindi and Punjabi)

Intern

Jul 2017-Aug 2017

CyberVision Intl.

- Designed login interfaces for websites as per clients' requirement.
- Directly contacted clients, incorporating their feedback to implement additional features into existing software to improve the user experience

AWARDS AND HONORS

Graduate Professional Development Grant (\$ 500)

Jan 2022

USENIX Security'21 Diversity Grant

Jul 2021

NSF Sponsored GREPSEC V Workshop Attendance Grant

Jul 2021

Project competition under Ministry of IT Pakistan's chapter Ignite Winner (70,000 PKR)

Nov 2018

Pakistan Institute of Engineering and Applied Sciences Full Scholarship Recipient

2017-2018

Second Position Holder in SSC Board Exams (300,000 PKR)

Aug 2013

SERVICE AND CO-CURRICULARS

Invited Speaker - Provo

Jul 2022

Teen Boot Camp

Graduate Student Delegate

Apr 2021-Present

BYU College of Physical and Mathematical Sciences

Part-time Volunteer

Jun 2019

SOS Children's Village, Pakistan

Head Operations

Jun 2019

Mental Health Awareness Workshop, Steps College