ABIR SAHA

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RESEARCH INTERESTS

Human-Computer Interaction, User-Centered Design, User Experience, Accessibility

EXPERIENCE

Inclusive Technology Lab, Northwestern University   Sep 2018 – Present
Doctoral Researcher | Advised by Anne Marie Piper
- Conducted in-depth interviews and observations with 18 blind audio producers and performed qualitative analysis to understand accessibility in audio production tools and practices.
- Conducted contextual inquiry with seven blind audio production trainers to understand practices and strategies for creating and disseminating accessible learning resources (e.g., guides, docs, tutorials) for blind learners.
- Generated actionable design decisions from research insights and led the design and usability study of an application to support creation and consumption of accessible interactive tutorials for blind audio producers.
- Conducted a study on enhancing music streaming experience of deaf individuals.

Collaborative Technology Lab, Northwestern University   Sep 2020 – Present
Doctoral Researcher | Advised by Darren Gergle
- Conducted qualitative analysis of conversation threads in a forum of blind software users to understand how blind users exchange instructional support regarding use of complex Graphical User Interfaces.

Western Washington University   Apr 2017 – Jan 2018
Researcher (remote) | Mentored by Moushumi Sharmin and Shameem Ahmed
- Performed systematic literature review on the design of smart technologies for autistic children.

Transportation Active Safety Institute (TASI), IUPUI   Aug 2016 – Jun 2018
Graduate Research Assistant
- Developed industry-standard, patented testing methods and equipment to evaluate automated safety features of self-driving cars as part of a project in collaboration with Toyota engineers and researchers.

Bangladesh University of Engineering & Technology   Aug 2014 – Sep 2015
Undergraduate Researcher
- Designed a next-gen cellular network that ensures faster data speeds by intelligently combining multiple towers.

EDUCATION

Northwestern University
Doctor of Philosophy (PhD) in Technology and Social Behavior   Dec 2023 (Expected)
Joint degree in Computer Science and Communication
Dissertation Committee: Anne Marie Piper (Chair), Darren Gergle, Marcelo Worsley, Shaun Kane
Dissertation Title: Designing for Accessibility in Audio Production among People with Vision Impairments

Indiana University-Purdue University Indianapolis (IUPUI)
Master of Science in Electrical and Computer Engineering (ECE)   Aug 2018

Bangladesh University of Engineering and Technology (BUET)
Bachelor of Science in Electrical and Electronic Engineering (EEE)   Sep 2015

SKILLS

- **Methods:** Interviews, contextual inquiry, field observation, experiment design, usability testing, thematic analysis, survey design, prototyping, programming (Python, R).
- **Others:** Wireframing (Figma), accessibility software (e.g., screen readers), qualitative analysis software (Atlas.ti, NVivo), audio editing (GarageBand, Logic Pro), image editing (Adobe Lightroom and Photoshop).

PUBLICATIONS

- **Abir Saha**, Thomas B. McHugh, and Anne Marie Piper. 2023. Tutoria11y: Enhancing Accessible Interactive Tutorial Creation by Blind Audio Producers. *In Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems (CHI '23)*.
- **Abir Saha**. 2022. Understanding and Designing for Accessible Audio Production among People with Vision Impairments. In *Extended Abstracts of the 2022 CHI Conference on Human Factors in Computing Systems (CHI '22)*. [Doctoral Consortium]
- Thomas B. McHugh, **Abir Saha**, David Bar-El, Marcelo Worsley, and Anne Marie Piper. 2021. Towards Inclusive Streaming: Building Multimodal Music Experiences for the Deaf and Hard of Hearing. In *Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems (CHI '21)*. [LBW]
- **Abir Saha** and Anne Marie Piper. 2020. Understanding Audio Production Practices of People with Vision Impairments. In *Proceedings of the 22nd International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '20)*. *Best Paper Nomination
- Stanley Chien, Jue Zhou, Qiang Yi, Seeta Ram Pandey, **Abir Saha** et al. 2020. Development of Surrogate Grass for the Evaluation of Vehicle Road Departure Mitigation Systems. In *Proceedings of the IEEE 23rd International Conference on Intelligent Transportation Systems (ITSC '20)*.
- Lin Li, **Abir Saha**, Seeta Ram Pandey, Yaobin Chen, Stanley Chien, and Rini Sherony. 2019. Infrared Reflectance Requirements of Metal Guardrail Surrogates for the Evaluation of Vehicle Road Departure Mitigation Systems. In *Proceedings of the IEEE Intelligent Transportation Systems Conference (ITSC '19)*.
- Moushumi Sharmin, Monsur Hossain, **Abir Saha,** Maitraye Das, Margot Maxwell, and Shamim Ahmed. 2018. From Research to Practice: Informing the Design of Autism Support Smart Technology. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*.
- **Abir Saha** and Maitraye Das. 2017. Impact of Social Networking on Post-Partum Depression in Women: An Analysis in the context of Bangladesh. In *Proceedings of the 20th IEEE International Conference on Computer and Information Technology (ICCIT '17)*.
- Maitraye Das and **Abir Saha**. 2017. An Automated Speech-Language Therapy Tool with Interactive Virtual Agent and Peer-to-Peer Feedback. In *International Conference on Advances in Electrical Engineering '17*.
- Tahsin Reasat, **Abir Saha,** and Md. Forkan Uddin. 2017. Cognitive Radio Network with Coordinated Multipoint Joint Transmission. In *International Journal of Communication Systems (IJCS)*, March 2017.

TECHNICAL REPORTS

- Dan Shen, Lin Li, **Abir Saha**, Stanley Chien, Qiang Yi, Rini Sherony. 2019. Infrared reflectance requirements of the surrogate grass from various viewing angles. In *SAE Technical Paper*.
- Stanley Chien, Qiang Yi, Jun Lin, **Abir Saha**, Lin Li, Yaobin Chen, Chi-Chih Chen, Rini Sherony. 2019. Determine characteristics requirement for the surrogate road edge objects for road departure mitigation testing. In *the 26th ESV 2019 – Technology: Enabling a Safer Tomorrow*.

PATENTS

- Rini Sherony, Stanley Yung-Ping Chien, Qiang Yi, Jun Lin, **Abir Saha**, Yaobin Chen, Chi-Chih Chen. 2020. Grass Surrogate. *US Patent, Application #16256412*.
- Rini Sherony, Stanley Yung-Ping Chien, Qiang Yi, Jun Lin, **Abir Saha**, Yaobin Chen, Chi-Chih Chen. 2020. Surrogate for Metal Guardrail. *US Patent #10689818*.
- Rini Sherony, Stanley Yung-Ping Chien, Qiang Yi, Jun Lin, **Abir Saha**, Yaobin Chen, Chi-Chih Chen. 2020. Surrogate for Concrete Divider. *US Patent # 10597835.*

AWARDS AND HONORS

- **Best Paper Nomination** at ACM Conference on Computers and Accessibility (ASSETS)   2020
- **University Fellowship** at Indiana University-Purdue University Indianapolis   2016 – 2017
- **Finalist** at International Robotics Challenge (IRC), IIT Bombay, India   2014

ACTIVITIES AND MEMBERSHIPS

- **Member,** ACM, SIGCHI, SIGACCESS   2020 – Present