

## Research Statement

---

My research interest falls broadly in the intersection of Human-Computer Interaction (HCI), Computer-Supported Cooperative Work (CSCW), and Accessibility. Specifically, my doctoral research involves studying and designing for accessible collaborative content production in ability-diverse teams. My work draws on literature in HCI, CSCW, and critical disability studies to uncover how accessibility is created, negotiated, and sustained in collaborative work. Methodologically, I take a cross-disciplinary approach that includes qualitative methods (e.g., contextual interviews, observations, ethnography) as well as system design, development, and evaluation through controlled experiments and design exploration studies. As a HCI researcher, my broader goal is to support accessibility through design and thus, contribute towards reducing equity gaps in education, employment, and creative expression.

## Education

---

NORTHWESTERN UNIVERSITY EVANSTON, IL, USA  
**PhD in Technology and Social Behavior** (Computer Science & Communication) Fall 2017 - Present  
Dissertation: Designing for Collaborative Content Creation for People with Vision Impairments  
Committee: Darren Gergle (co-chair), Anne Marie Piper (co-chair), Marcelo Worsley, and Cynthia Bennett

NORTHWESTERN UNIVERSITY EVANSTON, IL, USA  
**MS in Technology and Social Behavior** (Computer Science & Communication) Mar 2021  
GPA: 3.97 out of 4.00

BANGLADESH UNIVERSITY OF ENGINEERING & TECHNOLOGY (BUET) BANGLADESH  
**BS in Computer Science and Engineering** (CSE) Sep 2015  
GPA: 3.85 out of 4.00 (top 6% of the graduating class)

## Research Experience

---

COLLABORATIVE TECHNOLOGY LAB | NORTHWESTERN UNIVERSITY Fall 2017 – Present  
**Graduate Research Assistant** | advised by **Darren Gergle**

- Conducted contextual interviews and observations to understand collaborative writing practices and accessibility needs of visually impaired writers. Developed audio enhancements for asynchronous collaborative writing and evaluated through a mixed-methods controlled experimental study. Currently developing non-visual interactions to support accessibility in synchronous collaborative writing for visually impaired writers. [CSCW 2019]

INCLUSIVE TECHNOLOGY LAB | NORTHWESTERN UNIVERSITY Spring 2018 – Present  
**Graduate Researcher** | advised by **Anne Marie Piper**

- Conducted ethnographic field observations and contextual interviews at a weaving studio for people with vision impairments. Designed auditory augmentations on a loom to enhance collaborative weaving experiences among blind weavers and their sighted instructors. Currently developing an audio-tactile system to support collaborative designing of fabric patterns for blind weavers. [CHI 2020, TACCESS]

ABILITY TEAM | MICROSOFT RESEARCH, USA Summer 2020  
**Research Intern** | mentored by **John Tang**

- Conducted semi-structured interviews with 36 neurodivergent professionals. Performed thematic analysis to highlight accessibility issues in remote work during the COVID-19 pandemic. [CSCW 2021]

PEOPLE, SPACE & ALGORITHMS GROUP | NORTHWESTERN UNIVERSITY Fall 2017 – Summer 2018  
**Graduate Researcher** | mentored by **Brent Hecht**

- Collected a dataset of nearly 0.45 billion edits by 2000 OpenStreetMap editors using Python and Osmium. Performed quantitative analysis to investigate gender-based self-focus bias in OpenStreetMap. [CHI 2019]

WESTERN WASHINGTON UNIVERSITY, USA Summer 2017  
**Researcher (remote)** | mentored by **Moushumi Sharmin** and **Shameem Ahmed**

- Performed a systematic literature review on the design of smart technologies for children on the autism spectrum. [CHI 2018]

**Undergraduate Researcher** | advised by **Tanzima Hashem**

- Developed a secret sharing algorithm for privacy-preserved and authenticated queries in genomic databases to compute disease susceptibility. [COMPSAC 2018, Journal of Information Processing 2019]

**Honors, Awards, & Grants**

<b>Graduate Research Grant</b>   Northwestern University (\$2,999)	2021-22
<b>Finalist</b>   Microsoft Research PhD Fellowship	2020
<b>Best Paper Honorable Mention Award</b>   ACM CHI [C1]	2020
<b>Best Paper Honorable Mention Award</b>   ACM CSCW [J4]	2019
<b>Special Recognition for Outstanding Review</b>   ACM CHI'21 (3 times), ACM CSCW'19	2021, 2019
<b>Conference Travel Grant</b>   Northwestern University (\$2,300 + \$1,500)	2019, 2018
<b>Best Paper Award</b>   IEEE COMPSAC [C4]	2018
<b>Student Travel Grant</b>   ACM UbiComp (\$600)	2018
<b>Student Scholarship</b>   Grace Hopper Celebration, USA	2018
<b>Best Undergraduate Thesis Award</b>   Dept. of CSE, Bangladesh University of Engg. & Technology	2015
<b>Best Technical Poster</b>   Grace Hopper Celebration India	2014
<b>Student Scholarship</b>   Grace Hopper Celebration India	2014
<b>Dean's List Award</b>   Bangladesh University of Engg. & Technology	2011-2015
<b>University Merit Scholarship</b>   Bangladesh University of Engg. & Technology	2011-2014

**Journal Articles**

- J1. **Maitraye Das**, Anne Marie Piper, and Darren Gergle. Design and Evaluation of Collaborative Writing Techniques for People with Vision Impairments. Under review in *ACM Transactions on Computer-Human Interaction (TOCHI)*. Impact Factor: 3.147.
- J2. **Maitraye Das**, John Tang, Kathryn E. Ringland, and Anne Marie Piper. 2021. Towards Accessible Remote Work: Understanding Work-from-Home Practices of Neurodivergent Professionals. In *Proceedings of the ACM on Human-Computer Interaction*, Vol. 5, CSCW1, Article 183 (April 2021), 30 pages.
- J3. Katya Borgos-Rodriguez, **Maitraye Das**, and Anne Marie Piper. 2021. Melodie: A Design Inquiry into Accessible Crafting through Audio-Enhanced Weaving. In *ACM Transactions on Accessible Computing (TACCESS)*. Impact Factor: 2.641.
- 🔗 J4. **Maitraye Das**, Darren Gergle, and Anne Marie Piper. 2019. "It doesn't win you friends": Understanding Accessibility in Collaborative Writing for People with Vision Impairments. In *Proceedings of the ACM on Human-Computer Interaction*, Vol. 3, CSCW, Article 191 (November 2019), 26 pages. DOI: [10.1145/3359293](https://doi.org/10.1145/3359293) [acceptance rate: 31.2%] **\*Best Paper Honorable Mention** (Top 5% of submissions).
- J5. Nusrat Jahan Mazumder, **Maitraye Das**, Tanzima Hashem, Sharmin Afrose, and Khandaker Ashrafi Akbar. 2019. Towards Privacy-preserving Authenticated Disease Risk Queries. In *Journal of Information Processing*, Vol. 27, (September 2019), pp. 624-642. DOI: [10.2197/ipsjip.27.624](https://doi.org/10.2197/ipsjip.27.624)

**Peer-Reviewed Conference Papers<sup>1</sup>**

- 🔗 C1. **Maitraye Das**, Katya Borgos-Rodriguez, and Anne Marie Piper. 2020. Weaving by Touch: A Case Analysis of Accessible Making. In *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems (CHI '20)*, 1-15. DOI: [10.1145/3313831.3376477](https://doi.org/10.1145/3313831.3376477) [acceptance rate: 24.3%] **\*Best Paper Honorable Mention** (Top 5% of submissions).
- C2. **Maitraye Das**, Brent Hecht, and Darren Gergle. 2019. The Gendered Geography of Contributions to OpenStreetMap: Complexities in Self-Focus Bias. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems (CHI '19)*, Paper 563, 14 pages. DOI: [10.1145/3290605.3300793](https://doi.org/10.1145/3290605.3300793) [acceptance rate: 23.8%]

<sup>1</sup> Peer-reviewed conferences such as CHI are top-tier publication venues in Human-Computer Interaction. They are highly selective, extensively reviewed, and intended for archival papers only. When available, the acceptance rate is included.

C3. Moushumi Sharmin, Monsur Hossain, Abir Saha, **Maitraye Das**, Margot Maxwell, and Shameem 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)*, Paper 102, 1-16. DOI: [10.1145/3173574.3173676](https://doi.org/10.1145/3173574.3173676) [acceptance rate: 25%]

🏆 C4. **Maitraye Das**, Nusrat Jahan Mazumder, Sharmin Afrose, Khandaker Ashrafi Akbar, and Tanzima Hashem. 2018. A Novel Secret Sharing Approach for Privacy-Preserving Authenticated Disease Risk Queries in Genomic Databases. In *Proceedings of the 42<sup>nd</sup> IEEE International Conference on Computers, Software, and Applications (COMPSAC '18)*, pp. 645-654. DOI: [10.1109/COMPSAC.2018.00097](https://doi.org/10.1109/COMPSAC.2018.00097) [acceptance rate: 24%]  
\*Best Paper Award

C5. 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 20<sup>th</sup> IEEE International Conference on Computer and Information Technology (ICCIT '17)*, pp. 1-6. DOI: [10.1109/ICCITECHN.2017.8281831](https://doi.org/10.1109/ICCITECHN.2017.8281831)

C6. **Maitraye Das** and Abir Saha. 2017. An Automated Speech-Language Therapy Tool with Interactive Virtual Agent and Peer-to-Peer Feedback. In *Proceedings of the 4<sup>th</sup> International Conference on Advances in Electrical Engineering (ICAEE '17)*, pp. 510-515, DOI: [10.1109/ICAEE.2017.8255409](https://doi.org/10.1109/ICAEE.2017.8255409)

C7. Fatema Khan, **Maitraye Das**, and Ahiya Ahammed. 2016. PurpleAid: An mHealth platform to combat health hazards of women. In *Proceedings of the 2016 International Conference on Medical Engineering, Health Informatics and Technology (MediTec '16)*, pp. 1-6. DOI: [10.1109/MEDITEC.2016.7835368](https://doi.org/10.1109/MEDITEC.2016.7835368)

C8. **Maitraye Das**, Sunandita Sarker, and Syeda Lammim Ahad. 2016. A Novel Health Support System with Biometric Data Acquisition Device. In *Proceedings of the 19<sup>th</sup> International Conference on Computer and Information Technology (ICCIT '16)*, pp. 201-206. DOI: [10.1109/ICCITECHN.2016.7860195](https://doi.org/10.1109/ICCITECHN.2016.7860195)

### Refereed Workshop Short Papers, Posters, and Doctoral Consortia

---

1. **Maitraye Das**. 2020. Designing for Collaborative Content Creation for People with Vision Impairments. In *2020 Conference Companion Publication on Computer Supported Cooperative Work and Social Computing (CSCW '20)*. DOI: [10.1145/3406865.3418369](https://doi.org/10.1145/3406865.3418369) [Doctoral Consortium]
2. **Maitraye Das**, Katya Borgos-Rodriguez, and Anne Marie Piper. 2020. Rethinking Power and Politics in Accessible Making. In *ACM CHI Workshop "Nothing About Us Without Us": Investigating the Role of Critical Disability Studies in HCI*.
3. **Maitraye Das**. 2019. Who Can See What: Privacy and Audience Management for People with Vision Impairments on Social Media. In *ACM CSCW Workshop on Addressing the Accessibility of Social Media*.
4. **Maitraye Das**. 2018. Understanding Collaborative Writing Practices of People with Visual Impairments. In *Proceedings of the 2018 ACM International Conference on Pervasive and Ubiquitous Computing (UbiComp '18)*, pp. 1744-1749. DOI: [10.1145/3267305.3277807](https://doi.org/10.1145/3267305.3277807)
5. **Maitraye Das**. 2018. Towards Understanding the Effects of Social Networking on Postpartum Depression in Women. In *Grace Hopper Celebration of Women in Computing*, USA.
6. **Maitraye Das**, Sharmin Afrose, and Tanzima Hashem. 2015. Protecting Genomic Privacy in Medical Tests using Distributed Storage. In *Grace Hopper Celebration of Women in Computing*, USA.
7. **Maitraye Das**, Sunandita Sarker, and Shahina Ferdous. 2014. SpeechAid: A Self-treatment System for Individuals with Speech Disorder. In *Grace Hopper Celebration India*. \*Best Technical Poster Award

### Teaching Experience

---

UNITED INTERNATIONAL UNIVERSITY (UIU)

DHAKA, BANGLADESH

Lecturer | Dept. of Computer Science and Engineering (CSE)

Oct 2015 – Mar 2017

- Instructed courses on Computer Architecture, Digital Logic Design, Electrical Circuits and Assembly Programming Language.

## Skills

---

**Programming:** Python, R, C, C++, Java, HTML, CSS

**Research Methods:** Interviews, contextual observations, ethnography, thematic analysis, grounded theory method, survey design, experiment design, quantitative analysis, prototyping

## Students Mentored

---

<b>Thomas McHugh</b>   Undergrad in Computer Science, Northwestern University	2020-Present
<b>Rawan Mohamed</b>   Undergrad in Computer Science, Northwestern University	2020
<b>Caroline Brewley</b>   High school student researcher	2019
<b>Nusrat Jahan Mozumder</b>   Undergrad in CSE, Bangladesh University of Engineering & Technology	2017-2018
<b>Khandaker Ashrafi Akbar</b>   Undergrad in CSE, Bangladesh University of Engineering & Technology	2017-2018
<b>Fatema Khan</b>   Undergrad in CSE, United International University	2016
<b>Ahiya Ahammed</b>   Undergrad in CSE, United International University	2016

## Invited Talks

---

<b>Input and Interaction (INFO 463)</b>   University of Washington	Nov 2020
▪ Guest lecture: Accessibility in Collaborative Writing for People with Vision Impairments (virtual)	
<b>Bangladesh HCI and ICTD Study and Research Group</b> , Virtual Event	April 2020
▪ Talk: Designing for Accessible Interaction	
<b>Microsoft Research PhD Fellowship Finalist Presentation</b>   Redmond, WA, USA	Nov 2019
▪ Poster: Designing for Collaborative Content Creation for People with Vision Impairments	

## Academic Services

---

### Program Committee Member

Shadow PC, ACM COMPASS	2021
------------------------	------

### Reviewer

ACM CHI [*outstanding review recognitions: 3]	2021
ACM CSCW [*outstanding review recognition: 1]	2019-2020
ACM DIS	2020
GHC Faculty Scholarship	2017
Australasian Database Conference	2016

### Student Volunteer

ACM CHI	2021, 2019
ACM CSCW	2019
ACM UbiComp	2018
InfoSocial Graduate Conference at Northwestern University	2018

### Publicity Co-chair

InfoSocial Graduate Conference at Northwestern University	2019
---	------

## Outreach & Memberships

---

### Co-host & Co-organizer

Inspiring Stories (podcast series on Bangladeshi women in STEM)	2020 - Present
---	----------------

### Member

Northwestern Graduate Women in Computing	2019 - Present
Association for Computing Machinery (ACM), SIGCHI, SIGACCESS	2017 - Present
Bangladeshi Women in Computer Science and Engineering	2015 - Present

### Code Coach Volunteer

BraveCamp Chicago (non-profit coding camp for high school girls)	Summer 2018
--	-------------

### Vice-President

Murchhona : BUET (cultural club)	2014 – 2015
----------------------------------	-------------