

## Research Statement

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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 design-based, mixed-methods approach that includes qualitative studies (e.g., contextual interviews, observations, ethnography) as well as system development and evaluation through exploratory and experimental analyses. As a HCI researcher, my broader goal is to enhance accessibility through design and contribute towards reducing equity gaps in education, employment, and creative work.

## Education

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NORTHWESTERN UNIVERSITY EVANSTON, IL, USA  
**PhD in Technology and Social Behavior** (Computer Science & Communication) Fall 2017 - Present  
*Dissertation:* Designing for Accessible Collaborative Content Creation for People with Vision Impairments  
*Committee:* Darren Gergle (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) *with Honors* Sep 2015  
*GPA:* 3.85 out of 4.00 (equivalent to *magna cum laude*, top 6% of the graduating class)

## Research Experience

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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 auditory representations of asynchronous collaborative features and evaluated these representations through a mixed-methods controlled experimental study with 48 visually impaired writers. Currently developing interactive non-visual techniques to enhance accessibility in synchronous collaborative writing. [CSCW 2019]  
Faculty collaborator: *Anne Marie Piper*
- 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]  
Faculty collaborator: *Brent Hecht*

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 among blind weavers and their sighted instructors. Currently developing an audio-tactile system to augment collaborative designing of fabric patterns for blind weavers. [CHI 2020, TACCESS 2021]

ABILITY TEAM | MICROSOFT RESEARCH (MSR), USA

Summer 2020

**Research Intern** | mentored by **John Tang**

- Conducted semi-structured interviews with 36 neurodivergent professionals. Outlined practical guidelines for inclusive organizational practices and accessible design of remote collaboration tools (e.g., Microsoft Teams). [CSCW 2021]  
Faculty collaborators: *Kathryn E. Ringland, Anne Marie Piper*
- Performed a group autoethnographic study reflecting on accessible practices in an ability-diverse team and highlighted opportunities for designing technologies for accessible remote work. [ASSETS 2021]  
MSR collaborator: *Danielle Bragg*

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]

BANGLADESH UNIVERSITY OF ENGINEERING & TECHNOLOGY

Aug 2014 - Sep 2017

**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

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<b>PhD Student Research Award</b>   Dept of CS, Northwestern University	2021
<b>Graduate Research Grant</b>   Northwestern University (\$2,999)	2021
<b>Special Recognition for Outstanding Review</b>   ACM CHI (3 times)	2021
<b>Special Recognition for Outstanding Review</b>   ACM CSCW (2 times)	2021, 2019
<b>Finalist (top 20)</b>   Microsoft Research PhD Fellowship	2020
<b>Best Paper Honorable Mention Award</b>   ACM CHI [C8]	2020
<b>Best Paper Honorable Mention Award</b>   ACM CSCW [J2]	2019
<b>Conference Travel Grant</b>   Northwestern University (\$2,300 + \$1,500)	2019, 2018
<b>Best Paper Award</b>   IEEE COMPSAC [C5]	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>   CSE, Bangladesh University of Engg. & Technology	2015
<b>Best Technical Poster</b>   Grace Hopper Celebration India [W1]	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

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- J5. **Maitraye Das**, Anne Marie Piper, and Darren Gergle. Design and Evaluation of Accessible Collaborative Writing Techniques for People with Vision Impairments. Under review in *ACM Transactions on Computer-Human Interaction (TOCHI)*. [Impact Factor: 3.15]
- J4. **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. DOI: [10.1145/3449282](https://doi.org/10.1145/3449282)
- 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)*, Vol. 14, 1, Article 5 (March 2021), 30 pages. DOI: [10.1145/3444699](https://doi.org/10.1145/3444699) [Impact Factor: 2.64]

- 🏆 J2. **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).
- J1. 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/ipsijip.27.624](https://doi.org/10.2197/ipsijip.27.624)

## Conference Proceedings Papers<sup>1</sup>

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- C9. Kelly Mack, **Maitraye Das**, Dhruv Jain, Danielle Bragg, John Tang, Andrew Begel, Erin Beneteau, Josh Urban Davis, Abraham Glasser, Joon Sung Park, and Venkatesh Potluri. 2021. Mixed Abilities and Varied Experiences: A Group Autoethnography of a Virtual Summer Internship. In *the 23rd International ACM SIGACCESS Conference on Computers and Accessibility (ASSETS '21)*, 22 pages.
- 🏆 C8. **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).
- C7. **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%]
- C6. 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%]
- 🏆 C5. **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**
- C4. 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)
- C3. **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)
- C2. 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*

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<sup>1</sup> Top-tier publication venues in Human-Computer Interaction research include peer-reviewed conferences such as CHI and CSCW and journals such as TOCHI. Since 2018, CSCW transitioned to a hybrid journal structure. These venues are highly selective, extensively reviewed, and intended for archival papers only. When available, the acceptance rate is included.

*Engineering, Health Informatics and Technology (MediTec '16)*, pp. 1-6.  
DOI: [10.1109/MEDITEC.2016.7835368](https://doi.org/10.1109/MEDITEC.2016.7835368)

- C1. **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)

## Workshop Papers, Posters, and Doctoral Consortia

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- W8. **Maitraye Das**. 2021. Designing for Accessible Collaborative Content Creation for People with Vision Impairments. In *Human Computer Interaction Consortium (HCIC '21)*.
- W7. **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]
- W6. **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*.
- W5. **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*.
- W4. **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)
- W3. **Maitraye Das**. 2018. Towards Understanding the Effects of Social Networking on Postpartum Depression in Women. In *Grace Hopper Celebration of Women in Computing, USA*.
- W2. **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*.
- 🏆 W1. **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

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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.

## Students Mentored

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<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 Engg. & Tech	2017 - 2018
<b>Khandaker Ashrafi Akbar</b>   Undergrad in CSE, Bangladesh University of Engg. & Tech	2017 - 2018
<b>Fatema Khan</b>   Undergrad in CSE, United International University	2016
<b>Ahiya Ahammed</b>   Undergrad in CSE, United International University	2016

## Skills

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**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

## Invited Talks, Panels, and Demonstrations

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**Input and Interaction (INFO 463)** | University of Washington Nov 2020

- Guest lecture: Accessibility in Collaborative Writing for People with Vision Impairments (virtual)

**New Future of Work Group Meeting** | Microsoft Research Sep 2020

- Talk: Understanding Accessibility in Remote Work for Neurodivergent Professionals (virtual)

**Bangladesh HCI and ICTD Study and Research Group, Virtual Event** Apr 2020

- Talk: Designing for Accessible Interaction

**PhD Fellowship Finalist Presentation** | Microsoft Research, Redmond, WA, USA Nov 2019

- Poster: Designing for Collaborative Content Creation for People with Vision Impairments

**TSB Prospective PhD Students Visiting Weekend** | Northwestern University

- Panel discussion on graduate life and research at Northwestern 2021, 2018
- Demonstrations on accessible collaborative writing and weaving 2019

## Academic Services

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### Program Committee Member

Shadow PC, ACM COMPASS 2021

Grace Hopper Conference, HCI Track 2021

### Reviewer

ACM CHI [\*outstanding review recognitions: 3] 2021

ACM CSCW [\*outstanding review recognitions: 2019, 2021] 2019 - 2021

IEEE COMPSAC 2021

ACM DIS 2020

Grace Hopper Conference 2017

Australasian Database Conference 2016

### Student Volunteer

ACM CHI 2019, 2021

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

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### Co-host & Co-organizer

2020 - Present

Inspiring Stories (podcast series on Bangladeshi women in STEM)

### Member

Northwestern Graduate Women in Computing 2019 - Present

Association for Computing Machinery (ACM) 2017 - Present

Special Interest Group on Computer-Human Interaction (SIGCHI)	2017 - Present
Special Interest Group on Accessible Computing (SIGACCESS)	2017 - Present
Bangladeshi Women in Computer Science and Engineering	2015 - Present
<b>Code Coach Volunteer</b>	
BraveCamp Chicago (non-profit coding camp for high school girls)	Summer 2018
<b>Vice-President</b>	
Murchhona : BUET (cultural club)	2014 - 2015