NAIMUL HOQUE

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website https://naimulhoque.github.io

RESEARCH INTEREST

My broad research interests are Human-Computer Interaction, Data Visualization, and Human-Centered AI. More specifically, I study how data visualization can help us to design AI-infused supertools, applications that amplify, augment, empower, and enhance human performance, by combining user experiences with AI support services. I argue that interactive visualization can work as a communication medium between humans and AI and help us retain human agency and ownership in AI-infused supertools.

RESEARCH EXPERIENCE

2020–Present **Research Assistant, University of Maryland, College Park**

MD, USA

Human-Computer Interaction Lab (HCIL), Advisor: Niklas Elmqvist
Focus: AI-assisted writing, AI-infused supertools, Scalable data visualization, and Accessible data visualization

May-Aug 2021 **Research Intern, Bosch Research**

Virtual

Advisor: Liang Gou
Focus: Interactively labeling large-scale image datasets

2018–2020 **Research Assistant, Stony Brook University**

NY, USA

Advisor: Klaus Mueller
Focus: Creativity support tools and interactive causal inference

EDUCATION

2020-2024 (Expected) **University of Maryland, College Park**

MD, USA

Ph.D. in Information Studies

2018-2020 **Stony Brook University**

NY, USA

M.S. in Computer Science

2011-2015 **University of Dhaka**

Dhaka, Bangladesh

B.Sc. in Computer Science

PUBLICATIONS

Journal Publication

J5 Shahreen Salim Aunti, Md Naimul Hoque, Klaus Mueller. Belief Miner: A Methodology for Discovering Causal Beliefs and Causal Illusions from General Populations. *Proceedings of the ACM on Human-Computer Interaction (CSCW)*, 2024. (to appear) http://arxiv.org/abs/2401.08020

J4 Md Naimul Hoque, Niklas Elmqvist. Dataopsy: Scalable and Fluid Visual Exploration using Aggregate Query Sculpting. *IEEE Transaction on Visualization and Computer Graphics (TVCG)*, 2023. https://doi.org/10.1109/TVCG.2023.3326594

J3 Md Naimul Hoque, Wenbin He, Shekar Arvind Kumar, Liang Gou, Liu Ren. Visual Concept Programming: A Visual Analytics Approach to Injecting Human Intelligence at Scale. *IEEE Transaction on Visualization and Computer Graphics (TVCG)*, 2022. https://doi.org/10.1109/TVCG.2022.3209466

J2 Md Naimul Hoque, Klaus Mueller. Outcome-Explorer: A Causality Guided Interactive Visual Interface for Interpretable Algorithmic Decision Making. *IEEE Transaction on Visualization and Computer Graphics (TVCG)*, 2021. https://doi.org/10.1109/TVCG.2021.3102051

J1 Md Naimul Hoque, Nazmus Saquib, Syed Masum Billah, Klaus Mueller. Toward Interactively Balancing the Screen Time of Actors Based on Observable Phenotypic Traits in Live Telecast. *Proceedings of the ACM on Human-Computer Interaction (CSCW)*, 2020. https://doi.org/10.1145/3415225

Conference Publication

C7 Md Naimul Hoque, Tasfia Mashiat, Bhavya Ghai, Cecilia Shelton, Fanny Chevalier, Kari Kraus, Niklas Elmqvist. The HaLLMark Effect: Supporting Provenance and Transparent Use of Large Language Models in Writing with Interactive Visualization. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI)*, 2024. (Conditionally accepted) https://arxiv.org/abs/2311.13057

C6 Md Naimul Hoque, Ayman A Mahfuz, Mayukha Kindi, Naeemul Hassan. Towards Designing a Question-Answering Chatbot for Online News: Understanding Questions and Perspectives. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI)*, 2024. (Conditionally accepted) https://arxiv.org/abs/2312.10650

C5 Lee et al. includes Md Naimul Hoque. A Design Space for Intelligent and Interactive Writing Assistants. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI)*, 2024. (Conditionally accepted)

C4 Md Naimul Hoque, Bhavya Ghai, Kari Kraus, Niklas Elmqvist. Portrayal: Leveraging NLP and Visualization for Analyzing Fictional Characters. *Proceedings of the ACM Conference on Designing Interactive Systems (DIS)*, 2023. https://doi.org/10.1145/3563657.3596000

C3 Md Naimul Hoque, Md Ehtesham-Ul-Haque, Niklas Elmqvist, Syed Masum Billah. Accessible Data Representation with Natural Sounds. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI)*, 2023. https://doi.org/10.1145/3544548.3581087

C2 Md Naimul Hoque, Bhavya Ghai, Niklas Elmqvist. DramatVis Personae: Visual Text Analytics for Identifying Social Biases in Creative Writing. *Proceedings of the ACM Conference on Designing Interactive Systems (DIS)*, 2022. https://doi.org/10.1145/3532106.3533526

C1 Md Naimul Hoque, Choudhury Farhan Ahmed, Nicolas Lachiche, Carson K. Leung, Hao Zhang. Reframing in Clustering. *IEEE 28th International Conference on Tools with Artificial Intelligence (ICTAI)*, 2016.

Workshop, Posters, and Extended Abstracts

W3 Md Naimul Hoque, Niklas Elmqvist. Augmenting Human-AI Co-Writing with Interactive Visualization. *In2Writing Workshop, ACM Conference on Human Factors in Computing Systems (CHI)*, 2023. https://naimulh0que.github.io/docs/In2Writing2023.pdf

E2 Bhavya Ghai, Md Naimul Hoque, Klaus Mueller. WordBias: An Interactive Visual Tool for Exploring Intersectional Social Biases Encoded in Word Embeddings. *Extended Abstracts of the ACM Conference on Human Factors in Computing Systems (CHI)*, 2021. https://doi.org/10.1145/3411763.3451587

W2 Md Naimul Hoque, Niklas Elmqvist. 2021. Towards Using Visual Analytics to

Promote Diversity, Equity, and Inclusion. *Workshop on Artificially Intelligent Technology for the Margins, ACM Conference on Human Factors in Computing Systems (CHI),* 2021.

P1 Md Naimul Hoque, Darius Coelho, Klaus Mueller. Examining the Visualization Practices of Data Scientists on Kaggle. *IEEE VIS Poster,* 2019. https://naimulh0que.github.io/docs/Kaggle_Analysis.pdf

E1 Md Mehedi Hassan, Ashik Adnan, Asif M. Saleheen, Md Naimul Hoque. Understanding the Patterns of Crime Reports in a Popular Bangladeshi Newspaper. *Companion of ACM CSCW*, 2019. https://doi.org/10.1145/3272973.3274062

W1 Md Naimul Hoque, Rawshan E. Fatima, Manash Mandal, Nazmus Saquib. Evaluating gender portrayal in Bangladeshi TV. *Machine Learning for the Developing World, NIPS*, 2017. https://arxiv.org/pdf/1711.09728.pdf

TEACHING EXPERIENCE

Fall 2023 Instructor of Record, University of Maryland, College Park

MD, USA INST-760: Data Visualization (graduate-level)

2020–2022 Teaching Assistant, University of Maryland, College Park

MD, USA Courses: Data Visualization, Data Science, Big Data Analysis

2018–2019 Teaching Assistant, Stony Brook University

NY, USA Courses: Data Structure, Data Science

2015–2018 Lecturer, Eastern University

Dhaka, Bangladesh Courses: Introduction to Programming, Data Structure, Algorithms

INVITED TALKS

Pittsburg, USA July 2023 · Data Interaction Group, Carnegie Mellon University
Title: Leveraging NLP and Visualization for Analyzing Fictional Characters

London, UK May 2023 · giCentre, City, University of London
Title: Supporting Complex Creative Writing Tasks with AI-Infused Visualization

MD, USA April 2023 · HCIL Symposium, University of Maryland
Title: Supporting Complex Creative Writing Tasks with AI-Infused Visualization

Toronto, CA Feb 2023 · DGP lab, University of Toronto
Title: Supporting Complex Creative Writing Tasks with AI-Infused Visualization

MD, USA April 2021 · HCIL Symposium, University of Maryland
Title: Toward Interactively Balancing the Screen Time of Actors Based on Observable Phenotypic Traits in Live Telecast

AWARDS AND HONORS

MD, USA 2023 · Doctoral Student Research Award ($1000)

MD, USA 2021 · Doctoral Student Research Award ($1000)

MD, USA 2021 · Dr. Dana Rotman Doctoral Student Travel Awards ($500)

NY, USA 2018 · Chairman's Fellowship ($3000), SBU

SERVICES

Reviewer

2023 · ACM CHI, ACM DIS, IEEE VIS

2022 · ACM CHI, ACM DIS, IEEE VIS, ACM CSCW

2021 · ACM CHI, IEEE VIS, ACM CSCW

2020 · ACM CHI, ACM CSCW

Mentor

Shahreen Salim · CS Ph.D., Stony Brook University

Ayman Mahfuz · High school student, now at UT Austin

Organizer

2023 · UMD HCIL Symposium

2022 · Maryland State Department of Education's workshop on creating an accessible Data Science course for highschools.

Student Volunteer

IEEE VIS 2022, ACM DIS 2023

January 19, 2024