

NAIMUL HOQUE

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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

	<i>2020–Present</i>	Research Assistant, University of Maryland, College Park
<i>MD, USA</i>		Human-Computer Interaction Lab (HCIL), Advisor: Niklas Elmqvist Focus: AI-assisted writing, AI-infused supertools, Scalable data visualization, and Accessible data visualization
	<i>May-Aug 2021</i>	Research Intern, Bosch Research
<i>Virtual</i>		Advisor: Liang Gou Focus: Interactively labeling large-scale image datasets
	<i>2018–2020</i>	Research Assistant, Stony Brook University
<i>NY, USA</i>		Advisor: Klaus Mueller Focus: Creativity support tools and interactive causal inference

EDUCATION

	<i>2020–2024 (Expected)</i>	University of Maryland, College Park
<i>MD, USA</i>		Ph.D. in Information Studies
	<i>2018–2020</i>	Stony Brook University
<i>NY, USA</i>		M.S. in Computer Science
	<i>2011–2015</i>	University of Dhaka
<i>Dhaka, Bangladesh</i>		B.Sc. in Computer Science

PUBLICATIONS

Preprints

<i>P1</i>	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. <i>Under review</i> , 2024. https://arxiv.org/abs/2311.13057
<i>P2</i>	Md Naimul Hoque, Ayman A Mahfuz, Mayukha Kindi, Naeemul Hassan. Towards Designing a Question-Answering Chatbot for Online News: Understanding Questions and Perspectives. <i>Under review</i> , 2024. https://arxiv.org/abs/2312.10650

Journal Publication

- J1 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)
- J2 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>
- J4 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>
- J5 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

- C1 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>
- C2 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>
- C3 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>
- C4 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

- W1 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://naimulhoque.github.io/docs/In2Writing2023.pdf>
- E1 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://naimulhoque.github.io/docs/Kaggle_Analysis.pdf

E2 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>

W3 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

	<i>Fall 2023</i>	Instructor of Record, University of Maryland, College Park
MD, USA		INST-760: Data Visualization (graduate-level)
	<i>2020–2022</i>	Teaching Assistant, University of Maryland, College Park
MD, USA		Courses: Data Visualization, Data Science, Big Data Analysis
	<i>2018–2019</i>	Teaching Assistant, Stony Brook University
NY, USA		Courses: Data Structure, Data Science
	<i>2015–2018</i>	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

December 31, 2023