



Mohammad Alaul Islam

Research Interest

My research interests focus on the areas of Human-Computer Interaction (HCI) and Information Visualization (InfoVis). More specifically, I am interested in designing novel wearable interfaces and exploring techniques for analyzing and visualizing personal data on wearable devices. I employ a combination of cross-sectional, qualitative, and quantitative studies in my research efforts. These methodologies encompass survey studies, design thinking approaches, experiments on human-factor perception, interactions, and evaluations.

Current Job

May 2023–Present **Postdoctoral Researcher**, *University Health Network (KITE)*, Toronto, Canada. In my current research, I focus on the challenges of developing smart-based socks for wound prevention and management for individuals with current or past Diabetic Foot Ulcers (DFU) and healthcare professionals who work with individuals with DFU. My other research project centers on co-designing a knowledge translation tool for pressure injury prevention and management for individuals with pressure injuries and their unpaid caregivers, known as “PrIME,” and enhancing adherence to repositioning system in-home care through a non-contact sensor system classifier.

Supervisor : **Dr. Sharon Gabison**, *Assistant Professor, Department of Physical Therapy, University of Toronto, and Affiliate Scientist in Pressure Injury and Homecare Research, Wound Research Lab (Wound Research Team Web-page)*

Dr. Tilak Dutta, *Scientist/Director, Engineering Health Lab, KITE, Toronto Rehab, University Health Network. Assistant Professor, Institute of Biomedical Engineering, University of Toronto (Engineering Health Team Web-page)*

Education

Oct 2019–Mar 2023 **PhD, Micro Visualizations for Fitness Trackers**, *Université Paris-Saclay & National Institute for Research in Digital Science and Technology (Inria)*, Saclay, France. I successfully defended my Ph.D. thesis on 16th March 2023.

Thesis topic : The title of my Ph.D. thesis is- “*Visualizations for Smartwatches and Fitness Trackers*.” My research project aims to study very small data visualizations, micro visualizations in display contexts that can only dedicate minimal rendering space for data representations (e.g., fitness tracking armbands and smartwatches). Given small and complex data, I study the human perception of and interaction with micro visualizations.

Supervisor : **Dr. Petra Isenberg**, *Research Scientist (CR), Aviz team, Inria, LISN, Université Paris-Saclay, France (Personal Web-page)*

2018–2019 : **Master’s in Human-Computer Interaction**, *Université Paris-Saclay*, Paris-Saclay, France.

2015–2016 : **MSc in Computer Science & Engineering**, *United International University*, Dhaka, Bangladesh.

2009–2013 : **BSc in Computer Science & Engineering**, *Ahsanullah University of Science and Technology*, Dhaka, Bangladesh.

Publications

- 2024 **Alaul Islam**, Tingying He, Anastasia Bezerianos, Tanja Blascheck, Bongshin Lee, and Petra Isenberg. Visualizing information on smartwatch faces: A review and design space. In *ACM Interactive Surfaces and Spaces (ISS)*, 2024. Under Review.
- 2023 Tanja Blascheck, Lonni Besançon, Anastasia Bezerianos, Bongshin Lee, **Alaul Islam**, Tingying He, and Petra Isenberg. Studies of part-to-whole glanceable visualizations on smartwatch faces. In *PacificVis*, 2023. To Appear.
- 2022 **Alaul Islam**, Lijie Yao, Anastasia Bezerianos, Tanja Blascheck, Tingying He, Bongshin Lee, Romain Vuillemot, and Petra Isenberg. Reflections on Visualization in Motion for Fitness Trackers. In *New Trends in HCI and Sports Workshop held as a part of 24th International Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI)*, Vancouver, Canada, 2022. <https://hal.inria.fr/hal-03775633>.
- 2022 **Alaul Islam**, Tanja Blascheck, and Petra Isenberg. Context Specific Visualizations on Smartwatches. In Michael Krone, Simone Lenti, and Johanna Schmidt, editors, *EuroVis 2022 - Posters*. The Eurographics Association, 2022. <https://doi.org/10.2312/evp.20221122>.
- 2022 **Alaul Islam**, Ranjini Aravind, Tanja Blascheck, Anastasia Bezerianos, and Petra Isenberg. Preferences and effectiveness of sleep data visualizations for smartwatches and fitness bands. In *CHI Conference on Human Factors in Computing Systems*. ACM, 2022. <https://doi.org/10.1145/3491102.3501921>.
- 2021 Sheelagh Carpendale, Petra Isenberg, Charles Perin, Tanja Blascheck, Foroozan Daneshzand, **Alaul Islam**, Katherine Currier, Peter Buk, Victor Cheung, Lien Quach, and Laton Vermette. Mobile visualization design: An ideation method to try. In *Mobile Data Visualization*, pages 241–261. Chapman and Hall/CRC, Nov 2021. <https://doi.org/10.1201/9781003090823-8>.
- 2020 **A. Islam**, A. Bezerianos, B. Lee, T. Blascheck, and P. Isenberg. Visualizing information on watch faces: A survey with smartwatch users. In *IEEE Visualization Conference (VIS)*, pages 156–160. IEEE Computer Society Press, 2020. <https://doi.org/10.1109/VIS47514.2020.00038>.

Research Experience

- June 2022 – **Visiting Researcher**, *Interactive Media Lab Dresden*, Dresden University of Technology, Germany,
July 2022 (*Web page*) I have worked there for two weeks for a collaborative research project on smart-flexible display visualization.
- Advisor : Dr. Raimund Dachsel (Interactive Media Lab Dresden) & Dr. Petra Isenberg (Inria, LISN, Université Paris-Saclay)
- March 2021 – **Supervising a Master's student internship**.
Aug 2021 Understanding the aesthetic preferences by users for smartwatches data representation.
- Advisor : Dr. Petra Isenberg (Inria, LISN, Université Paris-Saclay)
- March 2019 – **Master's Internship**, *CEA (French Alternative Energies and Atomic Energy Commission) Tech*.
August 2019 Research and development of 3D point cloud interaction, Working with a team on design, development, and integration of multiple 3D point selection.
- Supervisors : Dr. Louis-Pierre Berge & Radhouene Azzabi (CEA), Prof. Dr. Emmanuel Dubois (IRIT)

Invited Talk

- 2024 **Aging Team lunch and learn session on aging in the community**, Title: *Smart Based Socks for Wound Prevention and Management*.
In this 10-minute talk, I provided an overview of my research on smart socks for the prevention and management of diabetic foot ulcers (DFUs). I also shared qualitative findings from interviews with ten healthcare professionals, which informed the development of these smart socks for DFU prevention. (*More details*)

- 2022 **Dresden Talks on Interaction & Visualization**, Title: *Visualizations for Fitness Trackers*.
In this 45-min talk, I gave an overview of my research work on fitness trackers' visualizations and share my insights on how they can help to enable a more pervasive use of visual data representation. ([More details](#))

Honors And Awards

- 2022 **Summer Training Scholarship: Analytics, Data Science & Decision Making Summer School**, University of Essex, Colchester, England, 25 July–5 August.
By attending summer training for two weeks (60 hours of training), I have benefited from learning advanced techniques in data science (e.g., Machine Learning, Federated Machine Learning) and applications (e.g., Brain-Computer Interfaces) including artificial intelligence and statistical methods.
- 2022 **MOMI2022 : Le MOnde des Mathématiques Industrielles/The World of Industrial Mathematics**, Université Côte d'Azur, Sophia Antipolis, France.
The MOMI2022 scholarship program is intended to support students to participate in the workshop in Inria Sophia Antipolis - Méditerranée. I presented a poster and give a talk about my Ph.D. thesis.
- 2021 **IEEE VIS 2021 Doctoral Colloquium (DC)**, Virtual Conference.
The DC application was accepted to present my research work and discuss the dissertation project's challenges and research questions; VIS DC Virtual Conference, October 2021
- 2016 **APNIC 42 Fellowship**, Colombo, Sri Lanka.
Obtained Fellowship of Asia-Pacific Network Information Centre conference (APNIC), APNIC 42–2016. Colombo, Sri Lanka.

Professional Experience

- May 2017 – **Associate Senior Programmer**, CSL Software Resources Ltd., Dhaka, Bangladesh.
Aug 2018 My primary responsibilities were developing different modules for Enterprise Resource Planning (ERP) systems tailored to the textile sector in Bangladesh. My duties revolved around analyzing customer requirements, designing software interfaces, crafting database structures, and programming (C and .NET framework) for the ERP software.
- April 2016 – **Software Engineer**, National Development Engineers Ltd., Dhaka, Bangladesh.
May 2017 I was responsible for the ERP system analysis for a reputed government construction and electrical plant firm in Bangladesh. My role involved transitioning from low-fidelity to high-fidelity prototypes across various ERP interfaces. Additionally, I played a part in shaping the ERP database architecture and design utilizing Microsoft SQL Server.
- Feb 2014 – **Web Application Developer**, Authentic Software, Dhaka, Bangladesh.
Feb 2016 As a UX/UI designer, I began my journey focused on developing web-based applications. I dedicated much of my time to mastering emerging web technologies such as JavaScript and PHP frameworks. My role also involved guiding teams in integrating these technologies into the application development process. Converting ideas into sketches and ultimately admitting them as fully functional web applications became my area of expertise.

Programming Skills

- Languages Python, C#, JAVA, Android
Web tools HTML5, PHP, JavaScript, Web API, Three/React/Node JS, d3.js
Database SQL, MySQL

Volunteer Experience

- 2020 – 2021 **PhD students' Representative**, ED–STIC, Pole–B, Université Paris-Saclay.
2020 **Event Coordinator**, CARaDOC – Careers and Doctors, Université Paris-Saclay.
2020–2021 **Student Volunteer**, IEEE VIS 2020, 2021, Virtual.
2022 **Student Volunteer**, EuroVis 2022, Rome, Italy.