MD. SAMI UDDIN

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RESEARCH INTERESTS

Designing interaction techniques and interfaces to support people's rapid expertise development with graphical interfaces.

My research focuses on understanding and leveraging people's cognitive and physical abilities to accelerate users' *expertise development* with Graphical User Interfaces (GUIs). Inspired by the benefits of landmarks in developing expertise with recalling real-life locations, in my work, I have been investigating the use of *"artificial landmarks"* in GUIs to support users' efficient learning and recalling the locations of graphical objects. My research aims to identify and design graphical elements that can act as landmarks in GUIs across multiple platforms (e.g., desktops, touch devices, tabletops, and extended reality: AR/VR). In general, I exploit people's *spatial memory* to develop novel interaction techniques and design landmarks-augmented graphical interfaces to improve GUIs' usability and efficiency, and help users become experts quickly.

My research interests and expertise fall under the broad category of a highly multi-disciplinary field, **Human-Computer Interaction (HCI),** with a particular interest in *user experience* and *interaction design*. My works have been published in and *awarded* by premier HCI venues, including CHI, ISS, SUI, MobileHCI, and GI.

EDUCATION

Ph.D. University of Saskatchewan, Canada   **2016 – June 2021**
Computer Science: Human-Computer Interaction (HCI)   ***(Expected)***
Thesis: *"Use of Artificial Landmarks to Improve Spatial Learning and Revisitation in Computer Interfaces"*
Advisor: Dr. Carl Gutwin

M.Sc. University of Saskatchewan, Canada   **2014 - 2016**
Computer Science: Human-Computer Interaction (HCI)
Thesis: *"Improving Multi-Touch Interactions Using Hands as Landmarks"*
Advisor: Dr. Carl Gutwin

B.Sc. Islamic University of Technology, Bangladesh   **2007 - 2010**
Computer Science and Information Technology   *First Class with Honors*
Thesis: *"A Telerehabilitation System of Hand Skill Development for the Disabled People in Bangladesh"*

RESEARCH EXPERIENCE

Graduate Research Assistant, The Interaction Lab   **2014 - Present**
University of Saskatchewan, Saskatoon, Canada

I carried out several research projects in collaboration with researchers from academia and industry. These projects focused on designing novel interaction techniques for efficient command selections and linear-document revisitations. These techniques' support in user expertise development was measured through quantitative and qualitative methods; results were published in peer-reviewed articles.

Collaborators (Previous and active)
- Dr. Benjamin Lafreniere, Facebook Reality Lab, Canada (Past: Autodesk Research)
- Dr. Andy Cockburn, University of Canterbury, New Zealand
- Dr. Alix Goguey, University Grenoble Alpes, France
- Dr. Chanchal Roy (Software Engineering), University of Saskatchewan, Canada
- Dr. Sally Vail, Agriculture and Agri-Food Canada
- Dr. Ian Stavness and Dr. Kevin Stanley, Plant Phenotyping and Imaging Research Centre (P²IRC), University of Saskatchewan, Canada.

PUBLICATIONS (FULLY REFEREED AND PEER-REVIEWED)

I have led several multi-disciplinary research projects in collaboration with researchers from academia and industry, which resulted in **11** peer-reviewed publications so far. According to Google Scholar, to date, my publications have received a total:
144 citations, with **H-index: 6**, including 5 publications with at least 10 citations.

[11.] **Md. Sami Uddin,** and Carl Gutwin. 2021. "The Image of the Interface: How People Use Landmarks to Develop Spatial Memory of Commands in Graphical Interfaces" in *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 21),* Yokohama, Japan, 17 pages. ** ***Honorable Mention Award (Top 5%)!***

[10.] Febi Chajadi, **Md. Sami Uddin**, and Carl Gutwin. 2020. "Effects of Visual Distinctiveness on Learning and Retrieval in Icon Toolbars" in *Proceedings of the Graphics Interface 2020 (GI 20),* Toronto, Canada, 14 pages.

[9.] Carl Gutwin, Michael van der Kamp, **Md. Sami Uddin**, Kevin Stanley, Ian Stavness, and Sally Vail. 2019. "Improving Early Navigation in Time-Lapse Video with Spread-Frame Loading" in *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 19),* Glasgow, Scotland UK, 12 pages.

[8.] Varun Gaur, **Md. Sami Uddin,** and Carl Gutwin. 2018. "Multiplexing Spatial Memory: Increasing the Capacity of FastTap Menus with Multiple Tabs" in *Proceedings of the ACM Conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI 18),* Barcelona, Spain, 13 pages.

[7.] Ehsan S. Mollashahi, **Md. Sami Uddin,** and Carl Gutwin. 2018. "Improving Revisitation in Long Documents with Two-Level Artificial-Landmark Scrollbars" in *Proceedings of the International Conference on Advanced Visual Interfaces (AVI 18),* Castiglione della Pescaia, Italy, 9 pages.

[6.] **Md. Sami Uddin,** Carl Gutwin, and Alix Goguey. 2017. "Using Artificial Landmarks to Improve Revisitation Performance and Spatial Learning in Linear Control Widgets" in *Proceedings of the ACM Symposium on Spatial User Interaction (SUI 17),* Brighton, United Kingdom, 48-57.

[5.] **Md. Sami Uddin,** Carl Gutwin and Andy Cockburn. 2017. "The Effects of Artificial Landmarks on Learning and Performance in Spatial-Memory Interfaces" in *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 17),* Denver, USA, 3843-3855.

[4.] **Md. Sami Uddin,** and Carl Gutwin. 2016. "Rapid Command Selection on Multi-Touch Tablets with Single-Handed HandMark Menus" in *Proceedings of the ACM Conference on Interactive Surfaces and Spaces (ISS 16),* Niagara Falls, Canada. 205-214.

[3.] **Md. Sami Uddin,** Carl Gutwin, and Benjamin Lafreniere. 2016. "HandMark Menus: Rapid Command Selection and Large Command Sets on Multi-Touch Displays" in *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 16),* San Jose, USA, 5836-5848.

[2.] **Md. Sami Uddin,** Varun Gaur, Carl Gutwin, and Chanchal K. Roy. 2015. "On the Comprehension of Code Clone Visualizations: A Controlled Study using Eye Tracking" in *Proceedings* of the 15th *IEEE International Working Conference on Source Code Analysis and Manipulation (SCAM 15)*, Bremen, Germany. 161-170.

[1.] **Md. Sami Uddin,** Jahid I. Khan, and Hasan Mahmud. 2012. "Designing and Implementing Telerehabilitation on Hand Skill Development for the Disabled People in Bangladesh" in the *International Journal of Software Engineering*. Vol. 5, No.2; Issue: July 2012, 37-49.

ABSTRACTS, POSTER, DEMOS, ETC.

[7.] **Md. Sami Uddin**, and Carl Gutwin. 2019. "A Comparison of Two-Handed and One-Handed Menu Selection Techniques on Touch Tabletops" in *ACM SIGCHI Summer School 2019: Research Methods in HCI – Building Bangladesh's Future HCI Professionals*, North South University, Dhaka, Bangladesh.

[6.] **Md. Sami Uddin**, and Carl Gutwin. 2018. "A Comparison of Two-Handed and One-Handed Menu Selection Techniques on Tabletops" in *Research Fest 2018*, University of Saskatchewan, Saskatoon, Canada. *** Best Poster Award (People's Choice)!*

[5.] Ehsan S. Mollashahi, **Md. Sami Uddin,** and Carl Gutwin. 2018. "Two-Level Artificial-Landmark Scrollbars to Improve Revisitation in Long Documents" in *Proceedings of Extend Abstract of the International Conference on Advanced Visual Interfaces (AVI 18)*, Castiglione della Pescaia, Grosseto, Italy. 2 pages.

[4.] **Md. Sami Uddin,** Carl Gutwin, and Alix Goguey. 2017. "Artificial Landmarks Augmented Linear Control Widgets to Improve Spatial Learning and Revisitation Performance" in *Proceedings of the ACM SIGCHI Symposium on Spatial User Interaction (SUI 17)*, Brighton, United Kingdom. 153-153.

[3.] **Md. Sami Uddin,** Carl Gutwin, and Alix Goguey. 2017. "Artificial Landmarks Augmented Media Players for Video Revisitation" in *Graphics Interface (GI 17)*, Edmonton, Alberta, Canada. *** Best Poster Award!*

[2.] **Md. Sami Uddin,** and Carl Gutwin. 2016. "Single-Handed HandMark Menus: Rapid Command Selection on Tablets" in *Proceedings of Extend Abstract of the ACM SIGCHI Conference on Interactive Surfaces and Spaces (ISS 16)*, Niagara Falls, Canada. 453-456.

[1.] **Md. Sami Uddin**. 2016. "Use of Landmarks to Design Large and Efficient Command Interfaces" in *Proceedings of the ACM Interactive Surfaces and Spaces Companion (ISS Companion 16)*, Niagara Falls, Canada. 13-17. *Doctoral Symposium.*

TEACHING EXPERIENCE

University of Saskatchewan, Canada   **01/2015 – 04/2021**
Teaching Assistant, Department of Computer Science
- Marking assignments and exam scripts for the following undergrad level courses:
    - CMPT 106: Design and Construction of Games and Interactive Systems
    - CMPT 111: Introduction to Computer Science and Programming
    - CMPT 306: Game Mechanics (*2 semesters*)
    - CMPT 381: Implementation of Graphical User Interfaces (*4 semesters*)
    - CMPT 481/ CMPT 811: Human-Computer Interaction (*3 semesters*)

Ahsanullah University of Science and Technology, Bangladesh   **04/2011 – 08/2014**
Lecturer, Department of Computer Science and Engineering
- Designed and taught the following undergraduate Computer Science courses averaging 120-150 students in a course per semester:
  - CSE 1101: Elementary Structured Programming – Language C (*5 semesters*)
  - CSE 1108: Introduction to Computer Systems (*2 semesters*)
  - CSE 200: Software Development – II (Java)
  - CSE 324: Information System Design & Software Engineering Lab (*3 semesters*)

SUPERVISORY EXPERIENCE

Co-Supervision (4)   2017 - 2020
University of Saskatchewan, Canada
During my Ph.D. studies, I have unofficially mentored *4 students (3 graduate-level)*:
- Febi Chajadi (2019-2020)
  CS Masters Student
  Project: Effects of Visual Distinctiveness on Learning and Retrieval in Icon Toolbars (resulted in **1 publication [10] at GI 2020**)
- Ehsan Mollashahi (2017-2019)
  CS Masters Student; *Present:* CopperTree Analytics, Vancouver
  Thesis: Improving revisitation in long documents with two-level artificial-landmark scrollbars (resulted in **1 publication [7] and 1 poster [5] at AVI 2018**)
- Varun Gaur (2018-2019)
  CS Masters Student; *Present:* SED Technologies, Saskatoon
  Project: Multiplexing Spatial Memory: Increasing the Capacity of FastTap Menus with Multiple Tabs (resulted in **1 publication [8] at MobileHCI 2018**)
- Michael van der Kamp (2017)
  CS Undergrad Student (summer intern); *Present:* Mentor Graphics, Saskatoon
  Project: Improving Early Navigation in Time-Lapse Video with Spread-Frame Loading (resulted in **1 publication [9] at CHI 2019**)

Supervision (9)   2012 - 2014
Ahsanullah University of Science and Technology, Bangladesh
I supervised *9 undergrad students (4 women)* for their final year projects and theses. Most of them continued their higher studies in Canada (University Regina and University of Manitoba), and one in the USA (California State University); One has completed Master's from the University of Regina (currently taken a role at CGI Information Systems, Ottawa).

PROFESSIONAL SERVICES

Program Committee - Associate Chair (AC)
- Late Breaking Work at CHI 2020 & CHI 2021

External Reviewer
In the last 4 years, I have reviewed a total of *32 papers*; *4 nominations* for outstanding reviews.
- CHI (2018 - 2021); CHI – LBW (2019)
- IJHCI (2021)
- ISS (2019 - 2020)
- Behaviour and Information Technology – Journal (2019 - 2020)
- SUI (2019)

Computer Science Faculty Recruitment Students' Committee
- As a member of the *Computer Science Faculty Recruitment Students' Committee* (2018-2019) at the University of Saskatchewan, Canada, I participated in the faculty hiring process and interviewed *8 faculty candidates.*

Vice President - Social
- As a VP-Social of the *Computer Science Graduate Council (CSGC)* at the University of Saskatchewan, Canada (Sessions: 2018-2019, and 2019-2020), I arranged monthly socializing events for CS grad students and faculties.
  Also, I actively participated in arranging the yearly *CS Research Fest,* where CS grad students presented their research as posters.

Vice President
- I served as *VP-Communication* and *VP-Finance* of the Bangladeshi Students' Association (BSA) at USask for 2015-2016 and 2016-2017 sessions, respectively, and represented both grad and undergrad students from our community at the university level.
- In collaboration with the International Student and Study Abroad Centre (ISSAC) at USask, we initiated a new event called **Global Village** to *promote and celebrate the diversity* among the students. After the massive success of the first event, now it has become a regular yearly event where students from diverse communities and countries showcase their unique cultural heritage, arts, languages, sports, and foods.

Moderator
- Organized Computer Science Fest (Programming contest, gaming contest, project demo) at the Ahsanullah University of Science and Technology, Bangladesh (2012, and 2013).

OUTREACH ACTIVITIES

Student Volunteer
Assisted the conference chairs in organizing the following conferences:
- ACM MobileHCI 2018; Barcelona, Spain.
- ACM SUI 2017; Co-located with ISS 2017 in Brighton, England, UK.

Science Promotion
- Participated in events (workshops) to promote computer science to the school students.
  - Demonstrated **Scratch** (a visual programming tool) to Grade-1 students at Chief Whitecap School, Saskatoon, Canada (2019)
  - Digitized: arranged workshops to demonstrate computer science research to high school students (2016, 2018)
- Volunteered at GameJam (2015, 2016) by Dept. of CS, UofS, where game enthusiasts and developers gather together in teams to learn, design and make computer games.

Volunteer
I volunteered at the *Saskatoon Folk Fest* (2016 and 2017), a 3-day long event to promote and appreciate the cultural diversities and values of the communities living in Saskatoon, Canada.