

# Research Statement

Kotaro Hara

School of Computing and Information Systems, Singapore Management University

Tel: (65) 6828-9691; Email: kotarohara@smu.edu.sg

23 (Day) 12 (Month) 2023 (Year)

## Background

As a Human-Computer Interaction (HCI) researcher, I design, build, and evaluate technologies to make the physical and digital environment more accessible for people with disabilities. In my research, I conduct formative studies to understand challenges that impact individuals with disabilities. Combining and extending computational techniques like crowdsourcing and machine learning, I prototype, build, and deploy new technologies that address accessibility challenges. To communicate my work with my community, I evaluate them through qualitative and quantitative methods.

Together with my students, I focus on two research themes related to accessibility: (i) making technologies that support people with disabilities to explore and navigate the built environment; and (ii) studying the equity and accessibility of online work and envisioning technical solutions to make the future of work inclusive for everyone.

## Research Areas

For the first theme, we built a chatbot system that allows people to converse with an agent-based system to localize their current position in the indoor environment. In the paper we published this year (Sheshadri and Hara, 2023), we asked, “Can we identify a user’s position within a complex indoor environment by asking them to describe their surroundings as if to a friend or colleague?” We built a system that obviates the need for sensing infrastructure by delegating effort in sensing the surrounding environment to the user; the agent could then focus on processing the user-provided information to compute their position. The research contributed to the HCI research community by designing a novel conversational system. Building on this work, we are working toward building a system that allows people with disabilities to learn conversationally about the accessibility of the built environment. For example, we envision the technology that communicates the descriptions of the built environment to blind people to support their spatial understanding and navigation.

For the second research theme, we explored the gender wage gap on online crowdsourcing platforms when determining payment for online workers (Adams-Prassl et al., 2023). Using information on 2 million tasks, we find no gender differences in task selection nor experience. Nonetheless, women earn 20% less per hour on average. Gender differences in working patterns are a significant driver of this wage gap. Women are more likely to interrupt their working time on the platform with consequences for their task completion speed. A follow-up survey shows that the gender differences in working patterns and hourly wages are concentrated amongst

workers with children. The study contributed to the crowdsourcing literature by advancing the understanding of the demographics of the online work platform.

### **Selected Publications and Outputs**

- Smitha Sheshadri and **Kotaro Hara** (2023) Conversational Localization: Indoor Human Localization through Intelligent Conversation, Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies 2023
- Abi Adams-Prassl, **Kotaro Hara**, Kristy Milland, and Chris Callison-Burch (2022) The Review of Economics and Statistics 1-23.