

Navigation preferences across people with a diverse range of disabilities

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Researchers at the University of Maryland, Baltimore County (UMBC) and the University of California, Irvine (UCI) have collaborated to create a universal design schema for navigation technologies to better support people with disabilities in getting from place to place. Although studies about assistive technologies and navigation have become more popular in recent years, the researchers argue that current research has been too narrow in its view of people with disabilities. For this study, researchers worked with technology users with a broad and diverse range of disabilities to find similarities and differences in their navigation preferences. They then used those findings to create a schema that can inform the design of future technologies.

The project was led by Maya Gupta, an alumna of UMBC's information systems program and current UCI graduate student in informatics; Ravi Kuber, associate professor of information systems at UMBC; and Stacy Branham, assistant professor of informatics at UCI. The research was accepted by the 2020 Conference on Human Factors in Computing Systems (CHI 2020). Although the conference was cancelled due to COVID-19, the research was published in online conference proceedings and made available as a [virtual presentation](#) on May 20. The research was funded by Toyota, as part of the University Mobility Challenge to improve navigation experiences.

The participants in this study had visual, mobility, cognitive, and hearing disabilities, as well as disabilities related to aging.

From the data, the researchers were able to identify main themes within the navigation techniques used by people in this study. They revealed key similarities in preferences across people with different types of disabilities, such as experiencing difficulty navigating in the presence of a large crowd. They also noted key differences in preferences, such as closeness of traffic. For example, people with [visual impairments](#) preferred to use the noise of nearby traffic as a means of keeping to a straight path, but it caused distraction and disorientation for others.

Based on the preferences of the study participants, the researchers were able to identify a schema for designers to use in order to think about the user experience for people with a range of abilities. This fits within a relevant trend in technology design: universal usability. Being able to create navigation technologies that are usable for as broad and diverse a population as possible helps to promote accessibility for all users. It also decreases stigma against people with differing abilities.

UMBC Ph.D. student Ali Abdolrahmani, who has assisted in conducting interviews with participants and analyzing the collected data, has a personal interest in expanding technology for people with [disabilities](#), as he identifies as blind. "We greatly believe that understanding common needs of different groups will eventually lead to a more universal design for future technologies towards having more equal life experience in the society," he says. The findings of this research can be used to develop prototypes and systems that better support [navigation](#) based on an individual's preferences.

Provided by University of Maryland Baltimore County

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