Building a 'blind-friendly' Internet

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Rakesh Babu, who lost his vision to a degenerative eye disease, says his goal is to empower the blind in the information society. (Photo by Troye Fox)

Rakesh Babu demonstrates how a blind person uses the Internet.

He runs his mouse across the pad, and a screen reader rapidly speaks everything that appears on his computer screen – plus graphic tags and other background coding. The computerized voice runs through the information at a speed that's barely comprehensible to the untrained ear. Experienced screen-reader users, says Babu, an assistant professor in UWM's School of Information Studies (SOIS), usually run the sound faster.

Screen readers are vital tools in helping those who are visually impaired use computers and the Internet, but improvements are needed to make online information easier to access, he says.

“The motivation for my research is to see that the Internet, which is so critical in today’s society for education and social interaction, is accessible to blind people,” says Babu, who joined the SOIS faculty in fall 2011. He adds that improvements in accessibility and usability may benefit not just the blind but also others, like older people, whose vision isn’t as acute as it once was. And, he adds, making a site more user-friendly for the blind benefits everyone.

An interest born of experience

Babu’s interest in this area grew out of personal experience. He was born with perfect vision, but began losing his sight around fourth grade because of a degenerative eye disease. He earned bachelor’s and master’s degrees in chemistry in his native India, but also battled depression as his vision finally faded away and his career prospects dimmed.

It was his mother, Madhuri, who encouraged him to study computers. At first he wasn’t convinced the technology would benefit him, but he found that with adaptations like the screen readers a whole new world was opening. He went on to earn his doctorate at the University of North Carolina at Greensboro.

His dissertation outlined a new way to accurately understand accessibility and usability problems blind users face in interacting with the Web.

Designing a blind-friendly Internet environment

“For the first time, we have the opportunity to integrate blind people in the information society through equal access to information and communications technology. We just need a little bit of understanding in designing a blind-friendly environment.

“Computers and websites,” Babu continues, “are designed for sighted users. Emphasis is primarily on visual modes of communication, with icons, colors, layout, buttons…everything is very visual.” They don’t support the nonvisual interaction techniques that people who are blind or visually impaired rely on, he says. Screen readers can help, he adds, but have their limitations because they provide a more linear experience rather than an interactive one.

For example, the “tags,” or written descriptions that designers put on graphics, may not be very informative when read aloud. The tag may say “snow,” but the blind person doesn’t know whether the graphic is of a snowstorm, an individual snowflake or gently falling snow.

Likewise, the screen reader may pick up some of the coding on the page, which can be confusing. Babu demonstrates with his university email account. The screen reader says the word “attach” in the coding before it actually gets to the “attach” button that he needs to use. “I know the system, but a blind user could get off track, clicking the first time he hears the word.”

Babu’s research focuses on how blind users conceptualize online tasks, trying to get inside their minds to understand how they think as they organize their knowledge about objects, events and activities. It’s an area where very little research has been done, especially from the point of view of the blind user.

Equal opportunity = web accessibility

He is working with an inter-university research team and national organizations serving the blind to set up the TREVIS Research Center to maximize blind people’s education outcomes, independent living and career prospects. The work is externally funded by a planning grant. Once established, this center will be the only one of its kind in the world,

he says. (TREVIS stands for Triad Research Initiative to Empower the Visually Impaired for Information Systems Competitiveness.)

“Designers assume blind people are like sighted people except they can’t see,” Babu says. “But, because sighted people rely on their vision to construct models in their minds, blind people often think about computer tasks differently. Understanding these different ways of thinking is critical to designing blind-friendly systems and environments.”

While there are all sorts of guidelines for designing accessible websites, assisting the end user in completing Web-based tasks is as important as complying with technical standards and laws, says Babu. “Web accessibility is not a legal issue; it’s an equal opportunity issue.”

“When you sit down to design a website, you have to think, how would a screen reader read my website? You need to be user-centered from the beginning.”

He sees his role as an intermediary in this process. “I am the neutral observer trying to bring the user and the designer closer together.”

Babu says his career goal is to empower the blind in the information society, enhancing their ability to get an education, develop careers and live independently. “For the first time, we have the opportunity to create equal access if we can understand the environment and design for it. This is something I’ve always wanted to do. I really love my research.”

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