Human-Centered Computing

Combining Human and Machine Intelligence to Describe Images to People with Visual Impairments

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Abstract: Digital imagery pervades modern life. More than a billion images per day are produced and uploaded to social media sites, and we also encounter digital images within websites, apps, digital documents, and eBooks. Engaging with digital imagery is part of the fabric of participation in contemporary society, including education, the professions, e-commerce, civic participation, entertainment, and social interactions. However, most digital images remain inaccessible to the 39 million people worldwide who are blind. By some estimates, nearly half of online images lack any alternative text descriptions that can be read aloud by screen reader software, and many images that do contain alt text have captions that are of poor quality; many popular emerging formats like social media and mobile apps do not even offer content authors the ability to specify caption information. Emerging AI techniques, such as vision-to-language systems, offer a cheap, scalable means of labeling digital images; however, these technologies have a long way to go before they can be a reliable information source for people who are visually impaired. To help supplement, correct, and train AI captioning systems, human-in-the-loop techniques such as crowdsourcing and friendsourcing can play an important role in advancing caption coverage and quality. In this talk, I will discuss the tradeoffs of various image-description techniques, and present example hybrid intelligence systems for making digital imagery accessible to screen reader users.

Bio: Meredith Ringel Morris is a Principal Researcher at Microsoft Research; she is also an affiliate Professor at the University of Washington in both the School of Computer Science & Engineering and the School of Information. Dr. Morris's research focuses on human-computer interaction, specializing in computer-supported cooperative work and social computing. Her past research contributions have included interaction techniques to support group work around large, shared displays and novel systems supporting collaborative and social web search. Her current research focuses on the intersection of accessibility and social technologies. Dr. Morris earned her Ph.D. and Master's degrees in computer science from Stanford University, and her Sc.B. in computer science from Brown University. More information about her research, including her full list of publications, can be found at aka.ms/merrie

Wednesday, October 4, 3-4:15pm @ DLC 170