Personalizing the User Interface for People with Disabilities

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ABSTRACT

Computer applications provide many people with disabilities with unique opportunities for interpersonal communication, social interaction and active participation. Rigid user interfaces often present accessibility barriers to people with physical, sensory or cognitive impairments. User interface personalization is crucial to overcome these barriers, enabling computer access to a considerable section of the population with disabilities. Adapting the user interface to people with disabilities requires taking into consideration their physical, sensory or cognitive abilities and restrictions and then providing alternative access procedures according to their capacities. This chapter presents methods and techniques that are being applied to research and practice on user interface personalization for people with disabilities and discusses possible approaches for diverse application fields where personalization is required: accessibility to the web using transcoding, web mining for eGovernment, and human-robot interaction for people with severe motor restrictions.

CCS CONCEPTS

• Personalization • Accessibility • Web mining • User models • Interaction techniques • Ethnographic studies

KEYWORDS

UI personalization, Digital Accessibility, People with disabilities

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User interface personalization for specific application

After presenting the state of the art in personalization techniques applied to accessible user interaction, we present and discuss three challenging application areas where user interface personalization is being applied with diverse results. The first one addresses the personalization of regularly used web user interfaces. In this case, a registration process may be required, enabling the interface to be personalized from the available information about the user. The second one deals with the personalization of sporadically -and often anonymously- used web interfaces, such as those in eGovernment portals. In this case, personalization requires observation of the behaviour of the user in order to match it with a previously built stereotype. The last one deals with an interface where the input from the user is insufficient to specify a task. Therefore, intelligent transformation of the commands, based on the user context and model, is required. In this case, the task is to control an assistive robot for augmented or alternative manipulation

Conclusions

Efforts in personalization for accessibility are focussed on research rather than on commercial products. Interface personalization can be applied with sufficiently high levels of security to different applications. Academia should produce practical personalization methods to be adopted by practitioners. The industry and the public administrations should adopt interface personalization in order to guarantee the accessibility of their applications and services.

Personalized systems must guarantee their commitment to user privacy. Information collection must be limited to data strictly necessary for the application, user data must be safely kept, anonymized, and be removed when it is not useful.