Co-Design of Accessible Speech Recognition for Users with Dysarthric Speech

Authors : Elizabeth Howarth, Dawn Green, Sean Connolly, Geena Vabulas, Sara Smolley

Abstract : Through the EU Horizon 2020 Nuvoic Project, the project team recruited 70 individuals in the UK and Ireland to test the Voiceitt speech recognition app and provide user feedback to developers. The app is designed for people with dysarthric speech, to support communication with unfamiliar people and access to speech-driven technologies such as smart home equipment and smart assistants. Participants with atypical speech, due to a range of conditions such as cerebral palsy, acquired brain injury, Down syndrome, stroke and hearing impairment, were recruited, primarily through organisations supporting disabled people. Most had physical or learning disabilities in addition to dysarthric speech. The project team worked with individuals, their families and local support teams, to provide access to the app, including through additional assistive technologies where needed. Testing was user-led, with participants asked to identify and test use cases most relevant to their daily lives over a period of three months or more. Ongoing technical support and training were provided remotely and in-person throughout the testing period. Structured interviews were used to collect feedback on users' experiences, with delivery adapted to individuals' needs and preferences. Informal feedback was collected through ongoing contact between participants, their families and support teams and the project team. Focus groups were held to collect feedback on specific design proposals. User feedback shared with developers has led to improvements to the user interface and functionality, including faster voice training, simplified navigation, the introduction of gamification elements and of switch access as an alternative to touchscreen access, with other feature requests from users still in development. This work offers a case-study in successful and inclusive co-design with the disabled community.

Keywords : co-design, assistive technology, dysarthria, inclusive speech recognition

Conference Title : ICDD 2023 : International Conference on Disability and Diversity

Conference Location : London, United Kingdom

Conference Dates : February 16-17, 2023