Development and Evaluation of "ChemAid": A Mobile Computing Application for Enhancing Laboratory Experience

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Abstract:

As technology continues to develop and becomes more advanced, it opens up many opportunities for us to make everyday tools more accessible for those with disabilities. For instance, visually impaired students may find academically challenging courses like Chemistry difficult to participate in, but technological efforts can be made to provide more accessibility in the classroom. In this ongoing project, we are developing a website and an app called ChemAid, a learning tool aimed towards aiding visually impaired students in their science laboratory courses and research. To reach this goal, we will design a website and mobile app that will allow the user to scan a QR code on the label of a bottle, container, or other piece of lab equipment. Once scanned, the app will then provide the student with both a text and audio file containing important information and instructions about the item's use. This approach ensures that learners who cannot easily read paper instructions are provided a safe and effective scientific learning environment. The creation of this service will require extensive research in text-to-voice API and how to implement it into an accessible website and application, as well as collaboration with visually impaired students to ensure that the needs of this disability are met in a classroom environment. Because this research is ongoing, we intend to expand the benefits of the app (e.g. proximity sensors rather than QR codes, translations for language barriers, etc.).