Mobile Real-Time OCR for Visually Impaired Individuals

Amirtharaj, Divya

285 million people worldwide live with a visual impairment that prevents them from basic access to written or virtual materials. Current braille code standards such as Unified English Braille (UEB) strive to reduce the communication barrier but have failed to become widespread. Because of this, the goal of my project was to develop software on a mobile platform that can recognize text real-time to improve the independence and ease for its user. Current apps available fail to provide optical assistance in real time, are only compatible in English speaking countries, and cost hundreds of dollars. The app I developed can read text in a standardized font in seven major languages and contains real-time optical character recognition. This app achieves real-time OCR using a spanning video camera image capture connected to an OCR engine to recognize text and a text-to-speech (TTS) engine which reads the text aloud. The application utilizes the Tesseract open source OCR library, as well as multiple training files to increase its accuracy. The trials proved successful and the app was able to recognize all the text on the page with 97% accuracy for 16 different combinations of fonts and seven languages. I have extended testing to visually impaired individuals throughout the greater Portland and Vancouver area in order to improve the accessibility and user capabilities of the app. Additionally the app, myVision, is available as a beta release on the Google Play store for additionally user testing and feedback.

Awards Won:

Fourth Award of $500

Oracle Academy: Award of $5,000 for outstanding project in the systems software category.

GoDaddy: $1,500 Open Source Award

Samvid Education Foundation: Geno Second Place Award of $500