Team 10:
Runtime Exception

SACRAMENTO STATE
COLLEGE OF ENGINEERING & COMPUTER SCIENCE

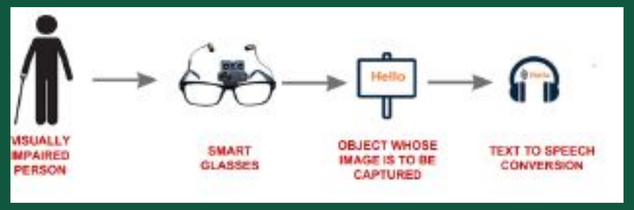
Our Team

Societal Problem

Vision impairment is the leading cause of disability worldwide. It is most common in those who are age 50 or older. As our population ages more and more people will become affected by vision impairment. Our product will allow for the affected people to be more independent and provide more accessibility during everyday life.

Problem Solution

Our team's solution to this issue is iGlasses. This device attaches to the user's glasses and will be take voice commands. The iGlasses will take an image and from that image convert it to an audio output via earpiece. This allows for the user to not have to depend on others to aid them and introduces a sense of independence.

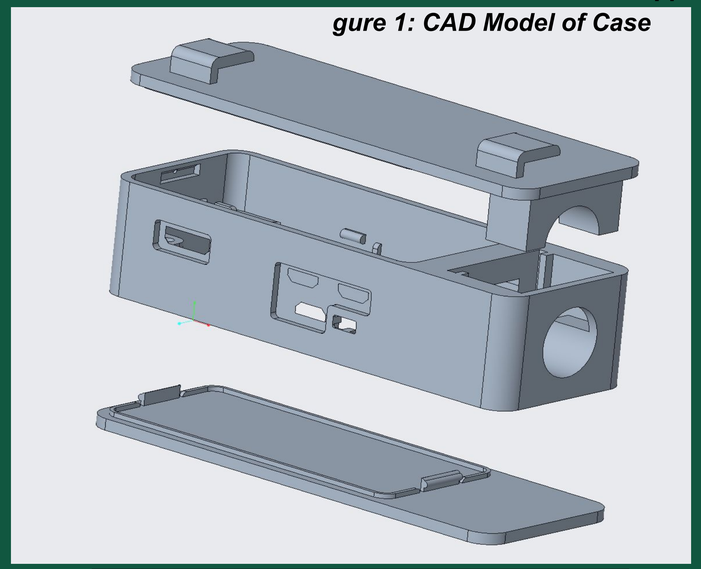


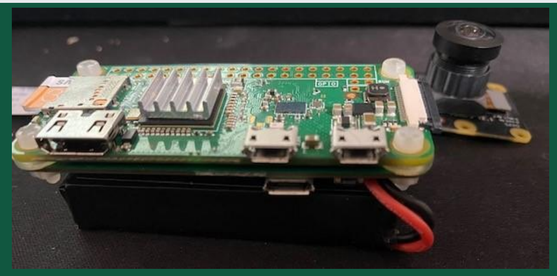
Design Process

We designed our product from the ground up using the Raspberry Pi as the main microcontroller. It is small and has great processing power as well as tons of open source libraries that proved invaluable. As we progressed through the design process, we migrated our work over to the smaller Raspberry Pi 0w.

After completing the coding side of things we designed a case using CAD software. From there we were able to 3d print out our case and make any changes that were necessary so that the case could function as we wanted.

Figure 1: CAD Model of Case





Hardware

- Raspberry Pi Zero W
- Raspberry Pi Camera
- Raspberry Pi Portable Battery
- Audio board

Software

- OpenCV
- Audio Software
- OCR Space API
- Camera Software

Design

iGlasses will provide a type of sensory substitution for those that have trouble seeing or those who cannot see at all. The iGlasses attaches to a pair of glasses that will provide feedback to the wearer. The device will have a camera that will detect text. Based on what is detected by the camera, the device will provide an auditory cue to the wearer that will indicate what was detected. This will allow for the wearer to interpret the text without further straining their eyesight. iGlasses is small enough to not be uncomfortable when being used. It is also light enough to not disrupt the weight distribution of the wearer's glasses.