ABSTRACT

People blind have difficulties moving around, reading text, and recognizing objects and humans. They are not much aware of the objects, text, and proximities in their surroundings necessary to be safe and secure. White canes and assistive technologies to detect proximities exist as products in the market, but they don't help identify the object. They use touch, sound, smell, and taste sensations to identify an object. People may be visually impaired since birth or because of accidents, and they are in all age categories. Visually Impaired children have a difficult time recognizing unknown objects. Still, once the child becomes an adult, they can detect objects because of constant exposure to various objects. Here, the person takes a decent amount of time to store how the object feels, smells, sounds, and tastes. In the future, the person may later use all of this data stored in his brain to identify the object next time. People who are blind can read only Braille text, and Braille is not available everywhere they go. They can't read, interpret signs, logos, maps, text on paper, or all forms of text available publicly. That's where our project comes in.

Our project is object recognition, text recognition, and proximity detection systems that any adult or child can wear. With the press of the first button, the person can detect anything, and at other times the device is on standby to avoid unwanted recognition and confusion. Object detection works based on processing images captured by a camera module connected to a controller. With the press of a second button, text from the captured image is recognized based on the Optical Character Recognition (OCR) technique. Both object detection and OCR give an audio output to the individual via headphones connected to the controller. Ultrasound sensors are interfaced with the controller to detect the proximity of an obstacle to the individual. Proximity detection is always enabled, and no button is physically present to switch on or off this process. Hence, this project will make the life of a visually impaired person more independent, safe, stress-free, and hassle-free.