

A Wearable Sensory Tactile Aid Device for Visually Impaired Individuals

Mooney, Alexandria (School: Arkansas School for Mathematics, Sciences and the Arts)

Vasquez, Isabel (School: Arkansas School for Mathematics, Sciences and the Arts)

There are five senses: taste, smell, touch, hearing, and sight. Now imagine losing one of those senses, how much would your life be altered? Currently, there are over 200 million people worldwide suffering from a visual impairment and more than 40 million people completely blind worldwide. There have been numerous advancements designed to aid the blind, such as, mouth clicks, eye transplants, artificial lens, canes, and more. While they have improved vision and everyday activity, the costs and limitations of some of these devices prevent optimal and affordable aid. For example, the cost of transplants is easily over a thousand dollars per eye. The effectiveness of canes can be compromised with weather or unforeseen cracks, mud, etc. The goal of this project is to build a jacket with built in sensors and micro-vibration motors to efficiently help navigate the blind and visually impaired. Using HC-SR04 sensors, waves are emitted and are bounced off objects near the user, causing micro vibration motors to vibrate. The sensors and vibration motors are connected to an Arduino, a micro-controller board that is coded with a program that instructs the vibration motors, located around the jacket, to vibrate when it receives back the distance of an object. Sensors and motors are located on the front, back, and sides of the jacket. Users are also able to blend in with everyday pedestrians. The jacket was successfully built and achieved the goal. With this jacket, the hope is to aid visually impaired people in their everyday lives.