About Us

The AccessibiliBEES are a team of students from the Mass Academy at WPI looking to improve access to navigation for VIPs (Visually Impaired People).

Background

Oftentimes, visually impaired persons (VIPs) use white canes or guide animals to navigate their environment. However, these aids are unable to detect obstacles above waist height. This means that VIPs are at risk of collisions with objects that the cane cannot detect, putting white cane users at risk of injuring themselves without aid from a sighted person.

Scan here for audio instructions!

Our Prototype

Our prototype is a vest which uses an ultrasonic sensor, speaker, and vibration motor to alert VIPs to approaching objects. This design consists of a series of straps and buckles that can hold 3D printed boxes which contain the sensors and technology, but connects these to a pre-sewn vest instead of relying entirely on the buckle-and-strap system. This system is easy to navigate independently and also has more of a sleek design, while retaining its modularity. The logic is handled by an Arduino, which is currently powered by a laptop for testing purposes.

Contact Us

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AccessibiliBEES

Visi-Vest:

An Assistive Solution for Detection of Above-Waist Obstacles

Build Instructions

Simple Holders

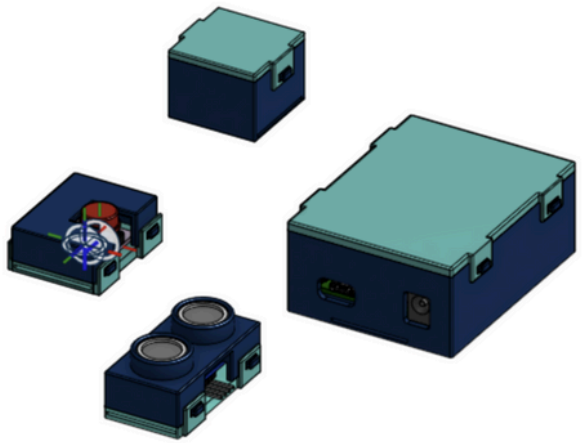
Each sensor is held in a case that we designed using a 3D modeling software. Each piece was then 3D printed.

Modular Design

Each sensor was then placed in its respective holder. Next, the holders were connected to a series of nylon straps.

Comfortable to Wear

All straps were sewn to a pre-fabricated safety vest for easy navigation and comfort. This allows for convenient replacement of parts as well as simplicity.



Safety Warnings

Please exercise caution while using the device, as the device may have lower accuracy in relation to protruding objects or objects at angles.

Please use the device in conjunction with a white cane, guide dog, or other preferred aid, as the device is not designed to detect objects below waist level.

Usage Instructions

Before You Begin

This device does not replace the need for a guide dog, white cane, or sighted guide. It only detects objects at chest level.

Getting Started With Visi-Vest

Place arms through the armholes, taking care to avoid contacting any fragile sensors. Carefully zip the vest.

General Navigation

Once secured, continue to walk around as normal. If an object is detected within 1-2ft, the device will make a beeping sound. To switch the device to vibration mode, press the button once. To switch back to audio mode, press the button again. When finished, disconnect from power supply and store in a safe place.

Care & Maintenance

Cleaning Your Visi-Vest

The device should be kept out of harsh weather conditions, as it is currently not waterproof. The vest can be spot cleaned; take caution to avoid getting water or cleaning solutions into electronic parts.