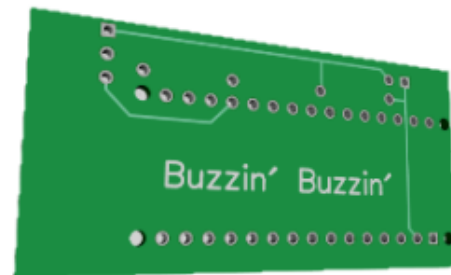
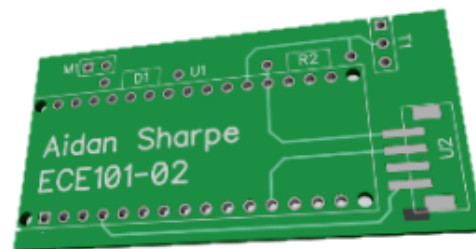


Helping the Blind See

"It's Buzzin' Buzzin'"

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(With Special Help From LA Connor)



The idea operates on a simple 3 stage premise, and draws inspiration from the classic white cane concept.

Stage 1- Input

The primary input is an ultrasound distance sensor that operates over an I2C connection. It sends distance data to the arduino to be processed.

Stage 2 - Processing

The device is controlled by an Arduino RP2040 Connect. It takes in a signal from the ultrasound sensor, and determines if the user is getting close to an object. Once the distance is small enough, the arduino begins sending a PWM signal over a digital out pin.

Stage 3 - Buzzin' Buzzin'

The output signal, and the namesake of the device, is a small DC motor with a cam on the drive shaft, causing a small vibration to occur whenever power is applied to the motor.



Problem Statement

We wanted to provide an alternative to white canes that blind people often use to orient themselves. We decided to use a motor that vibrates to relay signals in different degrees of severity based on the proximity of surrounding objects.

Design Background

Our sensor recognizes distance and categorizes it. It was chosen due to its ease of use.

Design Constraints

We decided that a chest mount would prevent the user from gleaning a wider range of data, and that a forehead mount would be bulky and heavy. We settled on a handheld device, which restricted us to a smaller size.

References:

The inspiration for making a device that builds upon existing tools for the visually impaired comes from a YouTube video on the "Stuff Made Here" channel, in which an iPad Pro is modified to give sensory feedback to a user based on an input image from a time of flight distance sensor.