CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY

Name(s)

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Project Number

S1012

Project Title

Project S.O.D.A., the Smart Obstacle Dodging Assistant: Helping the Visually Impaired Be Safer Outdoors

Abstract

Objectives/Goals

The objective of our experimentation is to determine if ultrasonic sensors and vibration motors attached to walking canes help the visually impaired avoid obstacles better than traditional walking canes.

Methods/Materials

3 ultrasonic sensors, 3 Arduino Nanos, 3 vibration motors, 1 metal cane, 1 walking cane, 1 pack of jumper wires, 3 small breadboards. Programmed the Arduino Nanos to warn the users of objects in the vicinity and assembled the Project S.O.D.A. walking cane using ultrasonic sensors, Arduino Nanos and vibration motors.

Results

The test subjects used regular walking cane and Project S.O.D.A. walking cane to walk through closed course and the number of unwanted collisions were recorded. The Project S.O.D.A. walking cane significantly reduced the number of accidents.

Conclusions/Discussion

The Project S.O.D.A. walking cane proved to be much safer for the user than traditional walking cane. The average number of accidents that occurred for the test subjects while navigating through the closed course from 12.166, while using the traditional walking cane, to 1.5, while using the Project S.O.D.A. walking cane.

Summary Statement

We have designed a walking cane for the visually impaired using sensors that proved to be much safer than traditional walking canes.

Help Received

None. We designed, programmed and conducted our experimentation independently.