CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY

Name(s)
Edward Yang

Project Number
S1021

Project Title
An Innovative Approach to Addressing the Needs of the Visually Impaired

Abstract

Objectives/Goals
The objective of this study is to design a system that the visually impaired can use to warn them of any object nearby that is above or below the knee and thus preventing them from colliding with the obstacle.

Methods/Materials
Microcomputer(Raspberry Pi3), Laser Distance Meter, Cane, Ultrasonic Distance Sensor, Vibration Motors, Stepper Motor
Programmed and wired the components together. Then, the system was optimized by adjusting the components.

Results
The system was able to accurately measure the distance away of an object with a percent error of 3.75% after testing with various objects set at exactly 40 cm away. It was able to vibrate the vibration motors when the obstacle was too close above or below the knee.

Conclusions/Discussion
This system will be able to give more advanced warning signals to the user about obstacles around him above or below the knee and thus allow the user to bypass the obstacle safely.

Summary Statement
I created a system that could warn the visually impaired of any obstacle around him above or below the knee.

Help Received
None. I designed, built, and performed the experiments myself.