



SMART BLIND WALKER

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ABSTRACT

This paper proposes a technology for blind people that helps them to be safe on road using modern techniques. According to WHO, 285 million people are estimated to be visually impaired worldwide: 39 million are blind and 246 have low vision. Blind Walker will help the blind to go safe like normal people and it will be a most helpful thing for the blind.

KEYWORDS : *Blind people, safe, ultrasonic signal ,wearable, Blindness*

I. INTRODUCTION

As according to World Health Organ(WHO) 39 million are blind and 246 have low vision. This device will help the blind to walk safe on road as this devices help the blind to detect the obstacles and guide the person to be in correct way using Google Maps and detector.

II. LITERATURE SURVEY

There are only some innovations brought to blind people.

- Mainly advanced technology found is ultrasonic walking stick
- Next is Voice based Blind walking stick which makes use of programmed voice for guidance.
- Another application makes use of Android technology for navigation purpose.
- There are walking sticks available with GPS system installed in it.
- It got the facial recognition which helps them to identify the people.

III. METHODOLOGY

This device consist of 2 things a ultrasonic device attached as shirt button or a optical/Sunglasses and a walking stick. But for the starters it could be too confusing for the blind people to use it. It could confuse the blind people for understanding the voice or the GPS guiding system. This could cause discomfort or reluctance is using the new technology way. Also such advanced technology doesn't exist. This is where the proposed technology could be very useful.

A. Ultrasonic device

This device helps to detect the obstacle and find the obstacle distance by Ultrasonic waves and gives the command/alarm to the user. This device can detect from 3 cm up to 400 cm. The program and circuit diagram is given below. It can be as a shirt button or sunglasses, it can be easily attached to the clothes. The user receives the signal in the mode of sound or vibration (most preferably vibration). The device is also attached with GPS system which helps to guide the user with the location he need to go. This blind walker allows the visually challenged people to navigate with ease using today's technology.

CIRCUIT DIAGRAMS

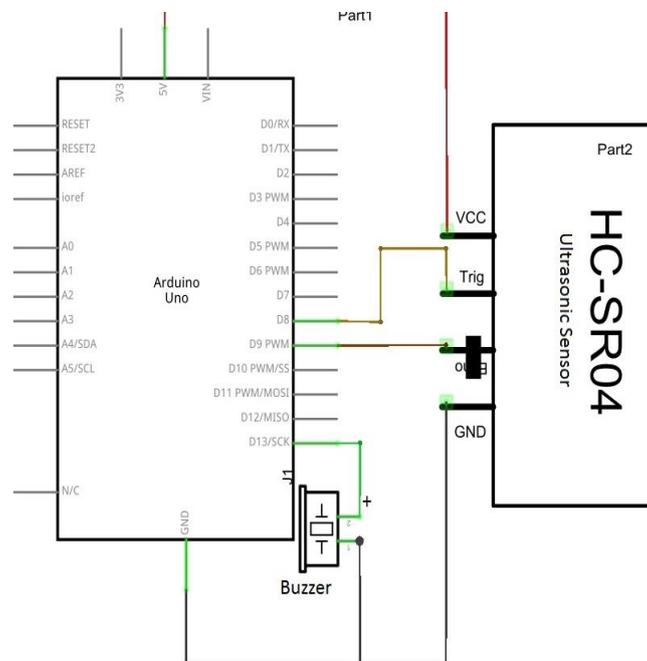


Fig.1.a Ultrasonic Sensor

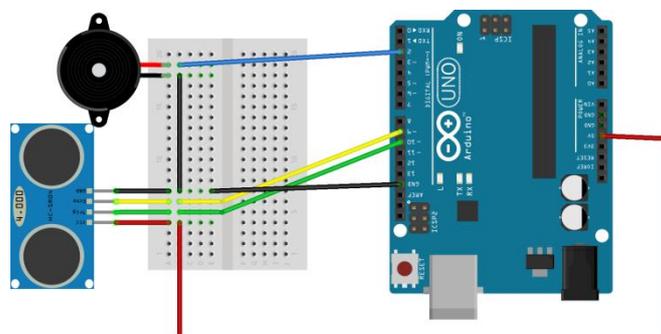


Fig.1.b Ultrasonic Sensor

B. Walking Stick

The walking stick is another part of blind walker that helps the blind. The stick is integrated with a soil sensor (this is used to check the ground is soil or water surface or road) and vibrator. This stick help to know the ground level and the what is the ground about , this warns the user about the ground.

CIRCUIT DIAGRAMS

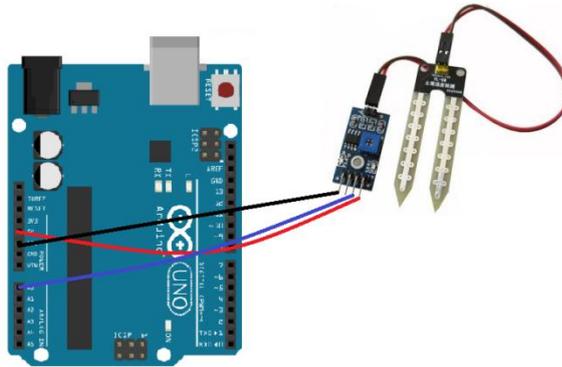


Fig.2.a Soil Sensor

C. Camera Module

This module helps the blind stick to identify the people when they come in contact with the camera. Communicate between Arduino and Python is achieved using pyserial module. High quality image is automatically clicked with android smart phone. The clicked image is further sent to system for processing via data cable. OpenCV's Haar Cascade classifier is used to identifying or verifying a person from a digital image. Image is captured as soon ultrasonic sensor detect work by comparing selected facial features from given image with faces within a database. It can uniquely identify a person by analyzing patterns based on the person's facial textures and shape. It also record and store information of entries made by persons.

IV. RESULT

- The ultrasonic walker is easily installed in the shirt buttons or Sunglasses
- The obstacle is detected by the ultrasonic walker and user is notified/alerted by a buzzing alarm/Navigation voice.
- Level sensor detects the water and notifies the user with a sound or vibrations.
- Camera module detects the person and alerts the user of the opposite people.

V. CONCLUSION

The Ultrasonic Walker has the following features:

- Can be maintained & operated easily.
- Very easy to function and install.
- Authentic & Durable.
- Low power consumption.
- The Arduino can be coded according to user requirement.
- Effective navigation assistant can be used .
- Wet or muddy or potentially slippery terrain can be detected by a pair of electrodes.
- Overall manufacturing cost is cheap & parts are available in both local & international market.

The Camera module in walker has the following features:

- Uses Open-CV algorithm to identify people easily.
- Recognizes quick and responses are made faster.

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