

ULTRASONIC GLOVE -A VIRTUAL EYE FOR BLIND PEOPLE

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ABSTRACT

In the present paper we report a the construction of an equipment which helps blind people to move faster and more confidently by finding nearby obstacles using the ultrasonic sensors by alerting the blind person with a buzzer sound .

Keywords – Ultrasonic sensor, Arduino, Virtual eye for destitute of vision

I. INTRODUCTION :

There are many object detection systems for blind people using various technologies [1-5]. The present project is based on Atmega 328 microcontroller. When ultrasonic sensor detects anything in front of it gives a message to the controller and we process this data and calculate the obstacle's position . If the obstacle is not to close the circuit, it does nothing. When the barrier is closed the microcontroller sends a signal to sound a buzzer. The sound changes depending on the distance of the obstacle. if the obstacle is too close then the buzzer will always be

open to alert the person. We have designed the project in such a way that It produces different vibration depending on the distance of the obstacle.

II. ULTRASONIC SENSOR :

Ultrasonic sensors operate on a system such as a radar or sonar that detects target by transmitting and receiving the reflected signals.. Ultrasonic sensors produce high frequency sound waves and it also detects the echo signals received. Sensors calculate the time interval between sending a signal and receiving an echo to determine the distance of an object.

III. BLOCK DIAGRAM :

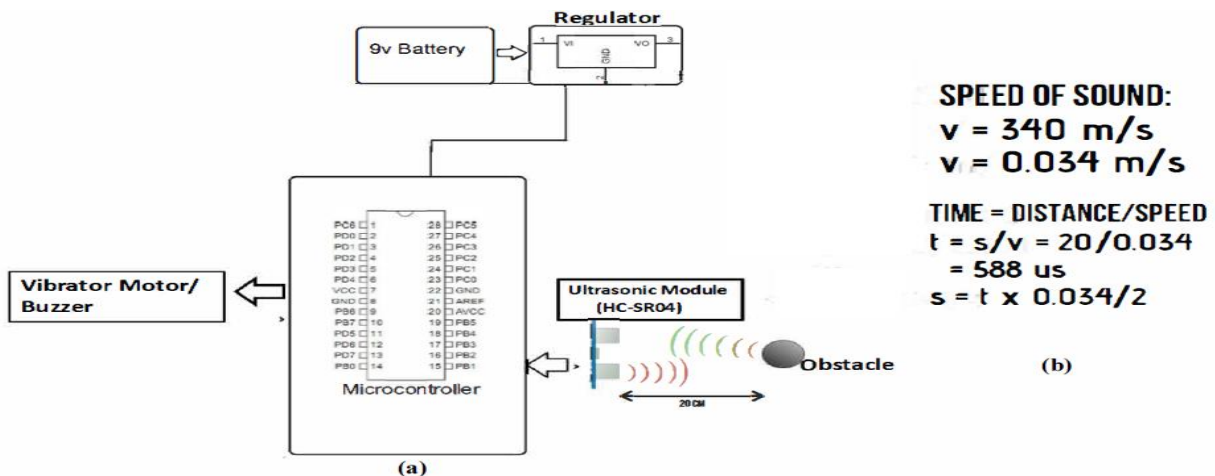


Fig.1 (a)Block diagram of the Device (b) Distance calculation using ultrasonic sensor

IV. HARDWARE REQUIREMENTS :

1. BATTERY
2. VOLTAGE REGULATOR (7805)
3. MICROCONTROLLER
4. ULTRASONIC SENSOR
5. LDR
6. LED
7. DIODE 1N4007
8. RESISTOR
9. CAPACITOR
10. PUSH BUTTON

SOFTWARE REQUIREMENTS :

Arduino IDE :

Arduino IDE is an open source prototyping platform [6] based on hardware and software that is easy to use. Arduino boards can read input - light sensor, finger button, or Twitter message - and convert it into output - turn on the engine, turn on the LED, print something online.

You can tell your board what to do by sending a set of instructions to the controller on the board. To do so using the programming language of Arduino (Wiring-based), and Arduino Software (IDE), based on Processing.

V. OPERATION :

The ATmega32 microcontroller is capable of handling analogue inputs. Hole A can be used as digital I / O lines or each PIN can be used as a single input channel for the internal ADC microcontroller, and two AREF, AVCC and GND pins together can form the ADC channel. ADC has one successive approximation type in which total 8 single channels are selectable. The external reference can be connected to the AREF pin. The three-terminal positive regulators are used with external components to obtain adjustable voltages and currents.

The ultrasonic sensor measures distance. It is determined by measuring the time required for the echo return [7]. Output from the ultrasonic sensor is a variable-width pulse that corresponds to the distance to the target. If the proper potential is provided across the buzzer it generates the sound else not. It is of two pin configuration that is anode (+) and cathode (-). For interfacing to any device like controller etc. we directly connect the cathode to the GND and anode to the device like controller. Now when signal on anode goes high buzzer activates else does-not. LEDs are used as indicator lamps as in many devices.



Fig. 2 Ultrasonic Glove

Diode 1N4007 is used to convert AC into DC these are used as a component wavelength or full frequency converter. The circuit uses a standard power supply consisting of 4 diodes forming a bridge fixer that delivers pulsating dc and is then filtered with an electrolytic capacitor of about 470 μ F to 1000 μ F. The filtered dc can be controlled. C 7805 is used to detect 5V DC fixed in pin and 3 regardless of the input DC varies from 7V to 15V.

The input dc will differ in case the input ac at 230volts varies from 160V to 270V . Therefore the dc power supply of the controller input varies from about 8V to 15V due to the variation of the A.C voltage from 160V to 270V. The output of the controller will be maintained to remain at 5V.

The 5V DC controlled is also filtered with a small 10 μ F electrolytic capacitor for any noise produced by the circuit. One LED connected to this 5V point in a series with a current limit of 330 low i.e., negative voltage to indicate the availability of 5V power supply.

VI. CONCLUSION :

In this project we have developed a wearable technology for blind people that removes all the shortcomings of existing technologies. The of main advantage of the present technological invention is that it is affordable for everyone.

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[6]<https://www.arduino.cc/en/software>

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