OBSTACLE DETECTION FOR BLIND PEOPLE USING GLASSES

[#1]Mr.D .SRINIVASA RAO, [#2]R.SWATHI, [#3]Y.D. SRAVANI, [#4] D.SIREESHA, [#5]N.SAI NITHIN

[#1,2,3,4,5]DEPT OF ECE

[#1,2,3,4,5]Satya Institute Of Technology And Management ,Vizianagaram

ABSTRACT

Now a days there has been rapid growing in the field of Embbeded System techonolgy our project is obstacle detection for blind people is developed on embedded system platform. ARDUINO is used which is the latest technology the main objective of this project is to provide safety for blind people from obstacles. Obstacle detection is one of the major concerns for a fully or a partially blind people. The main aim of this project is to detect near by obstacle and notify the user of the direction of that obstacle, there by enabling the user to determine the corrective direction to head. In this project we are using a ARDUINO along with ultrasonic sensor for obstacle detection that may be in any direction. The main objective of this project is to help the blind people to with easy and to be warned whenever their walking path is obstructed with other objects , people or other similar odds .this device ensures safety for the blind people while walking. The device is to be carried by blind people and when the device senses any obstacle it gives the warning signal through the AUDIO PROCESSOR and accordingly he can move. The entire design id built on the concept of embedded and ARDUINO microcontroller is used which monitors the components.

Keywords: Arduino, ultrasonic sensor, AUDIO PROCESSOR,LCD, speaker.

I.INTRODUCTION

These GLASSES are designed for blind people. The concept of obstacle detection by ultrasonic sensor has been used here. As soon as the obstacle is detected by the sensor, its distance it sent to the Arduino. We convert the distance into centimeters from milliseconds and the check whether the distance of obstacle is less than 3m, if yes then we send the output through a speaker. The audio of the speaker is directly proportional to the distance of the obstacle from human. Once detected, information of obstacles must be conveyed to the blind. In general, the user could be informed through speaker . The intention of the project is to resolve the problem of vision with the low-vision people, who are officially classified as blind persons. Although they are considered blind, they have different issues that can be handled with variety of solutions; one of them is to improve the remained vision by enhancing various environment scenes. This can be achieved by implementing a smart glasses that depends on capturing the the significant value of the project is the improvements in the wearer's social and academic life. Identically, wearing GLASSES helps the user to avoid the surrounding diversified obstacles and thus the mobility increases. If such a product is released, the independency of the users can be augmented, which will get them involved more in the society. The project's strategy is to use the product on people with different low-vision cases, where the low vision patients can communication better with others, reach desired destinations faster and easily, and participate in the various events. Moreover, disposing of canes make a person looks normal.

II.EXISTING SYSTEM:

Blind stick is an innovative stick designed for visually disabled people for improved navigation. Where propose an blind stick that allows visually challenged people to navigate with ease using advanced technology. The blind stick is integrated with ultrasonic sensor along with light and water sensing. project first uses ultrasonic sensors to detect obstacles ahead using ultrasonic waves. On sensing obstacles the sensor passes this data to the microcontroller. The microcontroller then processes this data and calculates if the obstacle is close enough. If the obstacle is not that close the circuit does nothing. If the obstacle is close the microcontroller sends a signal to sound a buzzer. It also detects and sounds a different buzzer if it detects water and alerts the blind. One more feature is that it allows the blind to detect if there is light or darkness in the room. The system has one more advanced feature integrated to help the blind find their stick if they forget where they kept it. A wireless RF based remote is used for this purpose. Pressing the remote button sounds a buzzer on the stick which helps the blind person to find their stick. Thus this system allows for obstacle detection as well as finding stick if misplaced by visually disabled people.

III.PROPOSED METHOD:

This proposed system introduces advanced technology for the obstacle detection here we are using a glasses in place of stick and in place of buzzer we are using a speaker for obstacle detection. In this advanced technology we are using AUDIO PROCESSOR for the audio signal which is coming from the speaker. A visually impaired person or a person with visually impaired, daily has difficulties to learn to recognize or differentiate objects when performing any activity, such as walking the streets or being able to recognize dollar bills of different denomination, this makes that the people with this type of disability cannot adapt easily to the society. Usually the visually impaired persons depend on someone to help them in their daily lives. The method that will be used for this problem is to adapt an ultrasonic sensor to the glasses, since most of the visually impaired persons wear glasses, there would not be any problem. The ultrasonic sensor will have its respective circuit, which will issue a repetitive vibration to indicate the proximity of an obstacle.
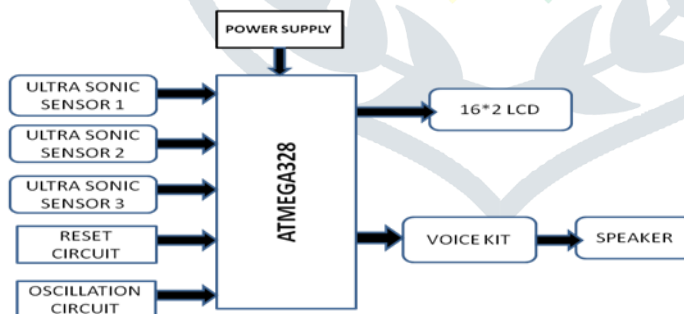
GENERAL BLOCK DIAGRAM:

Fig 1 General block diagram

In the block diagram of this project is that it consists of three ultrasonic sensors which are given as input to the ATMEGA328 microcontroller the three ultrasonic sensors used because it should detect the obstacle in three different directions. The range of the ultrasonic sensor is upto 3 meters and it has 4 pins that are VCC,GND, trigger, echo the echo pin used as input pin and trigger pin is use as the output pin. The microcontroller is used here is ATMEGA328 it is 8 bit RISC controller RISC is nothing but reduced instruction set computing, the execution speed of RISC controller is more and it supports the pipelining. ATMEGA328 microcontroller is a open soure electronic board which supprots the hardware and software. This controller is easy to use and it has more flexible. Here we are using LCD for displaying the distance here

we are using a 16*2 LCD it has a 16 pins. Here we are using a RESET circuit the, RESET circuit this circuit is used for to run the program from starting onwards. The oscillation circuit is used for the timing, which generets continues electronic signal pulses. Here we are using a AUDIO PROCESSOR for giving the warning A signal to the blind people the warning signal is given from the speaker.

APR33A3 AUDIO PROCESSOR:

Audio playback board using APR33A3 IC for 8 channels of recording Total 11 minutes of recording time each channel(M0 to M7) having 1.3 minutes of recording time. Single chip, high quality voice recording and playback solution. User friendly and easy to use operation .Non-Volatile flash memory technology, no battery backup required Audio output to drive a speaker or audio out for public address system. Can record voice with the help of on-board microphone. we can use 8 channels(M0 TO M7)each channel having 1.3 minutes recording length. Onboard MIC will automatically be used for recording Supply voltage: 12v AC/DC Switch on the board power LED(LD1) will On the Put the jumper in the board JP1(REC) Section.

While in record mode select J5 (M0-M7) to select a channel to record the message. Let us assume we want to record message in channel M0, Connect M0 to GND (IN Board J3-VCC, GND).Now whatever we speak will be captured by MIC and recorded, status LED(LD2) will on in record mode indicating that chip is currently recording. Once duration is full the LED(LD2) will off means that segment is full. Now you can disconnect the GND Connection from M0, if before the duration is this connection is removed, then that many seconds are recorded and rest duration is kept empty. Connect the speaker to the board J4 Speaker section .Now let us check what we recorded. Remove jumper from JP1(REC) Section Now connect the MO(J5)to GND(J3) Section, status LED(LD2) will ON till the recorded sound play in the speaker. This procedure same for the remaining channels also&#39.

INTERFACING APR33A3 WITH ARDUINO:

APR33A3 is a voice recording IC which can store up to 8 messages with a total recording time of 11mins.The datasheet very well explains the minimum components needed to make a voice recorder and playback circuit. However, making the circuit can be little challenging. You need to have a good knowledge of filters and microphone biasing circuits to completely eliminate the noise and pickup only the bandwidth of human voice signals. Well, that part is from analog circuits and filters .For interfacing the circuit with Arduino, you just need to use control signals from the digital pins of Arduino. Suppose you want to record a message in the IC then apply a low signal from Arduino to the record pin of the IC and it will start recording. You can set a timer in the Arduino to keep the pin low for a given amount of time. make sure that you make the pin high again so that it stops recording.

ULTRASONIC SENSOR:
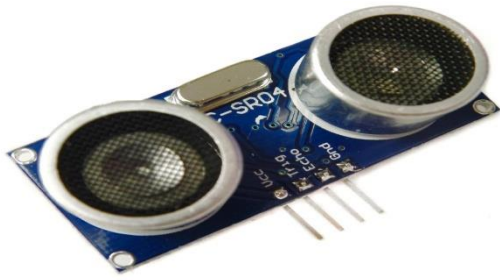
The ultrasonic sensor transmitts a high frequency sound pulse and then calculates the time to receive the signal of the sound echo to reflect back. the ultrasonic sensorha two circles one of them acts as the transmitter it transmitts the ultrasonic wave. The other one acts as receiver it receives the echoed sond signal the sensor is callibrated according to the speed of the sound in the air. it has foor pins VCC, trigger,echo,ground.

IV.CONCLUSION:

In this paper we have presented a obstacle detection for the blind people using glasses. The developed system is an embedded system that is part of obstacle detection for blind people. The main objective main objective of this project is to provide safety for blind people for from obstacles has been full filled with the use of development board ARDUINO . this device ensures safety for the blind people while walking. The device is to be carried by blind and when the device senses any obstacle it gives the massage through AUDIO PROCESSOR and accordingly he can move. The entire design is build on the concept of embedded system and ARDUINO microcontroller is used which monitors the components. In future we can use this system along with the navigation system so that the blind person can drive the car. The system can be used with low power consumption and automated operation.

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1) Mr.D .SRINIVASA RAO, working as Assistant Professor in ECE Department in Satya Institute of

Technology And management.

2) R.SWATHI(15B61A0470)

3) Y.D. SRAVANI(15B61A0483)

4) D.SIREESHA(15B61A0422)

5) N.SAI NITHIN(15B610454) pursuing B.Tech in ECE in Satya Institute Of Technology And

Management ,Vizianagaram