
THIRD EYE FOR BLIND ULTRASONIC VIBRATOR GLOVES

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ABSTRACT

Visually impaired people often rely on external assistance that can be provided by humans, trained dogs, or specialized electronic devices as a support system for decision making. The main problem with blind people is how to get where they want to go. Such people need the help of people with good eyesight. As described by WHO, 10% of visually impaired people have no functional vision to help them move around safely and without assistance. This project is designed to help the visually impaired overcome visual sense deficits, using other senses such as sound and touch. The system uses the Atmega-328 microcontroller, which is a high performance 8-bit AVR RISC based microcontroller. The system uses the HC-SR04, an ultrasonic range finder distance sensor module, to sense distance. The sensor module is designed to measure distance using the principle of sonar or radar using ultrasonic wave to determine the distance to an object.

I. INTRODUCTION

The Third Eye for the Blind is a wearable device that can help visually impaired people move themselves in an indoor environment. This reduces the work on those who are assisting the visually impaired. Apart from this, it also provides an opportunity to visually impaired persons to move freely from one place to another. Technology is developing a lot these days and people are showing interest in them. This device is especially helpful when the person himself wants to move around a house or an indoor place. In this device, the obstacle distance is determined using an ultrasonic module and a microcontroller. The obstacle distance is measured and notified to the visually impaired person in the form of a buzzer and vibration. One can move in other directions and avoid collision by using it. Instead of using the entire Arduino board in this project only microcontrollers were used, so the size of the device is reduced to a great extent and the cost is also reduced. The end result of the work will be a glove with a wearable band attached to the glove, in which all components are connected on a PCB, which operates with high accuracy and reliability.

II. LITERATURE SURVEY

[1] In the last few years or we can say that in the last decades, research has been done for new equipment and technologies so that there is a good and safe way to detect obstacles for blind or visually impaired people and to warn or alert them. To create reliable and efficient systems. at places of danger or obstacles. There are some systems that have some limitations and clampdowns. The Navbelt, an obstacle avoidance wearable portable computer intended only for indoor navigation, was developed. The Navbelt was equipped with two modes, the first one translating system information into audio in separate sounds. One for the direction of travel of the sound free and the other for the blocked, it was difficult for a person to differentiate the sounds. The second problem was that the system would not know the transient state of the user. There have been repeated innovations in wearable technologies for the blind.

III. PROPOSED SYSTEM

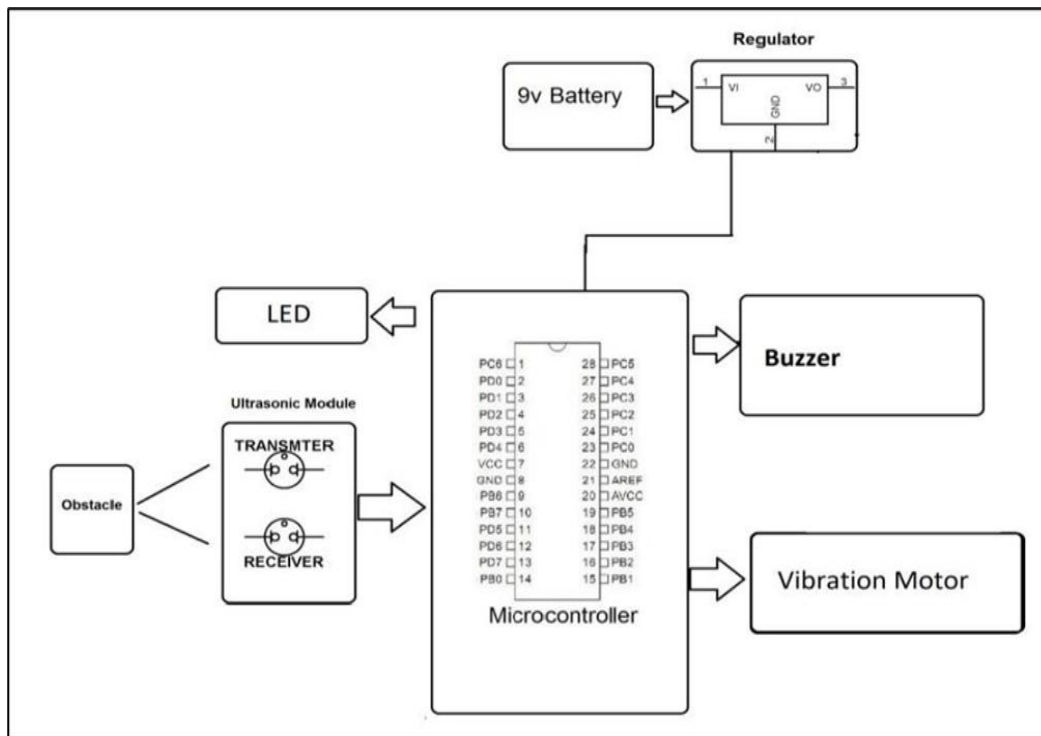


Fig 1: Block Daigram of the circuit.

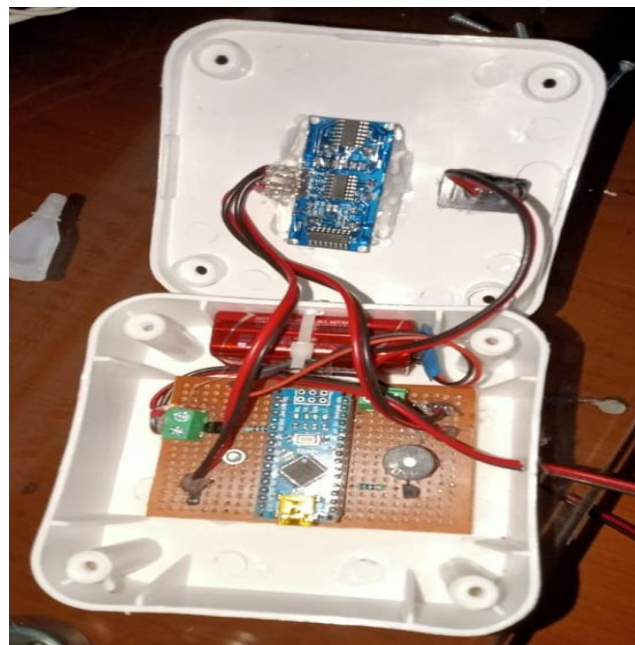


Fig 2: Our Proposed System with all hardware's connected

IV. HARDWARE

ARDUINO NANO

The Arduino Nano is a small complete and bread-board friendly based on AT mega 328. It works with a mini- B USB Cable instead of standard one. The Arduino Nano can be programmed with the Arduino software.

Atmega 328P

Atmel is a 32K 8-bit microcontroller based on the Atmega328P AVR architecture. Several instructions are executed in one clock cycle which provides a throughput of about 20 MIPS at 20 MHz. The ATMEGA328-PU comes in a PDIP 28 pin package and is suitable for use on our 28 pin AVR development board.

433MHz RF transmitter and receiver

433Mhz Wireless Module is one of the cheap and easy-to-use modules for all wireless projects. These modules can only be used in pairs and only simplex communication is possible.

Vibration Motor

An Eccentric Rotating Mass Vibration Motor, or ERM, also known as a pager motor, is a DC motor with an offset (non-symmetric) mass attached to a shaft. As the ERM rotates, the centripetal force of the offset mass is asymmetric, resulting in a net centrifugal force, and this causes displacement of the motor.

Ultrasonic Sensor HC-SR04

Ultrasonic sensors provide a very low-cost and easy method of distance measurement. This sensor is perfect for any number of applications that require you to measure between moving or stationary objects.

Buzzer

A buzzer consists of a number of switches or sensors connected to a control unit that determine whether and which button was pushed or a preset time has elapsed, and usually emits the appropriate button or a light on the control panel. illuminates, and sounds as a warning a continuous or intermittent buzzing or beeping sound.

Voltage Regulator 7805

The LM78XX/LM78XXA series of three-terminal positive regulators are available in TO220/D-PAK packages and with a number of fixed output voltages, making them useful in a wide range of applications. Each type employs internal current limiting, thermal shutdown and safe operation area protection, making it essentially indestructible.

Push Button

A push-button (also spelled pushbutton) or simply button is a simple switch mechanism for controlling some aspect of a machine or process. Buttons are usually made of a rigid material, usually plastic or metal.

V. SOFTWARE

Arduino compiler

- IDE is an open-source software, designed by Arduino.cc and mainly used for writing, compiling and uploading code in almost all Arduino modules.
- This is an official Arduino software, which makes code compilation so easy that even a normal person with no prior technical knowledge can get their feet wet with the learning process.
- The core code, also known as the sketch, built on the IDE platform will eventually generate a hex file which is then transferred and uploaded to the controller on the board.
- This environment supports both C and C++ languages.

Language C

C is a procedural programming language. It was initially developed by Dennis Ritchie in the year 1972. It was developed primarily as a systems programming language for writing an operating system. The main features of the C language include low-level memory access, a simple set of keywords, and a clean style, which make the C language suitable for systems programming such as operating system or compiler development.

VI. RESULTS AND DISCUSSION



Discussion

It is noteworthy at this point that the objective of this study, which is the design and implementation of an ultrasonic vibrator glove for the blind, has been fully achieved. The glove serves as a basic platform for the coming generation of more assistive devices to help visually impaired people navigate both indoors and outdoors safely. It is effective and economical. It gives good results in detecting obstacles in the way of the user within a range of three meters. The system provides robust solutions for navigation with low cost, reliable, portable, low power consumption and apparent short response time.

VII. CONCLUSION

Blind people need constant support to perform their daily tasks. Third Eye for the Blind is a device that helps the visually impaired to work independently in an indoor environment. It is developed to help the visually impaired overcome visual knowledge deficits by using other senses such as sound and touch. The combination of a microcontroller Atmega 328P and an ultrasonic sensor HC-SR04 is used as the input to calculate the distance of the obstacle from the blind person and another combination of vibrator motor and buzzer is used to inform the person about the obstacle is used to indicate.

VIII. REFERENCES

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