

**A Minor Project Report on**

**ULTRASONIC GLASSES FOR BLIND PEOPLE USING ARDUINO**

**Submitted by**

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## M.KUMARASAMY COLLEGE Of ENGINEERING

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## BONAFIDE CERTIFICATE

Certified that this Report titled **“ULTRASONIC GLASSES FOR BLIND PEOPLE USING ARDUINO”** is the bonafide work of **BARATHKUMAR R (927621BEE013), JANANI S (927621BEE051), NAVEENA A (927621BEE306)** who carried out the work during the academic year (2022-2023) under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other project report.

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## DECLARATION

We affirm that the Minor Project report titled “**ULTRASONIC GLASSES FOR BLIND PEOPLE USING ARDUINO**” being submitted in partial fulfillment for the award of **Bachelor of Engineering in Electrical and Electronics Engineering** is the original work carried out by us.

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* To emerge as a leader among the top institutions in the field of technical education

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* Create a diverse, fully-engaged, learner - centric campus environment to provide Quality education to the students.
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* **PSO3:** Design, Develop and implement methods and concepts to facilitate solutions for electrical and electronics engineering related real world problems.

|  |  |
| --- | --- |
| **Abstract (Key Words)** | **Mapping of POs and PSOs** |
| **Arduino Board, Ultrasonic Sensors,**  **Laser Module, Speaker, Connecting Wires.** | PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8 PO9, PO10, PO11, PO12, PSO1,PSO2,PSO3. |

[**ACKNOWLEDGEMENT**](https://www.google.com/search?rlz=1C1CHBD_enIN820IN820&q=ACKNOWLEDGEMENT&spell=1&sa=X&ved=0ahUKEwj99az1_ZXhAhVN63MBHRVODE4QkeECCCkoAA&cshid=1553265789884876)

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**ABSTRACT**

These “Smart Glasses” are designed to help the blind people. It is used to walk for helping them navigate the ground. To make a prototype of glasses which can be able to detect the objects in front of them, and tell the user by speaking. This smart glasses can make a huge impact in the lives of blind people. These Ultrasonic Smart Glasses for Blind people is a portable device, easy to use, light weight, user friendly and cheap in price. These glasses could easily guide the blind people and help them avoid obstacles.

**CHAPTER 1**

**INTRODUCTION**

* 1. **INTRODUCTION**

There are multiple smart accessories such as smart glasses, smartwatches, etc. Available in the market. But all of them are built for us. There is a significant lack of technology to aid the physically challenged. I wanted to build something that is useful for visually challenged people. So I designed low-cost smart glass that can be used to help the visually impaired. The circuit board used in this project is designed in the form of a spectacle, which can be worn by a visually impaired person.

* 1. **SCOPE OF WORK**

There are multiple smart accessories such as smart glasses, smartwatches, etc. Available in the market. But all of them are built for us. There is a significant lack of technology to aid the physically challenged. I wanted to build something that is useful for visually challenged people. So I designed low-cost smart glass that can be used to help the visually impaired. The circuit board used in this project is designed in the form of a spectacle, which can be worn by a visually impaired person. By using this product, they will become independent and will not depend on any one else for their daily life activity which they required to depend on all time.

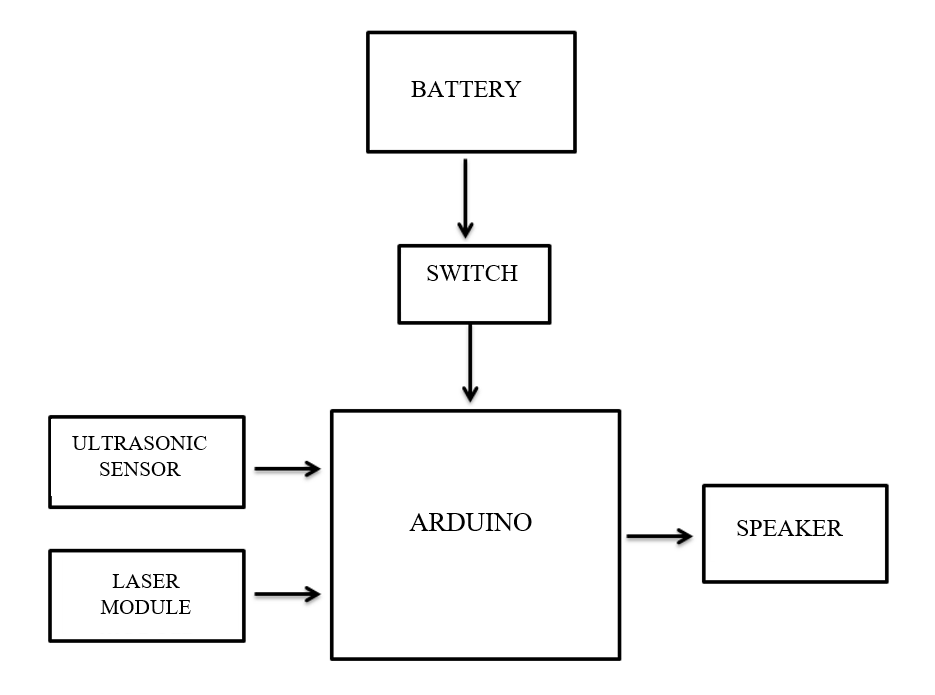
**CHAPTER 2**

**SYSTEM MODULE**

**2.1 Introduction**

The level of gas is can’t be known in LPG cylinder, so that we can’t pre-book for LPG cylinder. And the other problem facing with this LYG cylinder is gas leakage.

**2.2 Block diagram**



**Figure 2.1 Block Diagram**

Power supply

Mobile phone

Wi-Fi module

**2.3 Description of Various blocks**

The 9V Battery Supplies Power to the Hardware which is connected to the Arduino. The Arduino has Programmed which gives Output. The Laser Module and Ultrasonic Sensors gets the Input. Then the Output is Produced by the Speaker.

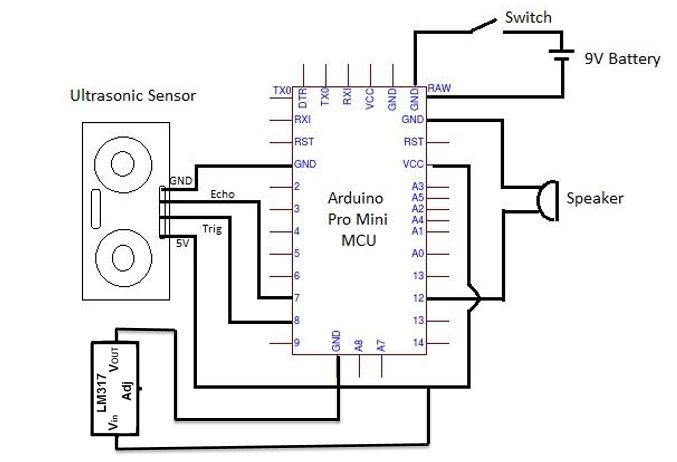
**CHAPTER 3**

**HARDWARE DESCRIPTION**

**3.1 Introduction**

The Principal objects are Ultrasonic Sensor and Laser Module. The Arduino gets the input and produces the Output. The Arduino measures the Distance and produces the Output.

**3.2 Circuit Diagram**



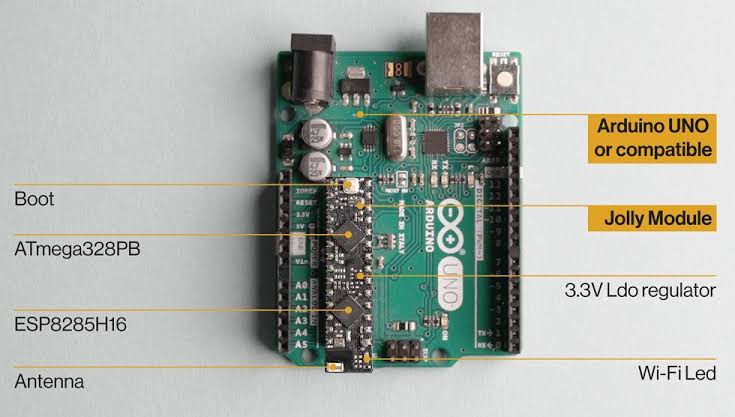
**Figure 3.1 Hardware Circuit Diagram**

**3.3 Description of Components**

|  |  |  |
| --- | --- | --- |
| **S.No** | **Name of the Components** | **Specification** |
| 01 | Arduino | UNO R3 SMD |
| 02 | Ultrasonic Sensor | HC-SR04 (upto 4 meter) |
| 03 | Laser Module | 650 nm |
| 04 | Speaker | - |
| 05 | Battery | 9V |

**3.3.1 ARDUINO UNO:**

Arduino UNO is open-source microcontroller board based on the AT mega 328P.We can directly connect the board to the computer via a USB cable which performs a function of supplying the power as well as acting as a serial port.



**Figure 3.2 Arduino**

**3.3.2 ULTRASONIC SENSORS:**

The purpose of ultrasonic sensors is to measure the distance using ultrasonic waves. Ultrasonic sensors emit the ultrasonic waves and receive back the reflected. So, by this time the ultrasonic sensor will measure the distance to the object. It can sense from 2-400 cm. The distance should be from 40 cm to 150 cm and that is because this is the required ranging capture a clear image.



**Figure 3.3 Ultrasonic Sensor**

**3.3.3 SPEAKERS:**

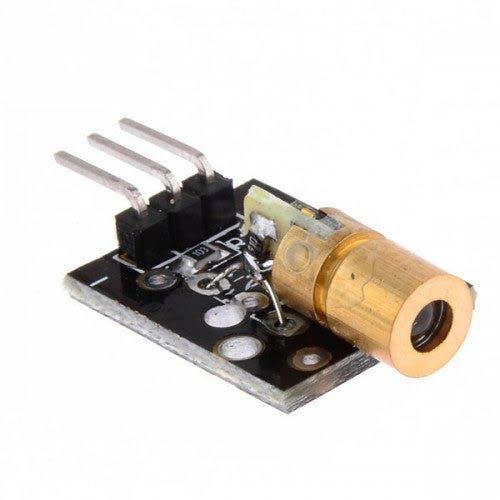
A Speaker is one type of electroacoustic transducer that is a device that converts an electrical audio signal into corresponding sound. An audio signal is amplified electrically to the power level capable.



**Figure 3.4 Speakers**

**3.3.4 LASER MODULE:**

The laser beam signal is used in this system a circuit is designed which will detect this laser beam and will calculate the intensity of the signal and distance. A TOF(time-of-flight) laser range finder consists of a laser transmitter, one or two receivers and timing discriminators, and a time measuring unit. In the transmitter usually avalanche transistors are used for generating the short (3–10 ns) and powerful (20–100 A) current pulses for the semiconductor laser

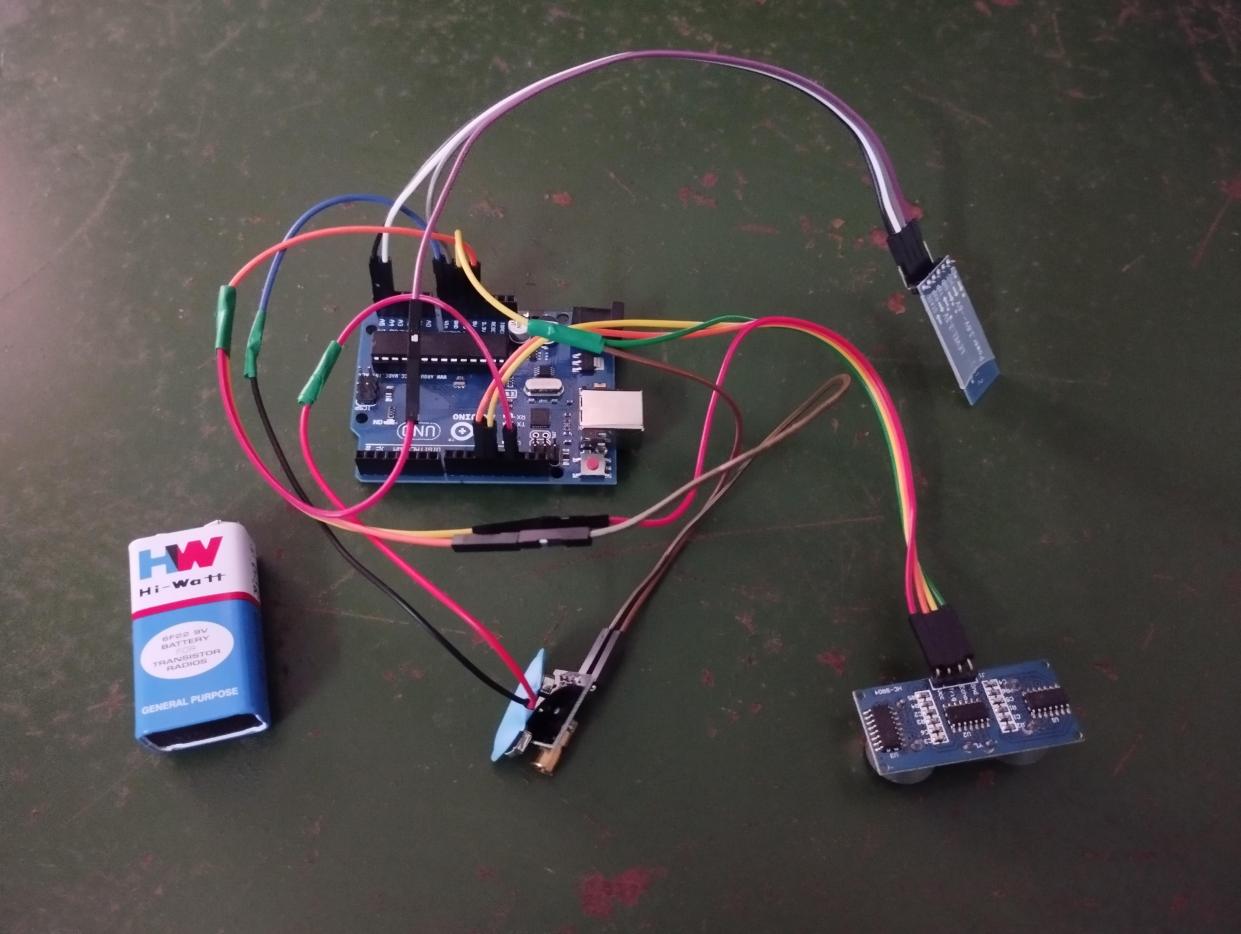


**Figure 3.5 Laser Module**

**CHAPTER 4**

**RESULT AND DISCUSSION**

**4.1 Hardware Implementation**



**Figure 4.1 Project Hardware**

* 1. **Working of Project Model**

First The Switch is turned on then the power supply is given to the circuit. Next the power given to the Arduino then the Arduino takes input from the Ultrasonic Sensor and Laser Module (This are used to measure the distance). The Ultrasonic Sensor and Laser Module given input to the Arduino then its takes 5secs for complete analysis of the distance and fix the distance. After than User moving to the target location between that if there is a distractions like obstacles and pits it will detect and communicate to the User. If there is an obstacle then the distance will reduce then it finds there is an obstacle. If there is a pit then the distance will increase then it finds there is an pits. This input is given to the Arduino then produce Output in the Speaker and helps the User to reach the target location.

* 1. **Result**

The Gadget is used to measure the distance to get input and the Arduino gives the output signal to the Speaker which is the Audio output. The Audio output to the Visually Challenged people is if the distance is low it takes as the obstacle then it gives output as an “There is an Obstacles” and then tells which direction to move and if the distance is high it takes as there is an pits then it gives output as an “There is an Hole” and then tells which direction to move. This the Audio output which is easily understandable to the Visually Challenged People.

**CHAPTER 5**

**CONCLUSION AND FUTURE SCOPE**

**5.1 CONCLUSION**

This smart glass implemented for blind person who are unable to see any object so this person can aware about accident. In future it can be implemented as a image recognization where sensor give information user about the object.

* 1. **APPLICATION**

Their small size makes it easy to integrate into projects. Ultrasonics can easily integrate with any type of controller. Their high frequency, sensitivity, and power make it easy to detect objects. They have greater accuracy than many other methods at measuring thickness and depth of a parallel surface. Ultrasonics are easy to use and not dangerous during operation

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