LOW COST ULTRASONIC SMART GLASSES FOR BLIND

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Abstract— This device includes a pair of glasses and an obstacle detection module fitted in it in the center, a processing unit, an output device i.e. a beeping component, and a power supply. The Obstacle detection module and the output device is connected to the processing unit. The power supply is used to supply power to the central processing unit. The obstacle detection module basically consists of a ultrasonic sensor, processing unit consist of a control module and the output unit consists of a buzzer. The control unit controls the ultrasonic sensors and get the information of the obstacle present in front of the man and processes the information and sends the output through the buzzer accordingly. 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.

*Keywords— Smart Glasses; Ultrasonic Sensors; Blind People Introduction (*Heading 1*)*

I. INTRODUCTION

In this protocol when find object but distance greater than 3 miter then it not sense, if distance less than 300 cm then it sense and create sound. The same approach is also used in many applications. One is Giving blind people the great accessibility to their environment is the objective of the smart glass system[1]. The key function of the another system is to enable the user in perceiving social signals during a natural dyadic conversation[2].The third system is a design, fabrication, assembly, and characterization of a fully-integrated single-chip glass BGA package at 40/80 μm off-chip I/O pitch with multilayered wiring and through-package-vias (TPVs) at 160 μm pitch[3]. The ClimaWin project's main goals are to improve both indoor air quality and the energy efficiency of new and refurbished buildings, through the use of novel green smart windows[4].Another one is an indoor navigation wearable system based on visual markers

recognition and ultrasonic obstacles perception used as an audio assistance for blind people[5].There was a solution for the blind people to walk safely by detecting obstacle and generating corresponding alert signal according to the distance of the obstacle[6]. The Microsoft Kinect camera enables a mobile robot to do essential tasks like localization and navigation [7].There is a design of a small portable electronic cane utilizing Polaroid's Ultrasonic Ranging Unit intended to supplement or replace the traditional long cane is presented [8]. An intelligent assist blind glass system, comprising a wireless transmission module, a high-definition camera, an infrared sensor, an eyeglass frame, mounting the cartridge [9].The next one is an embodiment of the present invention is a method for communicating navigation information on a physical environment to a user [10].An invention included .An electronic talking stick for the blind and more particularly to a stick which talks to instruct a blind man to walk [11].

A. Proposed Model

Blind as a special group in society, the needs of society to give them more care and attention, so that they are better able to live independently. However, how safe walking blind life is the biggest problem. Traditional navigation device mostly blind cane, blind by tapping the ground or walking around the object to determine the direction, the structure is simple, single function, easy to use, but the secondary effect is not very obvious, in fact, will encounter many problems when using the blind such as poor road conditions, uneven, hanging in front of obstacles, ordinary cane can not be proven accurate, such a serious impact on the safety of blind travelers.

A smart ultrasonic glasses for blind people comprises of a pair of wearable glasses, ultrasonic sensors for detection of obstacles in the way of blind man, a buzzer to give the sound as per the direction of the obstacle from the man, a central processing unit comprising of Arduino NANO which takes the

information from the sensor about the obstacle distance and processes the information according to the coding done and sends the output through the buzzer, power supply is given to the central unit which distributes the power to different components. The sensor is mounted in between of the top bar and bridge present in optical glasses as shown in the figure. All the components are connected to the central unit using single strand copper wires and the power is given to the central unit using a USB cable.

The best sensors that can be used will be ultrasonic sensors because ultrasound is a strong point, the energy consumption of slow wave propagating in the medium relatively far distance. Therefore often it is used to measure the distance over big length. At the same time, ultrasound for the object in the dark, dust, smoke, electromagnetic interference, toxic and other harsh environments have a certain ability to adapt, with a wide range of applications.

The ultrasonic sensor is fixed at a perpendicular from the glasses.

According to claim 1, as the blind man goes closer to the obstacle the distance sent by the sensors to the central unit will decrease. Hence the beeping of the buzzer will take shorter intervals and hence the beeping will be faster. But as the man will go far away the beeping will take long intervals and hence decrease.

At present, many of the navigation device using seeing-eye guide dogs, guide dogs by seeing some extent, although the trip to ensure the safety of the blind. But there are still some problems, training a guide dog larger difficulty, generally have to spend 3-6 months, training a skilled guide dogs will need to spend about two years, with dog the daily life of consumer spending, the cost it takes to reach the million, while the limited life cycle of guide dogs.

According to claim 5, the ultrasonic glasses according to specifications mentioned in claim 1 are very cheap resulting in a very cheap device affordable by all.

These smart glasses are very easy to use and very simple to understand. If a blind uses it for 2-3 times then he/she will understand the working and can handle it easily

II. PROPOSED PROTOCOL

In this protocol sensor find out the object from distance, if it found with in300 miter then it give sound and aware the user. Also if it more nearer it give more sound effect.
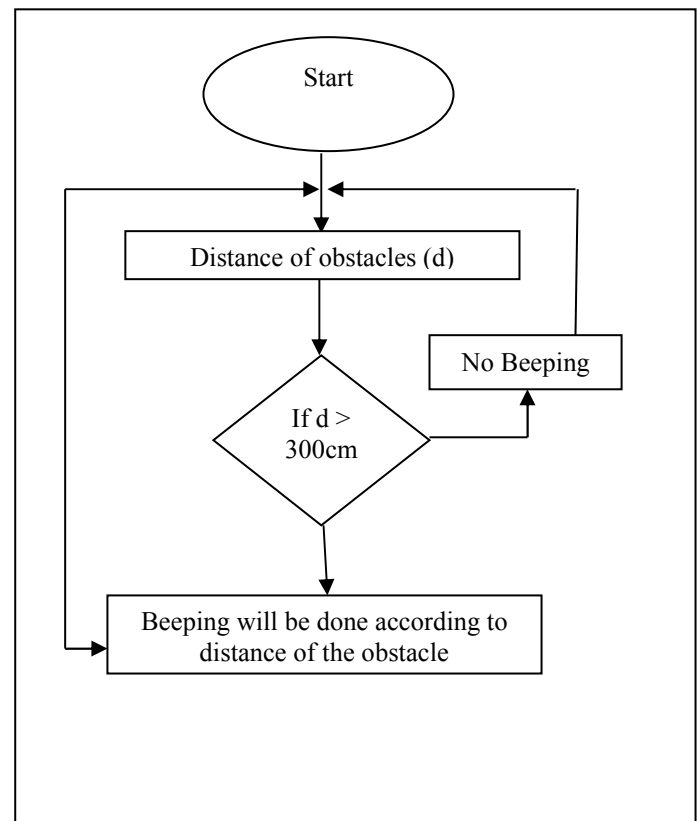
A. Field of Invention:

There has always been a need for the person with disability to live a normal life and get opportunity to excel in the world. There have been many inventions so far to bring such peoples on the same grounds like others. Some have failed but some have made it well. The science and technology in today's world has always tried to serve the mankind in the health and safety field and same is the motto of this project.

B. Description of the invention:

This device helps the blind people to easily feel the obstacles in front of them and can save them from accidents. They could buy this product at a very cheap rate. With the help of E-Wastes this project has been built. The blind people could become independent. These "GLASSES" are designed for blind people. The concept of obstacle detection by SONAR 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 check whether the distance of obstacle is less than 3m, if yes then we send the output through a buzzer. The beeping frequency of the buzzer is indirectly proportional to the distance of the obstacle from human. The other products which are in the market with same purpose and in the same field are not so cheap in costing and user-friendly. Also no use of any high level technology is used here just simple arduino coding with sonar sensor and a buzzer the whole project is built-up.

This device is very easy to use and very simple to understand this makes it user-friendly. Also it is very cheap thus affordable.

Additional Details:

● Light weight and portable device.

● Easy to use, user friendly.

● Cheap in price.

Diagram and Description:

The Obstacle detection module and the output device is connected to the processing unit. The power supply is used to supply power to the central processing unit. The obstacle detection module basically consists of a ultrasonic sensor, processing unit consist of a control module and the output unit consists of a buzzer. The control unit controls the ultrasonic sensors and get the information of the obstacle present in front of the man and processes the information and sends the output through the buzzer accordingly.

III. RESULT ANALYSIS

In this protocol when find object but distance greater than 3 miter then it not sense, if distance less than 300 cm then it sense and create sound. When the distance between object and user are closer then sound effect is high gradually.
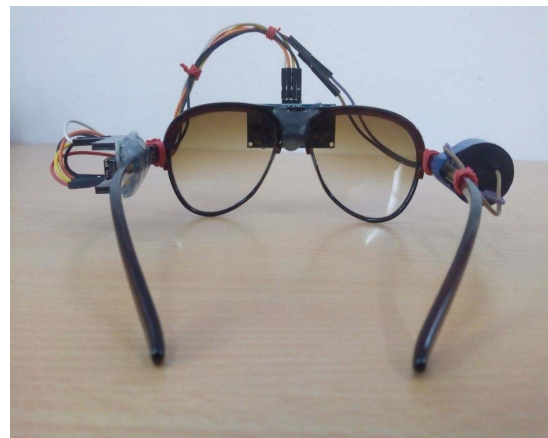

Fig. 1: Sensor Implementation
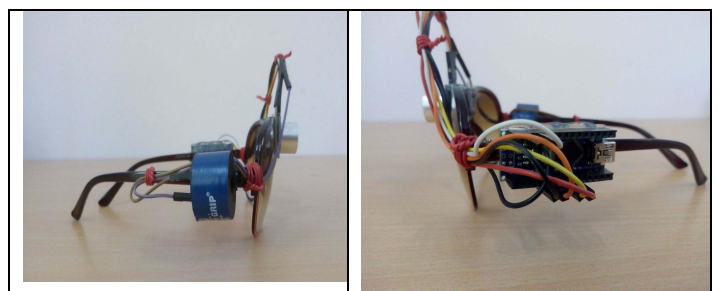

Fig. 2: Smart Glass with Sensor Implementation

Fig 3: Internal circuit diagram for Smart Glass

Here this smart glass can detect the object by sensor and make alrt the user. Figure 1,2 &3 are shows the internal architecture of smart glass.

IV. 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 recognition where sensor give information user about the object.

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