

SMART HAND FOR BLIND PEOPLE

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Abstract— In order to help the visually challenged people, a study that helps those people to walk more confidently is proposed. The study hypothesizes smart walking gloves that alerts visually-impaired people over obstacles, thus this device could help them in walking with less accident. It outlines a better navigational tool for the visually impaired. It consists of a simple walking system equipped with sensors to give information about the environment. The overall aim of the device is to provide a convenient and safe method for the blind to overcome their difficulties in daily life. Here the device consists of ultrasonic sensors, receivers, vibrators, LCD and batteries.

Keywords - ARDUINO UNO R3, LCD display.

I. INTRODUCTION

Nowadays, technology and human life cannot be separated as it has become the phenomenon of the world. But, how can technology help people that are visually impaired? Blind people usually can estimate the obstacle in front them without knowing the actual distance of the obstacle from them. Mobility for the blind people can be defined as mobility to move with safety and ease through the environment without relying on others. The cane provides limited preview for the user and as a result, the user has to be more careful to walk and mobile very slowly. As for the guide dogs, the training and coordinating the dogs with blind people is a difficult task and the results are minimal.

In order to overcome this problem, research on the assistant devices for the blind has been done by many people to help reduce the limited ability of the blind. The assistive glove for the blind is a device that can help visually impaired to facilitate movement and to perform daily activities without relying too much on others. The glove with the integration of ultrasonic sensors, HC-SR04, ArduinoUNO ATmega328 microcontroller will help blind to facilitate movement and give alert to users if there are obstacles in front of them in the range 75 cm and below.

II. LITERATURE SURVEY

To make the System more efficient there are various systems that relate to the development of projects related to the blind persons. These literature surveys help us to overcome various design and program related improvements.

“In today’s world communication has become so easy due to integration of communication technologies with the internet. However the visually challenged people find it very difficult to utilize this technology because of the fact that using them requires visual perception”. Even though much new advancement have been implemented to help them use the computers efficiently no naïve user who is visually challenged can use this technology as efficiently as a normal naïve user can do that is unlike normal users they require some practice for using the available technologies. This paper aims at developing a technology to help the blind through voice module, buzzer and along with vibration motor.

Many researchers are working to assist visually impaired people in different ways like voice based assistance, ultrasonic based assistance, camera based assistance and in some advance way researchers are trying to give transplantation of real eyes with robotic eyes which can capable enough to plot the real image Over the patient retina using biomedical technologies. There are some limitations in the systems like obstacle detection but which could not see the obstacle but detection the object camera based cannot work properly in different colors so, that, the proposed system is a fusion of color sensing sensors And the obstacle sensor along with the voice based assistance.

III. EXISTING SYSTEM

The blind Cane is one of the assisting tools for the visually-impaired and it is really important. One of the main problems of the visually-impaired, is that most of these people have lost their physical integrity. Also, they do not have confidence in themselves . It was intended at testing the visually- impaired to utilize their brain to identify a set of objects.

This can also be applied to different situations. When the visually-impaired walk into a new environment, they will find it difficult to memorize the locations of the object or obstacles. These examples demonstrate the difficulties of visually-impaired people. The Guide Cane is designed to help the visually-impaired users navigate safely and quickly among obstacles and other hazards. Guide Cane is used like the widely the user holds the Guide Cane in front of the user while walking.

IV. PROPOSED SYSTEM

The concept of integration of systems is illustrated in figure 3.3, this is the concept of the project that shows the position of all the components which will be discussed in the next section. All the components were integrated with gloves and used by blind people. The overview of system show below

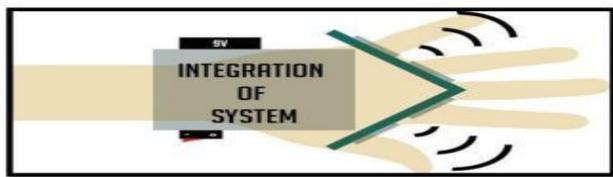


Fig 1. Overview of system

Ultrasonic sensor is used for the obstacle detection whenever the blind person faces an obstacle the ultrasonic sensor detects the obstacle and gives indication about. This thing is used to navigate without holding a stick .They can simply wear as a band or cloth and it can function very accurately and they need a little bit training to use.

Suppose if a blind person faces an obstacle the voice play back module give indication through voice in which side the obstacle present .If it is left side it gives voice as left obstacle similarly for right also and for the front a buzzer is used along with vibration motor the using vibration motor because in a crowd the if he can't listen the voice the vibration signal gives to have an obstacle .we considered the distance between person and obstacle is 75 cm.

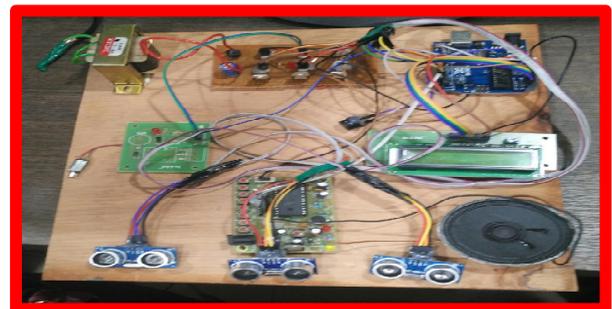


Fig 3. Practical implantation

VI. Conclusion

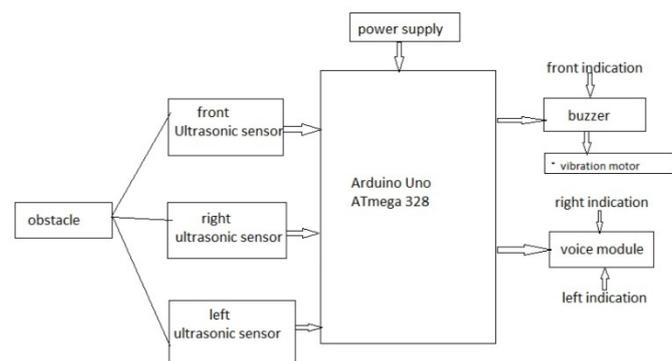


Fig 2. Block diagram

If the blind person faces the any obstacle the ultrasonic sensor detect obstacle and gives the indication about the obstacle through the voice ,Ultrasonic sensors plays an important role in the obstacle detecting .

An Ultrasonic sensor is a device that can measure the distance of an object by using the sound waves. It measure the distance by sending out an sound wave at a specific frequency and listening for that sound wave to back bounce. By recording the Elapsed time between the sound wave is being generated and the sound wave bounce back ,it is possible to calculate the distance between the sensor and object.

V. IMPLEMENTATION

In this paper, smart hand for blind people has been proposed.

Smart hand for the blind project is to help blind people walk and estimate the distance from obstacles. Main components for this project are Arduino UNO, Vibrator motor and ultrasonic sensor. Based on the experiment that has been conducted, there are few advantages and limitations of this project. One of the advantages of this project was the use of ultrasonic sensors. This sensor is very sensitive and will trigger faster when it detects obstacles. Besides that, the cost to develop this project was low and can be afforded by blind people. The limitation of this project was the ultrasonic sensor used can only detect the obstacles but cannot illustrate the shape of the obstacles. Furthermore, this assistive glove can only be used by blind people but not the blind and deaf people. Future improvement can be made to increase the performance of this project.

VII. REFERENCES

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