International Journal of Advance Research in Science and Engineering
Volume No.07, Special Issue No.01, April 2018
www.ijarse.com
IJARSE
ISSN: 2319-8354

SMART ASSISTIVE SHOES FOR BLIND PEOPLE

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ABSTRACT

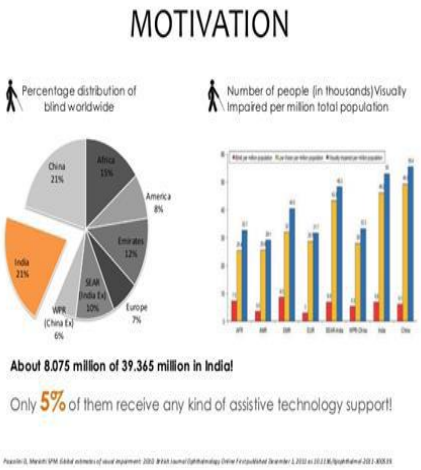
This paper presents an idea about dealing the problems faced by visually impaired individuals through assistive device in form of shoes. According to the WORLD HEALTH ORGANIZATION (WHO) survey in 2014 there is estimated 285 millions of people are visually impairment in which 37 millions of people are BLIND across the Globe over 15 millions of people are from INDIA. Where INDIA contributes to 21% of total blind population that's why most of the blind people dependent on other people for their activities. Hence, we are introducing a assistive shoe for blind people which will help them in their needed activities. The shoes will detect the nearby objects or obstacles and simultaneously send a message to the receiver in audio/vibration form. So it helps the visually impaired person to acquire the extra knowledge about the obstacles around them without any help or any guidance. It will make them more independent because there should be an "EYE" for an "I".

Index Terms-Ultrasonic Sensors, Arduino, Recordable chip, Vibrator/Motor.

I.INTRODUCTION

In India most of the people are facing the problem of visual impairment which are preventing them to become independent. where in unknown environment it becomes a real challenge for them to loco mote. Where obstacles passing away from the visually impaired person, so that the blind people have to develop their hearing sense or any guide to localize him to the new atmosphere. Where they uses cane, trained dog or other assistive electronics devices for movement. The purpose of the paper is to design a smart assistive shoe for visually impaired people so they get rid of the cane and make them more independent. This will also help them to survive freely in this fast-paced life-now-a day.

II.LITERATURE SURVEY



Where from the fig. 1 it shows in India there are world 21% blind people present and the counting is 15 million of people across the globe. Where the fig. 1 also shows that there is only 5% people who receives any kind of assistive things they want. So this is the small step to help the needy people. This shoe has an ergonomic design and an embedded electronic system. This system may be classified the cheapest assistive material for blind people.

III.PROPOSED DESIGN

In order to overcome the difficulties in the existing method and to provide the cost effective and user friendly system for blind navigation, the following design is proposed. Fig.1 shows that this project mainly consist on four parts namely Ultrasonic sensors, Microcontroller, Vibrating motor, Power supply.

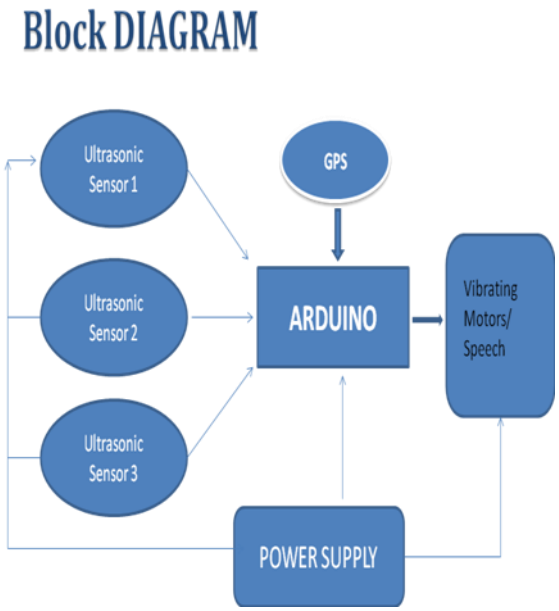


Fig. 1 Block diagram of Assistive Device

IV.HARDWARE DESCRIPTION

This shoe contains three ultrasonic sensors, one Arduino, one recordable chip and vibrator/motor. Where the ultrasonic sensor range is 3m wide if there is any obstacles/material present in 3m range sensor will provide an signal to the person in the form of vibration or audio signal. This was designed to detect the obstacles around them and give them the tactile feedback so they can get rid of the obstacles and choose the right path to move on. The shoe battery life is 5 hours. The shoes were use to guide the blind people, which is fitted with array of ultrasonic sensor around the sole. Arduino microcontroller keeps polling the ultrasonic sensor and provide the feedback via vibrator, This information is processed and fed to the user via one of his other working senses – here it has used the sense of touch. They've used the Arduino Mega for processing. The reason of using

microcontroller is because the microcontroller has the ability to store and run unique programs make it extremely versatile.

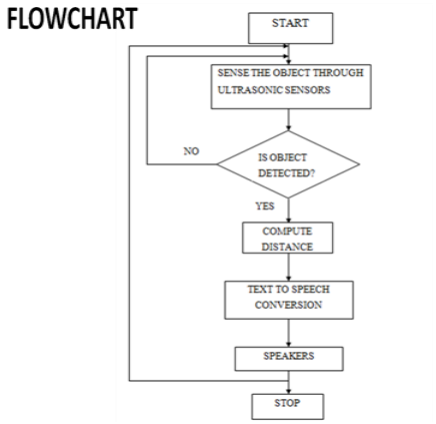
1. SOFTWARE USED

Arduino for sensor testing

2. HARDWARE IMPLEMENTATION

To implement, the ultrasonic sensors, Arduino microcontroller and SD card are used. Based on signals, decision is made in Arduino to manage and give timely signals. The input string is from the ultrasonic sensors which generate high frequency sound waves and evaluate the echo which is received back by the sensor. Sensors calculate the time interval between sending the signal and receiving the echo to determine the distance to an object. Ultrasonic sensor can measure distances in centimeters and inches.

3. FLOWCHART DESIGN



V.CONCLUSION

It has been observed that developed support system- is accurate in detecting the obstacle and alerting the visually impaired person find their way bypassing every obstacle that comes on their way to the destination. The ultrasonic sensor has been fully utilized in order to advance the mobility of the blind and visual impaired people in safe and independent way. This system does not require a huge device to be hold for a long distance, and it also does not require any special training. This system also resolves limitations that are related to the most of the movement problems that may influence the blind people in their environment.

Fig 2-Sensor is ON when the vehicle is coming on the way.

Here in the above Fig 2,the sensor will be turned ON when the vehicle will come in the path of the Blind Person and the shoes will be vibrated.

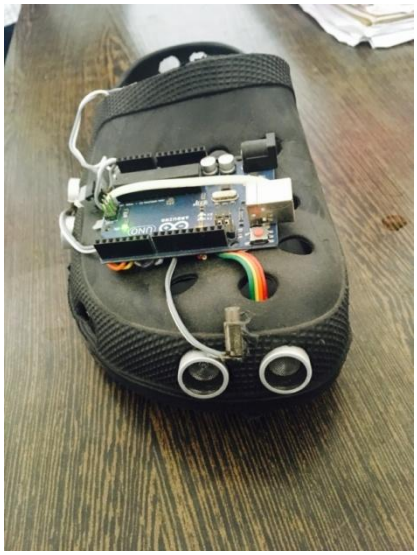


Fig 3-When the sensor is OFF

In the above Fig 3 the sensor will remain OFF since no vehicle is found on the way.

Fig 4

Here in this Fig 4 the shoe will vibrate since the vehicle coming from side

VI.ADVANTAGES

- Low design time.
- Low production cost.
- This system is applicable for both the indoor and outdoor environment.
- Setting the destination is very easy.

- It is dynamic system.
- Less space.

VII.FUTURE SCOPE

Future work will be focused on enhancing the performance of the system and reducing the load on the user by adding the camera to guide the blind exactly. Images acquired by using web camera and NI-smart cameras helps in identification of objects as well as scans the entire instances for the presence of number of objects in the path of the blind person. It can also detect the material and shape of the object. Matching percentage has to be nearly all the time correct as there no chance for correction for a blind person if it is to be trusted and reliable one. The principles of mono pulse radar can be utilized for determining long range target objects. The other scope may include a new concept of optimum and safe path detection based on neural networks for a blind person.

REFRENCES

[1]. Amjed S. Al-Fahoum, Heba B. Al-Hmoud, and Ausaila A. Al-Fraihat, "A Smart Infrared Microcontroller-Based Blind Guidance System", Hindawi Transactions on Active and Passive Electronic Components,Vol.3, No.2, pp.1-7, June 2013.

[2]. Harshad Girish Lele, Viten Vilas Lonkar, Varun Vasant Marathe and Mrunmayi Mohan Modak, "Electronic Path Guidance for Visually Impaired People", The International Journal Of Engineering And Science (IJES), Vol.2, No.4, pp.9-12, April 2013.

[3]. Pooja Sharma, Mrs. Shimi S. L. and Dr. S.Chatterji, "Design of microcontroller based Virtual Eye for the Blind", International Journal of Scientific Research Engineering & Technology (IJSRET), Vol.3, No.8, pp.1137-1142, November 2014.

[4]. Pooja Sharma, Mrs. Shimi S. L. and Dr. S.Chatterji, "A Review on Obstacle Detection and Vision", International Journal of Engineering Sciences and Research Technology", Vol.4, No.1, pp. 1-11, January 2015.

[5]. Naseer Muhammad and Engr.Qazi Waqar Ali, "Design of Intelligent Stick Based on Microcontroller with GPS Using Speech IC", International Journal of Electrical and Computer Engineering (IJECE) Vol.2, No.6, pp. 781~784 , December 2012.

[6]. K.Chandana and G.R.Hemantha, "Navigation for the Blind Using GPS along with Portable Camera Based Real Time Monitoring", SSRG International Journal of Electronics and Communication Engineering (SSRG-IJECE), Vol.1 No.8, pp. 46-50, Oct 2014.

[7]. M. Naveen Kumar and K. Usha, "Voice Based Guidance and
Location Indication System for the Blind Using GSM, GPS and Optical Device Indicator", International Journal of Engineering Trends and Technology (IJETT), Vol.4 No.7, pp. 3083-3085, July 2013.