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Arduino Based Audio Notifying Blind Stick Using Vibrator, Ultrasonic.

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ABSTRACT: This project describes ultrasonic blind walking stick with the use of arduino. According to WHO, 30 million peoples are permanently blind and 285 billion peoples with vision impairment . If u notice them , you can very well know about it they can't walk without the help of other. One has to ask guidance to reach their destination. They have to face more struggles in their life daily life. Using this blind stick , a
person can walk more confidently. This stick detects the object in front of the person and give response to the user either by vibrating or through command. So, the person can walk without any fear. This device will be best solution to overcome their difficulties .

KEYWORDS: Arduino, Ultrasonic sensor, Vibrator, Light sensor, Moisture sensor,Walking Stick,

I. INTRODUCTION

More than 161 million people worldwide are visually impaired. Among them, 124 million have low vision and 37 million are blind. Another 153 million people suffer from visual defect thanks to uncorrected refractive errors like near-sightedness, farsightedness or astigmatism. Virtually of these people could restore normal vision with eyeglasses or contact lenses. More than 90% of the world's visually impaired people live in low- and middle-income countries. Except in the most developed countries, cataract remains the leading cause of blindness, by the survey of news paper.

Blindness may be a condition of lacking beholding and it's always described as severe visual defect with residual vision. The blind people's life and activities are greatly restricted by loss of eyesight. They can only enter fixed routes that are significant in their lives, with blind navigation equipments and therefore the accumulated memories in their long-term exploration. This situation has resulted in many difficulties to them in their normal work, lives, activities, and so on. Based on the investigation about daily activity characteristics and modes of the blind, the study found that the most difficulties encountered during a trip of the blind included walking on the road, finding way, taking a bus and searching for usual life-arena.

Here our designed system is helpful for blind persons to notify him audio message, such like obstacle is detected turn left, obstacle is detected turn right. We used ultrasonic transverse to detect the obstacle and audio play back circuit for audio notification to him obstacle is detected and for other peoples that he cannot see the obstacle in front.

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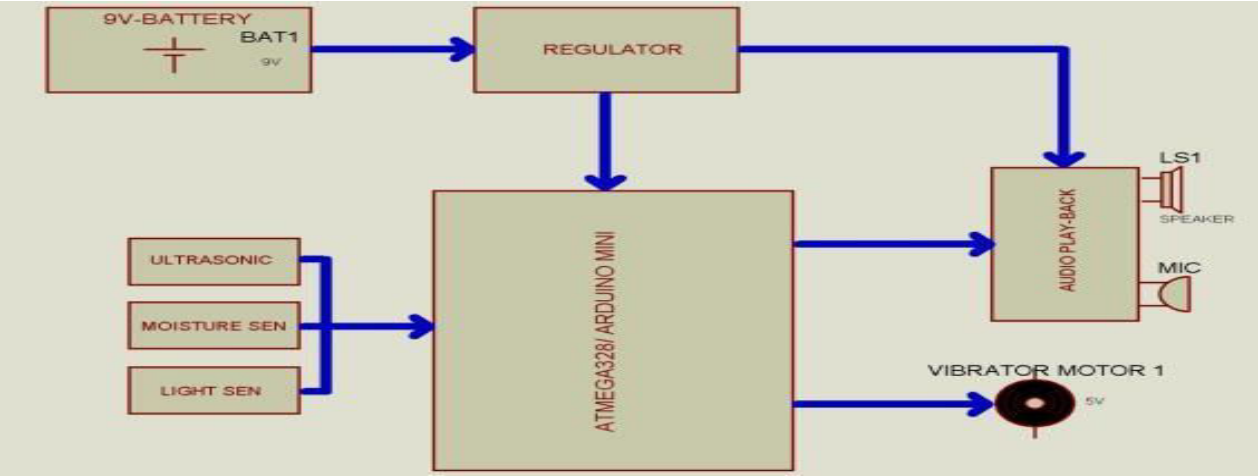
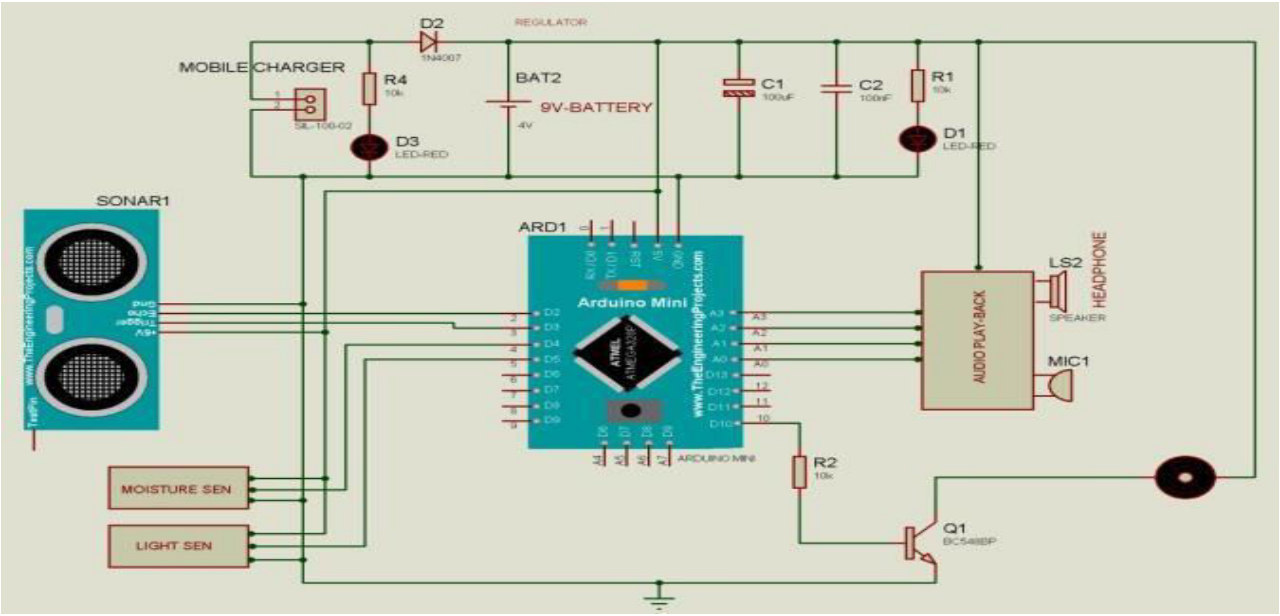
II. BLOCK DIAGRAM



III. CIRCUIT DIAGRAM



3.1WORKING

Here circuit is powered with 4V battery 4V is given to the respective pins of arduino mini board and ultrasonic module, audio playback module, other sensors. 100uf capacitor is used to cancel loading effect in the circuit produced by sensor module and sound playback circuit.

Output of regulator is connected with LED blue via current limiting resistor of 1K, to show circuit is ON condition. PIN2, 3 are used as ultrasonic transmitter and echo pins that pins are used to trigger ultrasonic and receive reflected signals. After receive signal arduino calculate distance.

Arduino 4 and 5 pins are connected with soil moisture sensor and light sensor to sense physical conditions.

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Arduino pins A0, A1, A2, and A3 are used as output to trigger sound recorder and playback circuit. Such as obstacle is detected please turn left, wet is detected please turn right, dark is detected.

We have to introduce information of notification, so we select here 4 sections of 20 second sound recorder and playback circuit. This circuit has facility of recording from MIC as input and when playback signal is given to this circuit at particular pin of that time. This circuit plays the stored data from sound. We can reuse or refill the stored data at many times.

IV. ADVANTAGES

- The circuit required power supply for operation is very less. (4V DC, 500mAh)
- The component required for this hard ware is easily available in market, and well in rate.
- The circuit is compact in size, so small space is required.
- Better than IR frequency due to IR is interrupted for sunlight.

V. APPLICATIONS

- Main application for this circuit is for blind stick.
- It can be used in automation system for shop & molls to control gates or doors automatically.
- It can be used in robotic application to control robot movements with ultrasonic obstacle detection.
- It can be used in security systems, by implementing little other hardware with this.

VI. FUTURE SCOPE

It is necessary that visually impaired people get access to an efficient and comfortable object in order to live their daily life comfortably. In a developing country like india, there is a need for a cost effective solution so that most of the people can have an effective product.

VII. RESULT

The smart **stick** for the **blind** as the name suggests is a device for the **visually impaired** to guide the user to respective destination and avoiding to collide with the obstacles. It uses two ultrasonic sensors HC SR 04 to detect the depth below or the obstacles in between.

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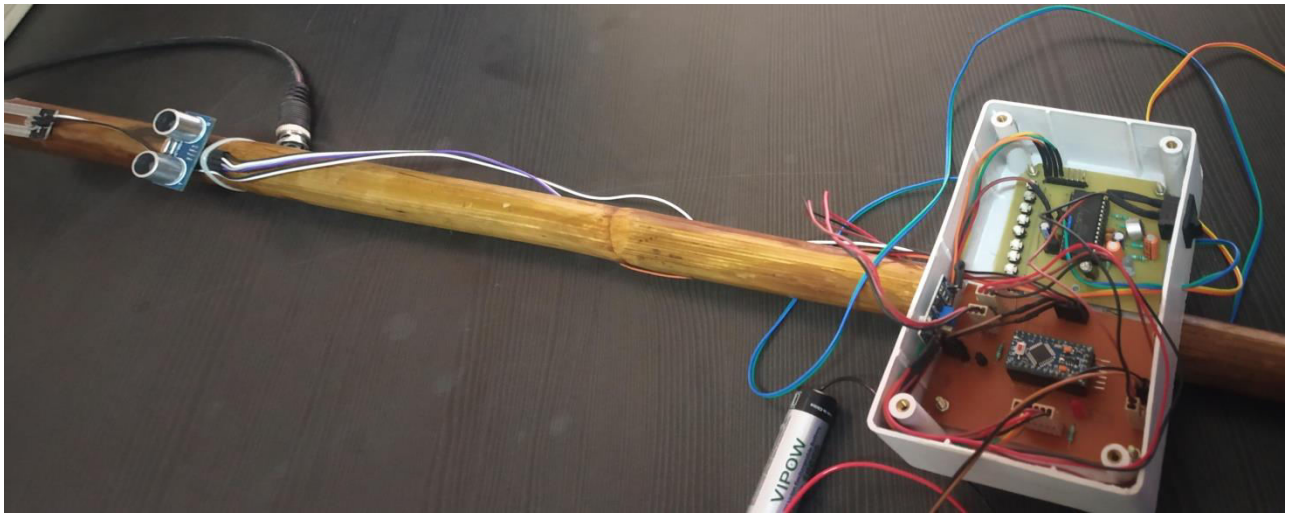

VIII. CONCLUSION

It are often further enhanced by using VLSI technology to style the PCB unit. This makes the system further more compact. Also,use of active RFID tags will transmit the location information automatically to the PCB unit, when the intelligent stick is in its range. The RFID sensor have to read it explicitly.
The global position of the user is obtained using the global positioning system(GPS), and their current position and guidance to their destination will be given to the user by voice.

REFERENCES

[1].Sung Jae Kang, et al." Development of an Intelligent Guide-Stick for the Blind", Proceeding of the IEEE international Conference on Robotics & Automation, 2001
[2]. Y. Kawai andF. Tomita, “A support system for visually impaired persons to understand three-dimensional visual information using acoustic interface", IEEE Conference on Pattern Recognition, Vol.3,pp.974-977,2002.
[3]. J. M. Sáez, F. Escolano, and A. Peñalver, “First steps towards stereo- based 6DOF SLAM for the visually impaired,” in IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), San Diego, USA,2005.
[4]. AlbertoRodriguez, et al., "Obstacle avoidance system for assisting visually impaired people", in proceeding IEEE Intelligent Vehicles Symposium Workshop, 2012.
[5]. ShrutiDambhare, et al., "Smart stick for Blind: Obstacle Detection, Artificial vision and Real-time assistance via GPS", 2nd National Conference on Information and Communication Technology (NCICT), 2011.
[6]. Mohammad Hazzaz, et al., "Smart Walking Stick- an electronic approach to assist visually disable persons", International Journal of Scientific & Engineering Research vol. 4, No. 10, 2013.
[7].S.Shoval,J.Borenstein,Y.Koren,“Mobilerobotobstacleavoidanceinacomputerizedtravelaidfortheblind,”Proceedingsof theIEEEInterna tionalConferenceonRoboticsandAutomation,May1994
[8]. S.Innet,N. Ritnoom” An Application of Infrared Sensors for Electronic White Stick” 2008 International Symposium on Intelligent Signal Processing and Communication Systems Bangkok,Thailand
[9]. J.Na,“The blind interactive guide system using RFID based indoor positioning system, ”Lecture Notesin Computer Science,SpringerPublications,vol.4061,pp.1298-1305,2006.