# DESIGN & IMPLEMENTATION OF NAVIGATION SYSTEM FOR VISUALLY IMPAIRED PERSONS

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*Abstract-* The purpose of this project is to build an Obstacle detection device with obstacle detection Sensors that is very useful for blind people. This device automatically senses the presence of obstacles in its path and helps blind people in deviate their direction of movement. The obstacle detection mechanism is done by an Obstacle sensor to find the presence of an obstacle in its path. This consists of a Microcontroller based control system, buzzer and Obstacle detection Sensor. This device senses the obstacles in its path by continuously transmitting the ULTRASONIC rays from ULTRASONIC transmitter. If any obstacle comes in its vicinity then the rays are destructed and give this input to the microcontroller.

*Index Terms*-  Obstacle detection, Sensors, Ultrasonic device.

## I.   INTRODUCTION

Blindness is a very common disability among the peoples throughout the world. According to the World Health Organization (WHO) 285 million people are visually impaired worldwide, 39 million are blind and 246 have low vision. About 90% of the world's visually impaired live in developing countries. For the indigents blindness is a curse. They need help to walk outside and all other daily essential works. So the paper glows a system that tries to remove the curse of blindness and make them self- dependent to do their daily chores. It is a walking stick, normally used by the blinds. But it is fully automated as well as manually operated, easy to maintain, cheap and it is very comfortable to use. The power consumption is low and can be operated easily. Above all the stick is very economic over the conventional one.  The entire project is designed using micro-controller based upon its reliability. The microcontroller is code protected so its security bridge cannot be override except the vendor or owner. Here one micro-controller is used, that is ARDUINO. All sensors data are taken by the micro-controller and it produces the sensors of output.

## II.   LITERATURE SURVEY

Nowadays, the wearable health monitoring system is the main application of Internet of things [1]. Likewise lots of

## III.   PROPOSED WORK

Visually impaired persons have difficulty to interact and feel their environment. They have little contact with surroundings. Physical movement is a challenge for visually impaired persons, because it can become tricky to distinguish obstacles appearing in front of them, and they are not able to move from one place to another. They depend on their families

wearable devices are designed for visually impaired people. Few systems are discussed here. In [2], sensor assisted stick for the blind people describes about a wearable equipment which consists of a light weight blind stick and the obstacle detection circuit based on a sensor. In [3], an innovative stick is designed for the visually disabled people for their easy navigation. The blind stick is able to detect the water by integrating with ultrasonic sensor. In this system, the ultrasonic sensors are used to detect obstacles by using ultrasonic waves. By sensing the obstacles the sensor passes the received data to the microcontroller.

The microcontroller processes the data and calculates if the obstacle is close enough to the person. If the obstacle is not close to the microcontroller, the circuit does not do anything. If the obstacle is close enough to the microcontroller, it sends a signal to buzzer. The system also detects water and provides different sounds and alerts the blind person. In [4], multitasking stick is designed to indicate safe path to visually disable people. The micro-controller based automated hardware allows a blind person to detect obstacles in front of them. The hardware part consists of a micro-controller which was incorporated with an ultrasonic sensor, voice play back module and additional equipment..

for mobility and financial support. Their mobility opposes them from interacting with people and social activities. In the past, different systems are designed with limitations without a solid understanding of the nonvisual perception. Researchers have spent the decades to develop an intelligent and smart stick to assist and alert visually impaired persons from obstacles and give information about their location. Over the last decades, research

has been conducted for new devices to design a good and reliable system for visually impaired persons to detect obstacles and warn them at danger places.
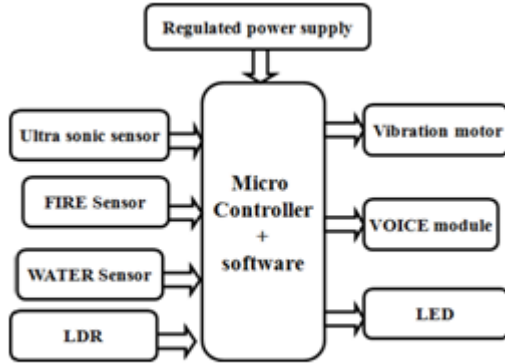


Fig: Block Diagram

Blind stick is an innovative stick designed for visually disabled people for improved navigation. We here propose an advanced blind stick that allows visually challenged people to The project Navigation for blind people" was designed such that it is used to provide security for the blind people using Obstacle sensor. Whenever Obstacle sensor detects a any obstacle presence, this will be fed as input to the micro controller and the buzzer gives alarm which is used to indicate the presence of obstacle nearer to it. The project has the following advantages and disadvantages:

Advantages:

1. Guides blind people.
2. Alerts through buzzer alarm system.
3. Efficient low cost design.
4. Low power consumption.

Disadvantages:

1. Interfacing Obstacle detection sensor module is sensitive.
2. It detects obstacle only from 2 meters.

Applications: This system can be practically in real time, which helps the blind to know the obstacles in their way.

## V. CONCLUSION

The smart walking stick, constructed with at most accuracy, will help the blind people to move from one place to another without others help. This could also be considered a crude way of giving the blind a sense of vision. This stick reduces the dependency of visually impaired people on other family members The Smart Stick acts as a basic platform for the coming generation of more aiding devices to help the visually impaired to be more safe.

### REFERENCES

[1] Duraisamy Sathya & Pugalendhi Ganesh Kumar, 'Secured Remote Health Monitoring System, IET Healthcare Technology Letters', vol. 4, issue. 6, pp. 228-232, 2017.

navigate with ease using advanced technology. The blind stick is integrated with ultrasonic sensor along with ldr, fire, water detection modules. Our proposed project first uses ultrasonic sensors to detect obstacles ahead using ultrasonic waves. On sensing obstacles the sensor passes this data to the microcontroller. The microcontroller then processes this data and calculates if the obstacle is close enough. If the obstacle is not that close the circuit does nothing. It also detects and sounds trough voice module. if it is lost and alerts the blind. The system has one more advanced feature integrated to help the blind find their stick if they forget where they kept it. Thus this system allows for obstacle detection as well as finding stick if misplaced by visually disabled people.

## IV. RESULTS AND DISCUSSION

[2] A. Dodds, D. Clark-Carter, and C. Howarth, The sonic PathFinder: an evaluation, Journal of Visual Impairment and Blindness, vol. 78, no. 5, pp. 206–207, 1984.

[3] G. Balakrishnan, G. Sainarayanan, R. Nagarajan and S. Yaacob, Wearable RealTime Stereo Vision for the VisuallyImpaired, Engineering Letters, vol. 14, no. 2, 2007.

[4] R. L. A. Kuranov and V. Pisarevsky, An empirical analysis of boosting algorithms for rapid objects with an extended set of Haarlike features, Intel Technical Report MRLTR-July 02-01, 2002.