

SMART BLIND STICK USING ARDUINO**¹Vikas Ghuge, ²Gaurav Dalvi, ³Krutika Nayse, ⁴Vaishnavi Zapparde, ⁵Monali Chauhan, ⁶Vaishnavi Tiwari**

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ABSTRACT

This stick detects the object in front of the person and gives response to the user either by vibrating or through command. So, the person can walk without any fear. This device is going to be the best solution to beat their difficulties. A paper describes ultrasonic blind walking persist with the utilization of Arduino. According to WHO, 30 million people are permanently blind and 285 million people with vision impairment. If you notice them, you can very well know about it they can't walk without the help of others. One has got to ask guidance to succeed in their destination. They have to face more struggles in their life lifestyle. Using this blind stick, an individual can walk more confidently.

1. INTRODUCTION

The power consumption is low and may be operated easily. Above all the stick is extremely economic over the traditional one. The walking stick mentioned above may be a stick that consists of a circuit card that contains a PIC micro controller, a LED for indication, input from micro pager motor, inputs from sensors that are installed at proper position of the stick. Positioning of the sensors is predefined by real world application. The entire project is meant using micro controller based upon its reliability. The microcontroller is code protected so its security bridge can't be override except the seller or owner. Here one microcontroller is used, that is PIC16F690. All sensors' data are taken by the microcontroller and it produces.

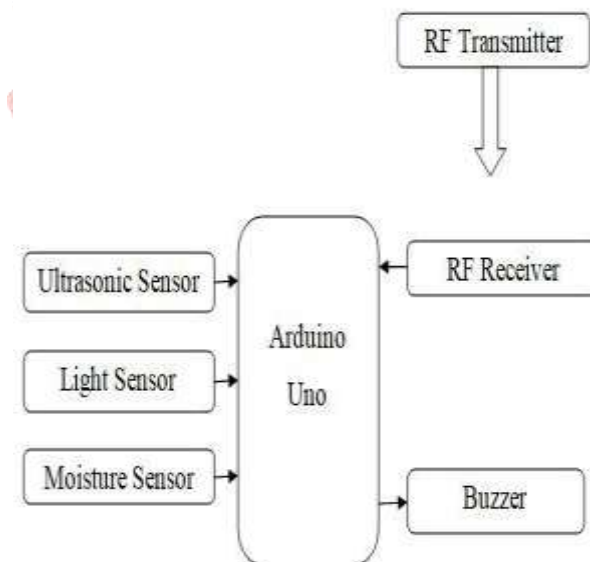


Figure1:- smart blind stick using arduino

[1] For the indigents blindness is a curse. They need help to steer outside and every one other daily essential works. So the paper glows a system that tries to get rid of the curse of blindness and make them self dependent to try to to their daily chores. It is a walking stick, normally employed by the blinds. But it is fully automated, easy to maintain, cheap and it is very comfortable to use different Pulse Width Modulation (PWM) based on the sensors output to operate pager motor.

Blindness may be a quite common disability among the peoples throughout the planet . According to the planet Health Organization (WHO) 285 million people are visually impaired worldwide, 39 million are blind and 246 have low vision.

[2] Looking at this locally, we see that within Australia, it's estimated that there are 380 thousand people that have low vision or are classed as legally blind. A person who cannot see at 6 meter nor has a field vision of 10° or less is considered legally blind. 95% of people classed as legally blind have some vision. To be classed as blind, there's a complete loss of vision. Low vision cannot be corrected by visual aids such as glasses and contacts.



2. ULTRASONIC SENSOR

The GH311 sensor detects objects by emitting a brief ultrasonic burst then listening" for the echo. Under control of a number microcontroller (trigger pulse), the sensor emits a brief 40 kHz (ultrasonic) burst. This burst travels through the air, hits an object then bounces back to the sensor. The GH311 sensor provides an output pulse to the host which will terminate when the echo is detected; hence the width of this pulse corresponds to the space to the target. Figure 3 shows a GH 311 ultrasonic sensor module.

3. FILTER CIRCUIT

In electronic circuit there's requirement of pure DC supply. But rectifier produce pulsating DC, if such DC signal is applied to electronic circuit it'll produce a hum i.e it'll contain AC and DC The AC components are undesirable and must be kept faraway from the load. To do so a filter circuit is employed which filter the AC components reaching the load. Obviously a filter circuit is installed between rectifier and transformer . In our project we use capacitor filter due to its low cost, small size and tiny weight and good characteristic. Capacitors are connected in parallel to the rectifier O/P because it passes AC, But dose not pass DC at All.

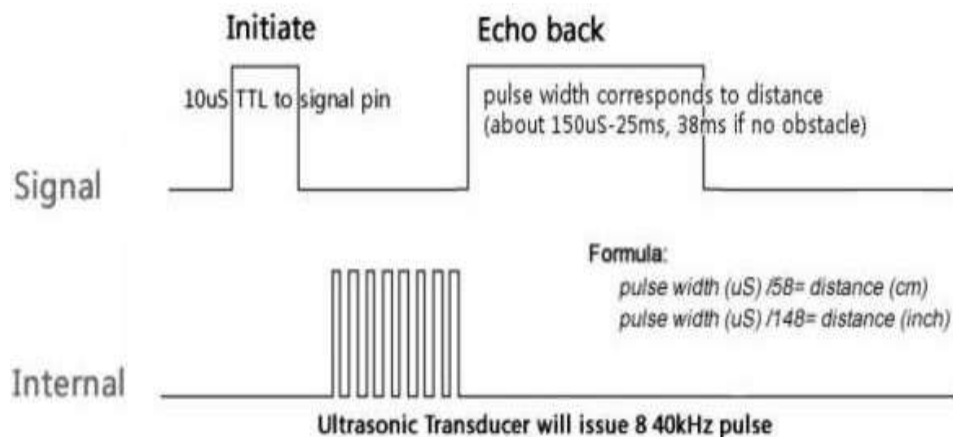


Figure 2 : Ultrasonic pulse transmitted

4. OBSTACLE DETECTION UNIT

Electronic Travel Aids (ETA) have been classified in three classes:

Obstacle detectors or clear-path indicators,
Environmental sensors and Navigation systems

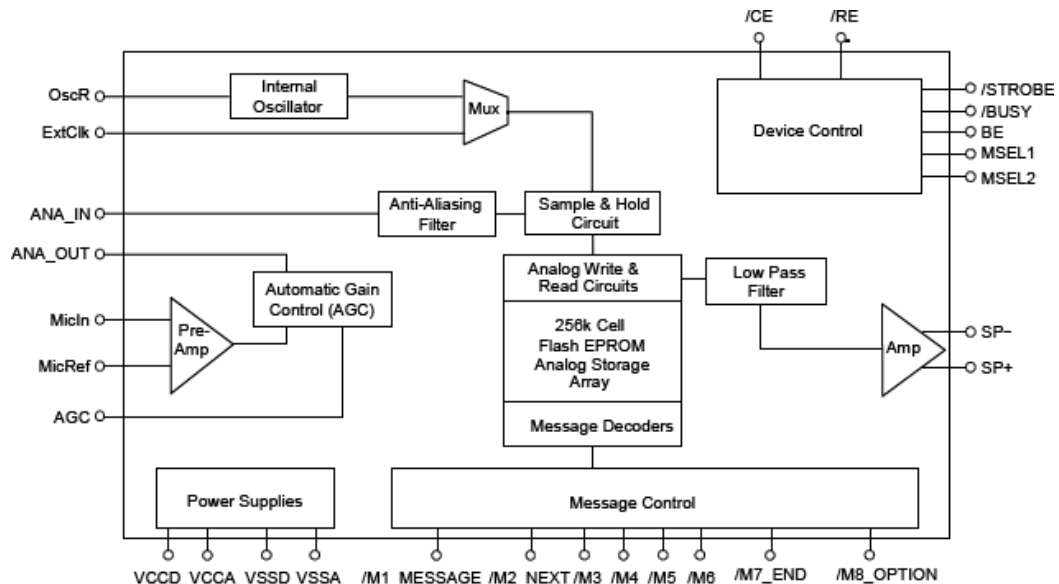


Figure 3: Obstacle detection unit

The first class is predicated on sensory or artificial vision systems. The sensory systems emit ultrasonic or laser beams to the environment, which are reflected by the thing ; the system calculates the space from the object consistent with the time difference between the emitted and received beam.

5. ADVANTAGES

- Low cost
- Path finder
- Easy to implement
- Security
- Less weight

6. APPLICATION

- This project is very useful for blind peoples.
- Some more application like vehicle detection , slippery floor , on –coming vehicle detection and fire or smoke alarm can also be included
- One more application is for the family members to again access to theblind person’s location through the server whenever needed

7. FUTURE SCOPE

The system can be supplemented with actual GPS module used in the cars and we can provide a vibrator for the partially deaf persons .it can be further enhanced by using VLSI technology to design the PCB unit . This makes the system further more compact, A wall following function can also be added so that the user can walk straight along a corridor in an indoor environment.

8. CONCLUSION

This blind aid system are often rendered a fresh dimension of useful assistance and provides a way of artificial vision along side dedicated obstacle and hollow detection circuitry. This cost effective and lightweight weight device are often designed to require of pattern of a clastic and portable device, which may be unconditionally mounted on a standard white cane or blind stick. The aimed combination of several working subsystems makes a time demanding system that monitors the environmental scenario of static and dynamic objects and provides necessary feedback forming navigation more precise, safe and secure.

REFERENCES

- [1] <http://www.who.int/mediacentre/factsheets/fs282/en/>
- [2] Australian bureau of statistics, Blindness complete/partial, 2003 <http://www.abs.gov.au/ausstats/abs@.nsf/0/5796EA76D51A2403CA256D3A002C7153?OpenHighlight=0>.
- [3] Johann Bornstein and Yoram Koren, The Guide Cane –A computerized Travel aid for the Active Guidance for the Blind Pedestrians, proceedings of the IEEE international conference on Robotics and Automation, Albuquerque,1997, page 1283-1288, April 21-27.
- [4]C. Gearhart, A. Herold, BSelf, C. Birdsong, L. Slivovsky, Use of ultrasonic sensors in the development of an Electronic Travel Aid, Sensors Applications Symposium, 2009, SAS 2009,

