

Guidance System for Blinds Using IOT

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ABSTRACT

Convergence and analysis which is required for the distributed environment study and monitoring is associated with multiple customized variations for making it usable and compatible for different references of networks which can be utilized. Multiple types of linked measures incorporated which has to be set up in detail formation which even includes different types of regulated policies so that accordingly the work can be achieved. The system is also associated with multiple performance analytical status review which hand be acknowledged and which can be substituted with more professional utilities. The workability in real-time for optimal visibility is also associated which hand we again filtered and utilized according to the requirements.

1.Introduction

According to the World Health Organization, there are around 4.8 million outwardly debilitated people in the year 2019. This people are totally dependent upon others. They even can't walk in isolation. Bigger piece of them are using ordinary white stick to assist with course. The obstruction in using white stick is that the information is obtained by reaching the articles by the tip of the stick. So we have made arranged and developed A Ultrasonic Blind Walking Stick contraption which will help surprise people to walk around basic openly. As a more direct variation, we have used vibrating sound to alert them if anything erroneously happen and help them with dealing with this issue.

The essential objective of this endeavor is to help with blinding people and moreover for nearly deaf to walk around straightforward and this system offers moves up to the current structure plan. It endeavors to make the current structure more capable, supportive and straightforward.

The essential section used for this contraption is the Ultrasonic sensor. The Ultrasonic sensor sends a high repeat sound heartbeat and subsequently learns a chance to get the indications of the sound resonance to reflect back. The sensor has 2 circles. One of them goes probably as the

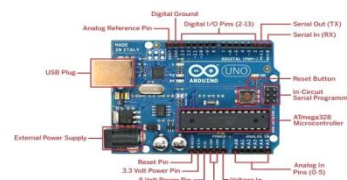
transmitter and sends the Ultrasonic waves. The other one goes comparably recipient and gets the rehashed sound sign. The sensor is changed by the speed of the sound in air. With this changed data, the time qualification between the transmission and get-together of sound not settled forever to register the distance of the article.

Research Objectives

1. This paper presents the implementation of a smart stick that assists a visually impaired person to his destination safe and secure.
2. We make use of sensor to detect the obstacles ahead and warn the blind person about the obstacle through vibrating sense.
3. We take the benefits of GPS module where GPS module helps to trace the blind person using the data collected by it.
4. All these features are beneficial in lending a hand to make the visually impaired people become self-reliant while navigating.
5. Not only helps to blinds but also for deaf people by making vibrating sense.

2.LITERATURE REVIEW

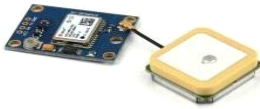
Introduction to Arduino UNO



Arduino is an open-source hardware and software company, project and user community that designs and manufactures single-board microcontrollers and microcontroller kits for building digital devices. The Arduino project started in 2005 as a program for students at the Interaction Design Institute

Ivrea in Ivrea, Italy, aiming to provide a low-cost and easy way for novices and professionals to create devices that interact with their environment using sensors and actuators.

GPS Module



The GPS based device proposed, A GPS module consists of GPS receiver and an antenna. GPS antenna is a device that helps to boost the reception signal to a GPS unit.

WI-FI Module (ESP8266)



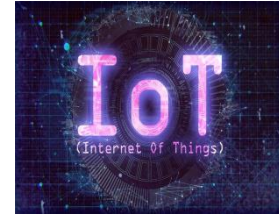
This small module allows microcontrollers to connect to a Wi-Fi network and make simple TCP/IP connections using Hayes-style commands. However, at first there was almost no English-language documentation on the chip and the commands it accepted. The very low price and fact that there were very few external components on the module, which suggested that it could eventually be very inexpensive in volume, attracted many hackers to explore the module, chip, and the software on it, as well as to translate the Chinese documentation.

Ultrasonic Sensor (HC – SR04)



In the proposed system we use a ultrasonic sensor. Ultrasonic sensor detects the obstacles in a range of about 2 - 400 cm. The distance of the obstacle is determined based on the delay between the emission of sound and the arrival of an echo.

IOT (Internet of Things)



The **Internet of Things (IoT)** is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to- human or human-to-computer interaction. The definition of the Internet of Things has evolved due to the convergence of multiple technologies, real-time analytics, machine learning, commodity sensors, and embedded systems. Traditional fields of embedded systems, wireless sensor networks, control systems, automation (including home and building automation), and others all contribute to enabling the Internet of Things.

Flat 1034 Mobile Phone Vibrating Motor



This Flat 1034 Mobile Phone Vibration Motor is a shaft less vibration motor is fully- enclosed with no exposed moving parts. Its small size (10 mm diameter, 3.4 mm height) and shaft less design mean you can mount it on a PCB or even place it in a pocket to add quiet, haptic feedback.

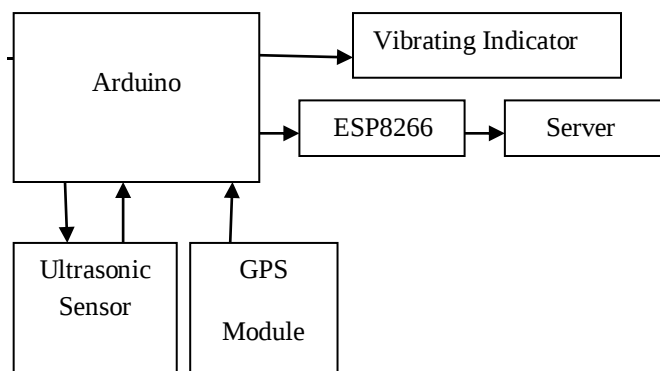
2.1 Proposed Solution

The study of previously developed systems and analysis of it, let us to define a newly equipped system which could overcome the disadvantages of the previous systems. So therefore using the existing technologies we provide a better solution to the state problem.

There have been few devices developed so far to help the blind people. The blind stick is integrated with ultrasonic sensor. Our proposed project first uses ultrasonic sensor to detect obstacles without touching it 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 far the circuit does nothing but if the obstacle is close the microcontroller sends a signal to vibrate the vibrator. Ultrasonic sensor is used to detect any obstacle in front of blind person. It has Detection Distance of 19cm-60cm so

whenever there is some obstacle in this range it will alert the blind person. One more feature is that the GPS system which can use for tracking the blind person location. GPS system provides the information regarding to his current location. ESP8266 WIFI Module helps to send data to the server. The main objective is to help visually challenged people to navigate with ease using advance technology. In this technology controlled world, where people strive to live independently, this project proposes an ultrasonic stick for blind people to help them gain personal independence. Since this is economical and not bulky, one can make use of it easily. Not only to help blind but also help deaf people and we are using vibrating motor.

3. Block Diagram



4. RESULT

The software and hardware developed is tested and its quality, benefits and limitations are analysed.

Quality factors:

Correctness: The system satisfies its specifications and hence this fulfils the requirements of the user.

Reliability: The system is more reliable.

Scalability: The system is scalable and reliable.

Maintainability: Since the system is developed embedded C, locating errors and adding new methods.

5. ADVANTAGES AND DISADVANTAGES

ADVANTAGES

1. Auto detection.
2. Having feature to left & right turn alarm signal.

3. Obstacle detection with indication support.
4. Dig information with indication alarm.
5. Simple to use & low cost

DISADVANTAGES

1. Limited & fixed route to follow daily routine.
2. No voice message

6. CONCLUSION

This paper presents the implementation of a smart stick that assists a visually impaired person to his destination safe and secure. We make use of sensor to detect the obstacles ahead and warn the blind person about the obstacle through vibrator sound. The intensity of the vibrating sound increases as the person nears the obstacle which aid him to move aside of the obstacle. We take the benefits of GPS module where GPS module helps to trace the blind person using the data collected by it. In case of dangerous circumstances the person whose phone number has been saved is notified that the blind person is at risk, along with the current location of the blind person. All these features are beneficial in lending a hand to make the visually impaired people become self-reliant while navigating.

A simple, configurable and easy to handle electronic guidance system is proposed to provide and support for blind and visually impaired persons. The system is designed, implemented, tested and verified. The real time results of the system are encouraging it revealed an accuracy of 93% in detecting different materials and distances. The results indicate that the system is efficient and unique in its capability in specifying the source and distance of the objects that may encounter the blind. Not only to help blind but also help deaf people and we are using vibrating motor.

7. REFERENCE

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- <https://en.wikipedia.org/wiki/ESP8266>
- https://en.wikipedia.org/wiki/Internet_of_things