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IOT BASED BLIND STICK

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Abstract:

Blind stick is designed for visually challenged people for better navigation. Here we propose an advanced blind stick for the visually challenged people to navigate and to identify the obstacles. We use different sensors to detect the obstacles like ultrasonic sensor ,fire sensor, water sensor, LDR sensor. This blind stick is developed by an advanced technology called IOT. This alerts the blind person by giving a warning message, ones the blind app is developed we can connect it to the stick. By using this blind stick a blind person can walk more confidently. This device is the best solution to overcome the difficulties.

Keywords: IOT(Internet of things), fire sensor, Water sensor, ultrasonic sensor, Blind App.

1.Introduction :

The Smart walking stick is a simple device to detect the obstacles easily. Blind person can move from one location to another without depending on others. Based on the WHO records there are about 25.3crore people live with vision impairment ,3.6 crore people are blind and 21.7 crore people have moderate to severe vision impairment , 81%people who are blind are aged 50 years and above.

In this project advanced technology that is IOT(Internet of things) is used, this technology is used to transmit the data or receive the data. The term Internet of things(IOT) was invented by the computer scientist Kevin Ashton. Internet Of Things(IOT) has considered a inaccurate because device no need to be connected to a network, it has to be individually addressable. In the market IOT became a part of our routine life, like we are using in home appliances as home security system, cameras and it can control the device such as smart phones, smart speakers, smart air condition etc. By using this technology in the smart cities we can reduce the waste of time by giving efficient energy to the man power. IOT is not only used by an individual, connecting the different sensors to it became a vast usage by government or public categories like industries and hospitals followed the trend by use of security alarms, cars and trucks have become members, cars and trucks are loaded with sensors and including a GPS.

To develop the IOT based blind stick we use the software called Arduino IDE, Where IDE stands for Integrated Development Environment. Using this software the code is implemented and inserted in ESP micro controller which is attached to the stick. Apart of the job of IDE is to take the human readable code and translate it into machine readable code to be executed by the Arduino. This is process is called Compiling.

2.Related work:

The ultimate aim to do this survey, is to know the work behind the project. There are several methodologies used in this project, ultrasonic sensor is used to detect obstacles, we use node MCU as microcontroller, fire and water sensors are used to identify the fire and water. This literature work will provide the information regarding the project that has developed the defects observed in the present system.

[1] According to M.Narendra Sarasmitha podhi Ashitha Tiweri SRM college proposed a paper "Third eye for the blind people using Arduino and Ultrasonic sensor." In this paper they have designed a smart wrist for blind people which was a wearable wrist band which is imported with ultrasonic sensor for detecting the obstacles in the users way . The gadget was made made to wear in walking in night

To indicate other people about the blind person.

[2] The smart stick for blind people using micro controller. In this paper they have designed a smart stick for blind people S.Sivakumar, R.Premkumar, M.Vivek kumar from Eshwar College of Engineering proposed and they have connected with different sensors and GPS for the user. In this paper there is no mechanism for one who walking in night to indicate other people about the blind person.

[3] A smart walking stick for visually Impaired using ultrasonic sensor and Voice Guidance, proposed by the author Olakanmi if there is an obstacle identification by the sensor.

3.BLOCK DIAGRAM :
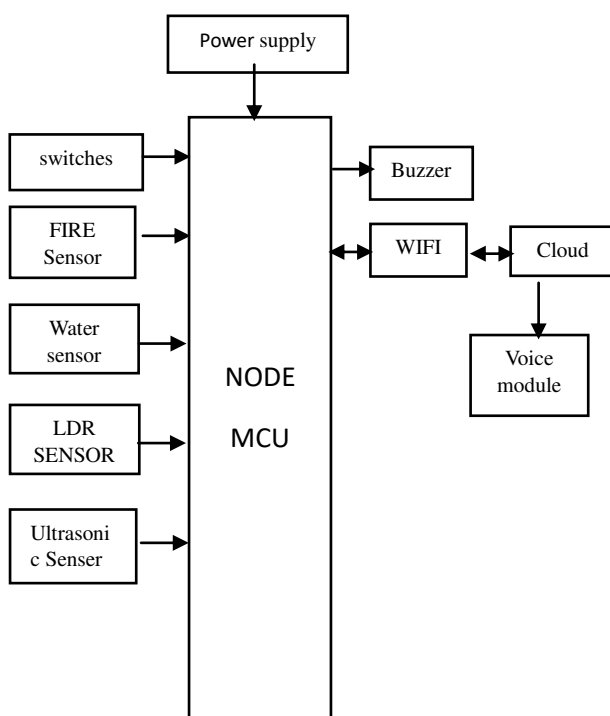
ULTRASONIC SENSOR:

Usage of ultrasonic sensor plays an dominant role in smart blind stick.This ultrasonic sensor senses the obstacle within the 2cm-350cm, that means user can adjust the range and use it. If there is no obstacle then it do nothing. On sensing the obstacle the sensor immediately passes the data to NODEMCU

NODE MCU :

The node MCU is a microcontroller which is connected to various sensors and which is programmable. After the identification of obstacle every sensor passes the data to node MCU, then the node MCU perform the isolated operations by calculating and sends the signal to the buzzer and to the mobile by voice module. This hardware based on ESP module.

LDR SENSOR

LDR sensor means light Dependent Resistor, this LDR sensor is attached to the stick that is connected to an LED (Light emitting diode), this works when the sensor is in dark environment. The LDR senses the dark and pass the information to NODE MCU and then the LED light glows, this helps the other people to identify visually impaired people on the roads.

FIRE AND WATER SENSOR

The fire and water sensor is also works in same way as the other sensors. This senses the obstacle and pass the information to the micro controller, after the calculating it sends the signal to the buzzer and to the mobile.

PUSH BUTTONS

There are two push buttons that we used in this smart walking stick .One is used for time and other is used for location. When a blind person is in danger or lost his/her route, then he/she can warn their family members by sending their location to them. The location will be shared when the user press and hold the button for few seconds
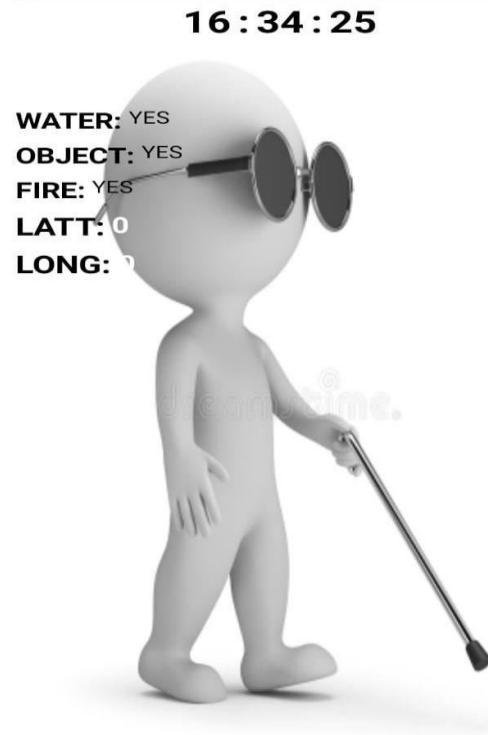
BLIND APP

Blind App should be install by the user in their mobile and connect to Wi-Fi
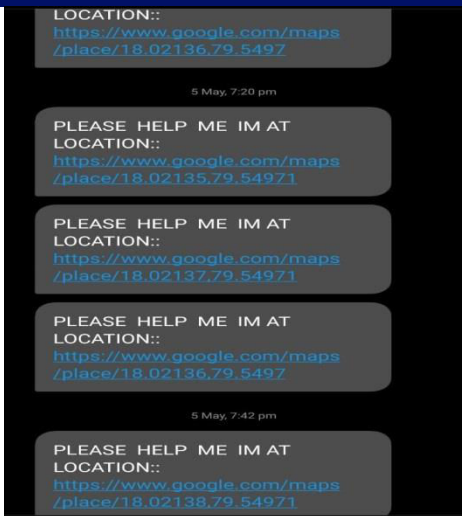
board that is attached to the stick. When the obstacle is point out by any of the sensor then it not only gives the buzzing sound but also the voice command through the user mobile. It gives the voice message like

1) Fire is detected
2) Water is detected
3) obstacle is detected
4) Time and location

4.RESULTS:

The smart blind stick is given to visually challenged people with some prior training. The project IOT based blind stick, we have arranged the ultrasonic sensor, water sensor, fire sensor, LDR sensor, push buttons, buzzer to the micro controller(NODE MCU) which is a Wi-fi board that is connected to the mobile of an user. Whenever any of the sensor identifies the obstacle then it passes the information to NODE MCU, then it calculates and send the signal to the buzzer which gives buzzing sound as a warning and it also sends to the user mobile as a voice module that we have set up. When the user is in danger or lost the route, then by holding the button for few seconds it can make a call directly to their family members

LOCATION::
https://www.google.com/maps
/place/18.02136,79.5497

5 May, 7:20 pm

PLEASE HELP ME IM AT
LOCATION::
https://www.google.com/maps
/place/18.02135,79.54971

PLEASE HELP ME IM AT
LOCATION::
https://www.google.com/maps
/place/18.02137,79.54971

PLEASE HELP ME IM AT
LOCATION::
https://www.google.com/maps
/place/18.02136,79.5497

5 May, 7:42 pm

PLEASE HELP ME IM AT
LOCATION::
https://www.google.com/maps
/place/18.02138,79.54971

5.ADVANTAGES:

1 . This smart walking stick help all the blind people in the world to make them easier to walk everywhere and reach their destination. The navigation system helps the blind person with voice command.

2. Water sensor will detect water that blind person can be aware about the water on the surface.

3 .The main feature of this smart stick is that, when the blind person is in danger his/her location can be determined by their close members.

4.The smart stick is portable and can be use in other blind sticks also.

5. This smart stick is Simple and easy to use

6.DISADVANTAGE:

1.The prior training should be given to the blind person about the device.

2.The device can't differentiate between person or object.

3. It does not identify the obstacle at face level 4. The battery must be charged, if not the stick will not work.

7.CONCLUSION:

This gadget have finally made into prototype that can be used to guide the visually impaired. Our motive to do this project is to solve the problems faced by the blind people in their daily life. This stick helps the blind if he lost the route and move from one place to another. This device ensures the safety of the blind. This project will help all the blind people in the world to reach their destination easily and confidently.

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