

GPS Tracking Blind Stick using Microcontroller

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Abstract— The main purpose of this paper is to help the blind people, by using “GPS Tracking Blind Stick Using Microcontroller”. The blind people need not to worry when walking on the road or anywhere. If any obstacle or mud or electric wire present before the stick that time alerts the blind person by using various sensors. The blind people may wonder independently by using this blind stick.

Key words: Ultrasonic Sensor, Moisture Sensor, Electromagnetic Wave Sensor, Microcontroller, GPS Module, RF Module, Buzzer

I. INTRODUCTION

In our world there are lots of people they are blind from childhood. They facing lot of problem when they are wondering on the road or anywhere. Sometime they need help of someone when crossing the road. So to reduce this problem we are going to design “GPS tracking blind stick using microcontroller”. In this project we use various sensors like moisture sensor, ultrasonic sensor, and electromagnetic wave sensor for the operation of blind stick. Electromagnetic wave sensor is used to sense the electromagnetic waves because some time the wire is present on the road or anywhere so for the safety purpose we use this new concept. In this project we also use the GPS module because, the blind person may miss in mob and this person don't know how to go to home that time the position of the person may be tracked by using GPS module. And for finding the stick if missed nearby place RF module used as remote.

II. BLOCK DIAGRAM

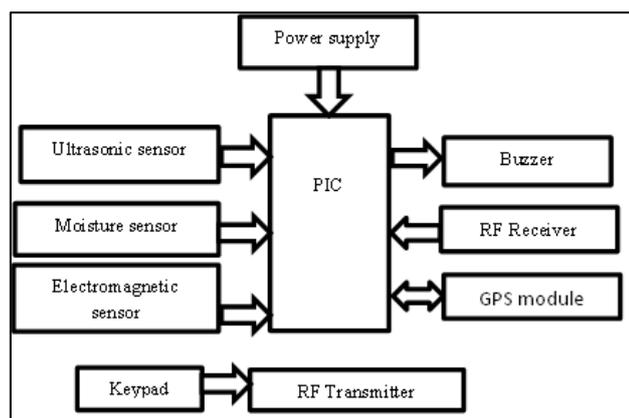


Fig. 1: Block Diagram of GPS Tracking Blind Stick Using Microcontroller

In this project various sensors are used for the operation of blind stick. In this project 3 sensors are used that are ultrasonic sensor, moisture sensor & electromagnetic sensor. The output of these sensors are given to the PIC microcontroller. This microcontroller has on-chip ADC so there is no need to connect the external ADC. First these sensors sense the various parameter and

are given input to the microcontroller. Then the output of microcontroller is given to the buzzer. If the sensors output goes high then buzzer produce the sound. In this project we use a wireless remote to find the stick if it is missed anywhere then we can find it by using wireless remote easily. When we press the button then RF Transmitter generates frequency (433MHz) these frequencies are received by RF Receiver and the buzzer produce sound which is present on stick.

A. Microcontroller

This is the heart of project. It has on-chip ADC to converts analog signal coming from the various sensors and convert it into digital form and given to the controller. The controller reads the distance to obstacle using the sensor & also commands to the buzzer to sound. It process the incoming data from various sensors & provide the output to sound the buzzer or provide the output signal with respect to input data.

B. Ultrasonic Sensor

The ultrasonic sensor consisting of two part namely emitter & detector. It is one type of electronic sensor. It is used to sense the obstacle in our project. Ultrasonic sensor is a 4 pin model namely Vcc, trigger, echo and ground. The ultrasonic transmitter transmits an ultrasonic wave, this wave are bounced on object & reflected back towards the sensor. This reflected wave is received by ultrasonic receiver. To calculate the distance we can use this sensor. For that use following formula

$$\text{Distance} = \text{Speed} * \text{Time}$$

C. Moisture Sensor

The Moisture sensor is used to sense the water content present in the soil. When the soil contains water content then the moisture output is high. The sensor includes a potentiometer to set the desired moisture threshold level. When the sensor measures more than the set threshold level then digital output goes high & when the moisture in the soil is less than the threshold level then the digital output goes low. This digital output can be given to the microcontroller to sense the moisture level.

D. Electromagnetic Sensor

The electromagnetic sensor is used to detect the electromagnetic waves which are present in any current conducting wire. When wire is present on the road or near to blind person it is detected by sensor and alert that person.

E. RF Module

A RF module is small electronic device used to transmit & receive radio frequency signals between two devices. The transmitter section contain the RF transmitter, encoder & keypad. The RF transmitter is ASK modulation type therefore encoder is required to convert into digital. It has four pins

namely antenna, Vcc, ground & data. The keypad is used to on/off the buzzer in our project. The RF Receiver is also ASK modulation type with 433MHz frequency for that Decoder is required. This wireless communication may be accomplished through optical communication or through radio frequency communication.

F. Buzzer

A buzzer is an audio signaling device. Typically used for alert purpose. In our project it is used to alert the blind person from any minor accident. In this project if stick is forget anywhere then it is found by listening sound of buzzer.

G. GPS

GPS stands for Global Positioning System. GPS is used to identify the location of blind person in terms of latitude & longitude. If there is change in direction & distance of blind person there will be change in latitude & longitude values.

III. CONCLUSION

In this proposed system we were going to make this for blind person for safety purpose of them. It is inexpensive so it is usable to all blind persons.

IV. FUTURE SCOPE

It can future enhanced by using VLSI technology to design the PCB unit. This makes the system further more compact. Also, use of RFID tags will transmit the location information automatically to the PCB unit, when the intelligent stick is in its range. The RFID sensor doesn't have to read it explicitly.

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