

Smart Blind Help

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ABSTRACT

In the world of 21st century where technology has developed so much that it provides much flexibility in our day to day life. It has made life easy of the normal people but such case is not with the visually impaired people where they have to face day to day problems. So in order to extend our support towards blind people with the help of latest technology we can simply reduce their problem to some extent. As nowadays many blind people are using white stick but it does not make person independent so in order to make them independent we have proposed a design of stick which we will develop. A smart blind stick that will help visually impaired people to sense an obstacle in front of their stick using an ultrasonic sensor. GPS and GSM can also be used to help them if they meet with some accident to trace the location or incase if they are lost it will help them to find appropriate route using navigation system. Cameras are also used if someone tries to thief them, or if someone tries to molest a blind girl, a camera will capture the act.

Keywords: Cane, visually impaired, Ultrasonic sensor, GPS+GSM module

I. INTRODUCTION

According to WHO stats 253 million people live with vision impairment: 36 million are blind and 217 million have moderate to severe vision impairment (1).81% of people who are blind or have moderate or severe vision impairment are aged 50 years and above (1)(till 2017).The problems they face in their day to day life is they are not able to detect the obstacle ,not able to identify appropriate route, in case of molestation or accident they are helpless.

The need of this project is because we have to make them independent. So they can live their life without dependency on other. Everyone in this world has right to make efficient use of technology for their betterment so in order to achieve that we are making this project to help them.

Previously such project were implemented using various technology which includes Drive Medical

Deluxe Folding Blind Cane, Reflective Red, Folding walking cane with Adjustable LED light and ALARM, Pivoting Quad Base, Ohuhu Folding Walking Cane.

In this project we are going to implement a smart blind cane with use of ATmega16 processor ,this project also includes various features like Ultrasonic sensor, GPS+GSM module, Camera , Buzzer and Switch. This project will help all blind people to become less dependent on others. Also, this project is cost efficient which can be produced to be easily purchasable.

II. LITERATURE SURVEY

A. Ultrasonic stick for Blind for blind people done by Ankit Agrawal, Deepak Kumar, Abhishekh Bhardwaj (2014). In this project Ultrasonic sensor, GPS+GSM module, Buzzer and Microcontroller was used . The stick contains three ultrasonic sensors to detect the obstacle at three different directions (180 degree). If

obstacle is detected the buzzer and the vibration motor is activated .This system also provides GPS system which is used to send current location of the blind man to his/her relative in case of emergency or accident. The SMS message is send to the saved number in the microcontroller. In this Microcontroller is which is cheap and affordable for the blind people.



Figure 1. Working of blind stick

B. Radhika R, Payal G Pai, Rakshita S, Rampur Srinath (2016) has implemented project on Implementation of Smart Stick for Obstacle Detection and Navigation. In this project Ultrasonic Sensor is used to detect the obstacle. Water sensor is used to detect the water pits, puddles and water spread with the help of three wire probes where two wires are used to complete the circuit and another one wire is used to short circuit. Once wire is short circuit it will interrupt microcontroller and beep sound is produced. This system also uses GPS+GSM module to send SMS in case of emergency. Arduino uno is used as a controller which is also cost effective.

C. Jismi Johnson, Nikhal Rajan P, Nivya M Thomas, Rakendh C S, Sijo T (2017) has publish paper on ‘Smart Walking Stick for Blind’. This project includes Raspberry Pi as a processor it also includes Ultrasonic sensor, Object recognition, Voice output. In this ultrasonic sensor is used to detect the obstacle but

the blind people does not know the type of obstacle present in front of him/her. So with the help of the camera this system uses object recognition which will tell the blind people type of obstacle, size of obstacle ,and how far it is from them in the form of Voice output. In this camera will detect the object and stick measures the distance of the object from the blind person with the help of ultrasonic sensor. When object/obstacle is detected the speaker will tell the name of the object to the blind person. It will provide safety and make them independent.

III. BLOCK DIAGRAM

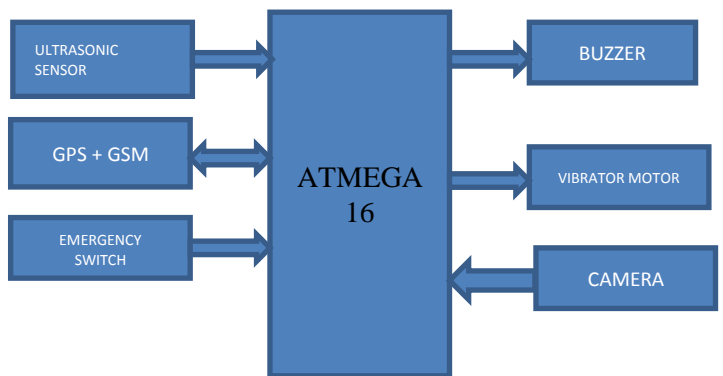


Figure 2. Block diagram representing elements of the system

In this block diagram we are using ATmega16 processor .We are giving Ultrasonic sensor, Camera, Emergency Switch as input to the terminal whereas Buzzer and Vibrator Motor as a output .GPS+GSM module is used as a bidirectional port to the processor. In this ultrasonic sensor (hc-sr04) is used to detect the obstacle present in front of the visually impaired peoples .The range of the ultrasonic sensor is from 2cm-400cm and its measuring angle is 15 degrees and works at 5v dc supply. If the obstacle is detected then Vibrator motor is turn ON. Emergency switch is used in case of molestation or any harm caused to the blind person. When Emergency switch is pressed the Buzzer will turn ON which will indicate nearby people for the help. GPS+GSM module is used for live tracking of the blind people on the smart phone. First the SMS is send to the processor and with the help auto reply SMS system tracking is done. SMS

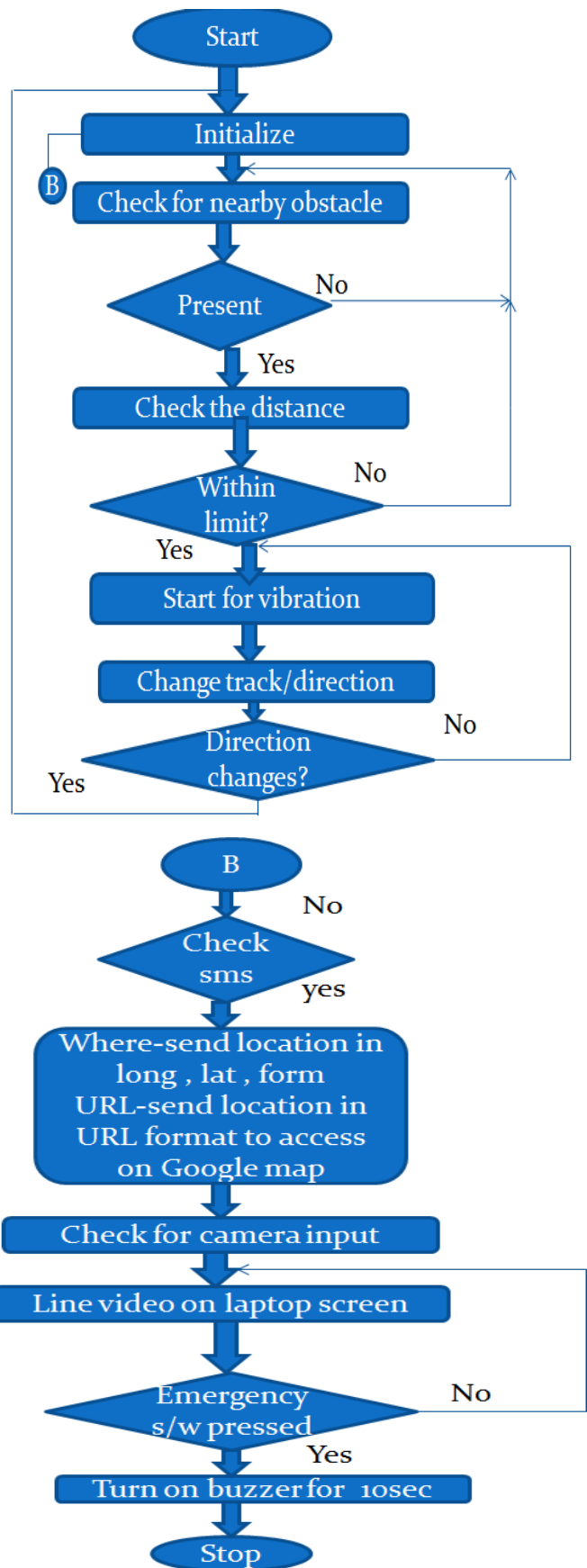
can also be sent to the relative with this module in case of emergency. Camera will capture/record the surroundings if they feel any danger around themselves.

IV. ALGORITHM AND FLOWCHART

A. Algorithm

1. Start
2. Initialize
3. Check for nearby obstacle
4. Check the distance
5. If obstacle detected start for vibration
6. Change track or direction
7. If direction changes vibration stops
8. Check SMS
9. If SMS detected track the location
10. Check for camera input
11. Line video on laptop screen
12. Check emergency switch
13. If pressed turn on buzzer.

B. Flowchart



While navigating the blind people has to initialize this stick. When stick is initialized it will continuously check for the obstacle. If obstacle is

present then it will check the distance and if obstacle is not detected then again it will continuously keep checking the obstacle. Once obstacle is detected it will check the distance with the help of ultrasonic rays if the distance is within limit it will start for vibration. If the distance is not within limit it will again check the distance.

Once the motor starts vibrating then blind person has to change the track/direction. When the direction changes it will again initialize the stick and the same procedure continues. If direction is not change then it will keep on vibrating. If blind people relatives want to track him/her then it will check SMS if it is detected then with help of auto reply relative will know the exact location of that blind people. Then it will check for the camera input if it is detected then it will line video/image on laptop screen. In case of danger emergency switch is pressed which will turn ON buzzer for 10sec and it will stop. Such procedure will continue in a loop.

V. CONCLUSION AND FUTURE SCOPE

A. Conclusion

In this paper we have proposed the project for smart blind Assist for the blind peoples for his safety and security. In this paper we have used latest technology like ultrasonic sensor, GPS+GSM module, and camera for blind person. Where ultrasonic sensor is used to detect obstacle and GPS+GSM module is used to give exact location and send SMS to relatives in case of emergency. Camera is used to capture the surrounding existence in case of danger. With the help of these features this stick will prove to be a helping hand to blind people to become self-independent while navigating.

B. Future scope

1. In future we can make the battery operated stick which work on solar panel which is easily available and cost effective.

2. We can also make the use of internet of things in case of any stick functionality gets damaged then it will allow one stick to communicate with another stick to utilize its resources.

VI. REFERENCES

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