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Device for Blind People Navigation

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Abstract— Blind feel very discouraged because they need help to move around the outdoors and indoors. They can only walk through the known roads but they can't detect the obstacle on their way. It is very difficult for them to walk on the roads. Blind people are not able to sense things. Blind people lose their friends and relatives due to their blindness. People should not look the disabilities of the blind. They must instead help them when in need.
For this purpose, we are going to develop an aid to help the blind people in walking, So that they can walk freely in the environment without being conscious. Major researches have been under consideration on developing a smart stick with various sensors attached to it to be used as a mobility aid by the blind as a part on an ongoing study. For the project we will be using sensors, GPS and GSM. Our project completely relies on implementing an innovative product to help the blind.

***Index Terms*— Ultrasonic Sensor, LCD, Motor, GSM (Global System for Mobile Communication), GPS (Global Positioning System)**

I. INTRODUCTION

This device will help them detect any obstacle on their way. When a blind person is walking over a straight path an there is an obstacle in the front it will stop and will default move in the right direction. The motor will first move in clockwise direction then anticlockwise so as the blind person will return back to its original path. : When there are obstacles in both straight and right direction. Then our device will first detect the front obstacle and will move towards right direction where it will again detect the obstacle and will move towards the left hand side so as to obtain a free path. Again the motor will first move in clockwise direction then anticlockwise so as the blind person will return back to its original path. When there are obstacles in all the three direction. In that condition our device will first detect the front obstacle and will move towards right direction where it will again detect the obstacle and will move towards the left hand side where it will again detect an obstacle an our device will stop. If in case, the blind person meet with an accident there is an emergency switch present in the device through which he could know the present location of the blind person and hence can be helped out.

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II. PROPOSED DIAGRAM IN PROTEUS SIMULATION

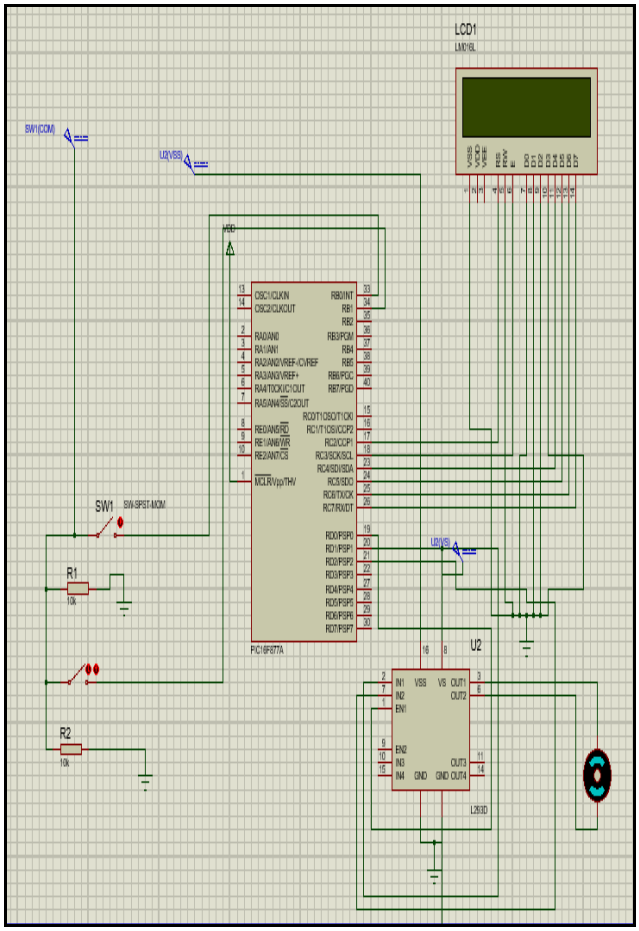

Fig:1

We will be using three ultrasonic sensors in the front of the device so that they can easily find any hindrance using air interface. Ultrasonic sensors have an angle of 15 degree. Therefore, we will use three sensors. A crystal oscillator provides the clock signals to the device. Therefore, it is connected to the microcontroller. H Bridge Motor driver IC operates the working of two motors simultaneously. Pin 1 enables motor one when set and pin 9 enables motor two when set. We have used a microcontroller of pic series Pic16f877A. It has 40 pins. We can write and erase data as many times as we want since it uses flash memory. Two motors are used in the device. When an object is detected the motor stops and changes the path. And another motor is turned on for the process. Motor weight is 100 grams.

III. FLOW CHART

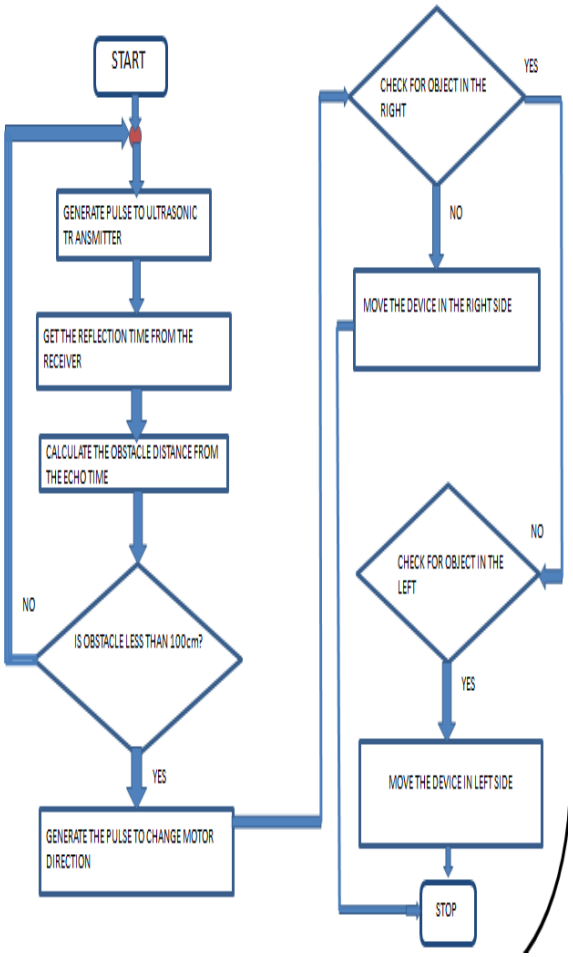

Fig:2

As seen in the Flow Chart, a pulse will be generated to the Ultrasonic sensor transmitter. Microcontroller receives the reflection time from the receiver. The obstacle distance is calculated using the Echo time measured. If obstacle is less than 100cm, then a pulse will be generated to change the direction of the motor. Then it will check the object in the right direction. If there is an obstacle in right direction, then will again change the motor direction. But if there is no obstacle in right direction, then it looks for obstacle in left direction. If there is no obstacle then it moves to the left side.

IV. CONCLUSION

Some Blind people used to take help of a conventional walking stick to walk freely in the environment. It does not have a large range. It can detect the obstacles that touch the stick. It can't detect the hanging articles in the environment. Also it is not reliable and efficient. These are easy to use, light in weight and inexpensive. A number of devices have been developed for blind people with different specifications. But each one of these lacks large range of detection. The previously used devices are costly and inefficient. Hence, there is a great need to develop another device for blind people. The device must have a larger range of detection and it should be inexpensive. Therefore, our design will fulfil the requirement of our new developed Electronic travel aid kit.

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