Smart Stick for Blind People Using GPS and GSM 900 A

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Abstract: *Blind sticks are an aid to help visually impaired people scan their surroundings to identify obstacles and do not require the assistance of an outside agent. The current mechanical shape of the blind stick needs to be updated to better support the theme. Therefore, this paper suggests modifying these sticks by adding sensors, micro controllers, and buzzers. This allows subjects to better navigate their environment / surroundings and improve their mobility experience. Sensors detect hurdles and obstacles from a safe distance, and the micro controller activates a buzzer to alert the user in the event of a threat. The model uses another unit to send location updates to targeted relatives and emergency relatives using GPS and GSM units.*

Keywords: Arduino Nano, Sensor HCSR04, Buzzer, GPS (Neo-6m), GSM (900A), Jumper Wire, Bread Board

I. INTRODUCTION

The main goal of smart sticks for the visually impaired is to allow the visually impaired to navigate safely and pay attention when the walking route is obstructed by others, people, or similar obstacles. Is to. The buzzer is attached to the circuit as a warning signal, and its beep frequency changes according to the distance from the target. The smaller the obstacle gap, the more often you will beep. It can be said that the length of the beep is inversely proportional to the size. The ultrasonic sensor is the main function of this device. The ultrasonic sensor emits a high frequency sound wave pulse, then measures the period and reflects back the sound wave echo signal. There are two circles inside the sensor. One of them emits ultrasonic waves and acts as a transmitter. The other acts as a receiver and records repeated audio signals (usually small microphones). The sensor adjusts according to the airspeed of the echo.

II. PROPOSED SYSTEM

The proposed system uses ultrasonic sensors to detect the distance of obstacles from the user. This reference distance can be used to determine if the user can move. The ultrasonic sensor works on the basis of sound. Sound waves are sent forward from the sensor towards the obstacle, which can detect the maximum distance. A distance of 12 feet with a resolution of 0.3 cm. Sensors are located in five locations to minimize sensor usage and cover the maximum page length possible. The sensors are located on the left, right, centre left, centre right, and bottom. In general, blind people cannot see objects on the floor. Therefore, the sensor at the bottom Ground clearance that provides the necessary safety measures. The proposed system attempts to present vision to the user, so the image must be reviewed and processed in advance. The image is taken with an image sensor (camera).

III. LITERATURE REVIEW

Smart Stick for the Blind a complete solution to reach the destination. This system uses IR sensor, Ultrasound sensor and water sensor to detect the obstacle. However, this system just gives an alert if any one of the sensors is triggered, it uses a buzzer to alert the blind person.

Pothole detection for visually impaired which uses a camera that captures image 15 frame per second and based on the concept of image processing the pothole is detected. Problem with this system is use of camera makes it expensive, and also a lot of images captured per second increases overhead and storage requirement.

Smart Walking Stick for Blind describes about a Stick which use Raspberry Pi and an ultrasonic sensor to detect objects and intruder, the system also has a camera embedded with it, and based on the images captured the objects are detected. The objects are analysed based on the set of image datasets that are already stored.

IV. FEATURES

1. Automatic station recognition helps blind people recognize their destination
2. The system consists of sensors used to measure distance and alert the visually impaired.
3. This system allows visually impaired people to share the location when in a dangerous situation.
4. Easy to use and affordable.
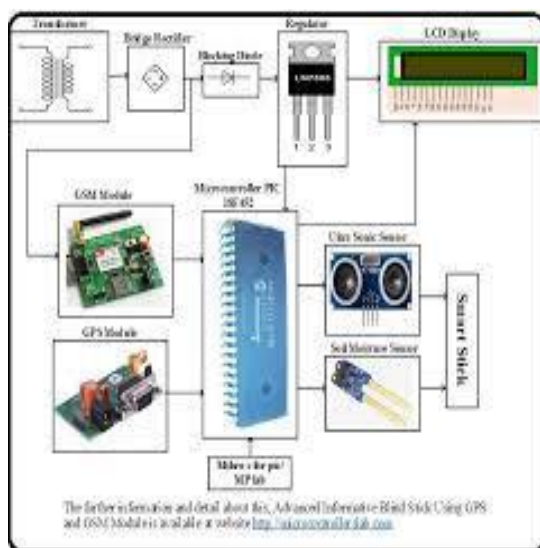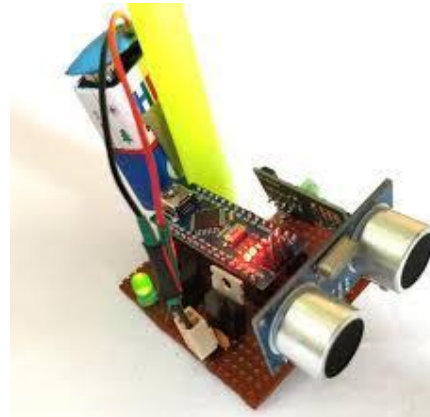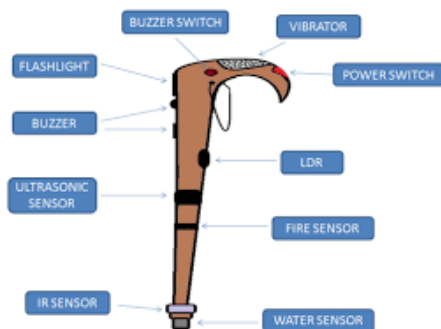
V. SOFTWARE USED

- Arduino IDE.

VI. CONCLUSION

In summary, this project consists of hardware parts such as GSM module, ultrasonic sensor, Arduino UNO and vibrator. The programming used by Arduino is Visual Basic. You can also use c / c ++ to program the Arduino UNO. One is to improve mobile capabilities, and the other is to notify a known person through a message when they are in danger zone. The Smart Stick serves as the base platform for other next-generation adders to help the visually impaired navigate safely indoors and outdoors. It's effective and affordable. Suitable for detecting obstacles in the user's path within the area. This project offers low cost, reliability, portable, low power, and robust navigation technology with apparently short response times. Various types of sensors and other lightweight components are used in this project. It also includes the Global Positioning System "GPS".

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