Visionary Stick

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ABSTRACT:

Technologies are growing very fast, which helps people to get a better and easier life. The visionary stick is a technique to help blind people to recognize their way. blind People suffer from the lack of ability to do their daily activities, from walking in the street to visiting friends or relative or any daily things. Therefore, the solution for this major problem is proposed by designing a visionary stick that can aid the person to walk safely without having fear of hitting someone on the way or any solid objects. The stick has been designed using Solid Work software.This system is very useful for those who are blind or get accidentally blind and are often need help from others. In this paper we have using ultrasonic sensors. sensor has been placed in front of the stick To detect the motion from way of side it has been used vibrating motor and buzzer alarms to alert the person if some obstacle is detected near him.

Keywords: Visionary Stick, Assistive technology, Navigation aid, Ultrasonic sensors, Haptic feedback, Object detection,

1. INTRODUCTION

A blind people have difficulty to interact and feel their environment. they have little contact with surroundings. physical movement is a challenge for visually impaired persons, because it can become tricky to distinguish obstacles appearing in front of them, and they are not able to move from one place to another. they depend on their families for mobility and financial support. their mobility opposes them from interacting with people and social activities. in the past, different systems are designed with limitations without a solid understanding of the nonvisual perception. researchers have spent the decades to develop an intelligent and smart stick to assist and alert visually impaired persons from obstacles and give information about their location. over the last decades, research has been conducted for new devices to design a good and reliable system for visually impaired persons to detect obstacles and warn them at danger places. smart walking stick is specially designed to detect obstacles which may help the blind to navigate care-free. the audio messages will keep the user alert and considerably reduce accidents. this system presents a concept to provide a visionary stick for blind people, both in public and private space the proposed system contains the ultrasonic sensor, Arduino Uno and buzzer. the proposed system detects the obstacle to surrounding. The visionary stick measures the distance between the objects and walking stick by using an ultrasonic sensor. when any objects or obstacles come in range of an ultrasonic sensor and it

2. LITERATURE REVIEW

The work in the paper [1-2] presents a plan and execution of an ultrasonic sensor-based strolling stick for an outwardly disabled individual. An ultrasonic sensor module, HC-SR04 is utilized for impediment discovery in the way of the visually impaired individual, and a ringer is utilized to make the individual cautious. The proposed framework is carried out utilizing PIC microcontroller 16F877A. Dazzle people can utilize this strolling stick for a safe route. It can identify impediments inside 5 to 35 cm scope of distance. Daze People utilizes white sticks to help in obstruction identification and evasion in [3]. Guide canines can likewise be of restricted guide for discovering the way to a far-off area. So we will probably make a versatile, straightforward less expensive framework that will permit blind people groups to go through natural and new conditions without the guide of guides. A few direction frameworks have been produced for vision disabled individuals, however, these frameworks will in general be costly, likewise utilize a customer worker approach.This Navigation framework comprises of two unmistakable parts: detecting the prompt climate for daze individuals travel

3. SYSTEM CONFUGURATION

The visionary stick system configuration using arduino uno model have some of the components and technology used are.

- ➢ Arduino Uno: a main system, responsible for controlling and coordinating the various components.

- ➢ Ultrasonic Sensor: Mounted on the stick, it emits ultrasonic waves and measures the time taken for the waves to bounce back from obstacles. This data helps determine the distance to obstacles in front of the user.

- ➢ Vibration Motor: Attached to the stick, it provides haptic feedback to the user based on the proximity of obstacles. Stronger vibrations indicate closer obstacles, while weaker vibrations indicate objects farther away.

- ➢ Buzzer: Another feedback mechanism, the buzzer emits sound alerts to notify the user of obstacles. Different tones or patterns of sound can indicate varying distances to obstacles.

- ➢ Push Button Switch: Allows the user to toggle between different modes or functions of the Smart Blind Stick, such as adjusting sensitivity or activating/deactivating certain features.

- ➢ Power Supply: The device is powered by a battery or external power supply.

- ➢ Software: The software used in the configuration of a smart blind stick includes the operating system that is Raspbian. And the programming is done in python language.

4. BLOCK DIAGRAM
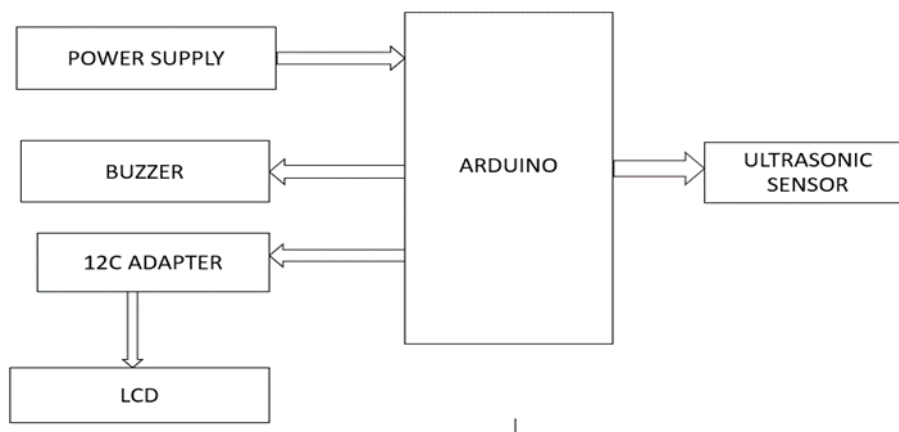
IMPLENTATTION

Implementing an ultrasonic sensor in an IoT project for a blind person's stick involves several steps:

1. Hardware Setup: Connect the ultrasonic sensor to a microcontroller board such as Arduino or Raspberry Pi. Ensure it has a power source and necessary components for interfacing.

2. Code Development: Write code to read distance measurements from the ultrasonic sensor. When an obstacle is detected within a certain range, trigger an action in this case, activating a vibrating motor.

3. Vibrating Motor Integration: Connect a vibrating motor to the microcontroller. Activate the motor when the ultrasonic sensor detects an obstacle within the predefined range.

4. Testing : Test the system in different environments to ensure accurate obstacle detection and appropriate vibration feedback. Calibrate the distance thresholds as needed.

5. User Interface : Consider adding a user interface for adjusting sensitivity or providing feedback to the user such as LED indicators.

6. Enclosure Design: Design a casing or enclosure for the electronics to protect them from the elements and ensure ease of use for the blind person.

7. User Testing and Iteration: Involve blind individuals in the testing phase to gather feedback and make any necessary adjustments for usability and effectiveness.

5. FLOW CHART
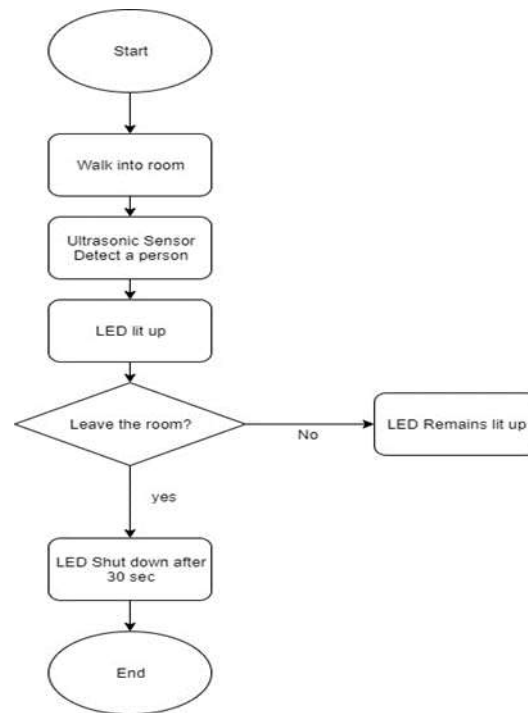
6. RESULT

A Visionary stick using Arduino uno model is to provide people with visual impairments greater independence and mobility by enabling them to navigate their surroundings more safely and confidently. Here are some specific results that is achieved with a visionary stick:

- Enhanced Safety: By using sensors to detect obstacles a visionary stick can help to prevent accidents and improve the safety of the user.

- Increased Independence: A visionary stick allows users to navigate their surroundings more independently, reducing their reliance on others for assistance.

- Improved Mobility: With a Visionary stick, users can move around more freely and explore new environments with greater confidence.

- Real-time Feedback: The audio feedback provided by the device helps users to navigate their surroundings in real-time, allowing them to make quick decisions and avoid potential hazards.

Overall, the result of a smart blind stick is to improve the quality of life for people with visual impairments by providing them with a tool that enhances their safety, independence, and mobility. With the help of advanced technologies we can help the visually impaired persons and make them feel just like a normal person.

7. CONCLUSION

A blind people can move from one place to another independently, with more accuracy of sensors are used, with the help of this system in which the blind person can receive signal. It is a real boon for blind people, because good results can be obtained. The system can give most accuracy of obstacle detection for range of 45cm. Further aspects of this system can be improved via wireless connectivity between system components. Thus, can increase range of obstruction detection speed by upgrading components. Flashlight is used as at night time which can be noticed by others to let him pass way. Overall, a smart blind stick using IoT technology has the potential to significantly improve the quality of life for visually impaired individuals

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