IntelliStick

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Abstract: In this article, we are making a smart blind stick for the visually impaired. This project demonstrates an ultrasonic blind stick using Arduino. Blind people face many problems in their lives. One of them is to find your way. The roads are full of cars and obstacles that will block your way and hurt you. So, with these issues in mind, we created a smart blind bar that primarily uses ultrasonic sensors to scan for obstacles.

Keywords — Blind Stick, Ultrasonic Sensor, Arduino Uno, and Blind People

I. INTRODUCTION

Blind people face many problems in their lives. One of them is to find your way. The roads are full of cars and obstacles that will block your way and hurt you. So, with these issues in mind, we created a smart blind bar that primarily uses ultrasonic sensors to scan for obstacles. Smart rocker for the blind, as the name suggests, is a device that guides the user to the right place and avoids obstacles for the blind.It uses two HC SR 04 ultrasonic sensors to detect their depth or problems. The main aim of the project is to create a smart cane that can warn visually impaired people about obstacles and water in advance and help them reduce injuries while walking. Identify the best navigation tool for the visually impaired. The blind bar will still print the path. There is an ultrasonic sensor HC-SR04 on the front.When the sensor detects an object in its path, the buzzer will sound and the LED will light up. The The visually impaired can hear the bell number when changing classes. So, people can easily find their way without getting hurt. This smart stick works the same as an ultrasonic rangefinder.

II. LITERATURE REVIEW

"Ultrasonic Sensor Based Smart Stick for the Blind People"
This paper describes the development of an ultrasonic sensor-based wand for the visually impaired. The HC-SR04 model ultrasonic sensor module is used to detect obstacles in their path, while the bell is used to warn the blind. PIC microcontroller 16F877A is used to fulfill the request. This pool helps the visually impaired walk safely. Obstacles are visible in the range of 5 to 35 cm. [1]

"Smart walking stick based on infrared sensor program for blind people."
Blind people need a little help staying safe while moving. Smart canes are a way to encourage mobility for the blind and visually impaired. Solutions include a variety of technologies, including lasers, infrared, and ultrasound, but they still have limitations. In this study, we have prepared a smart walking stick based on infrared technology, which is light, inexpensive, user-friendly, fast-response, and low-energy.Within two meters, a pair of infrared sensors can detect the presence of stairs and other obstacles in the user&path. The test was accurate and the stick detected all problems. [2] program for blind people.

"Implementation of Cognitive Services for the Blind/Visually Impaired."

In this study, we present smartphone applications, smart hats, wearable smart glasses, and online information platforms within the scope of smart services for the visually impaired and visually impaired. Blind or low vision people can detect problems using the smart wand and smart glasses. When a blind or visually impaired person falls, relevant information (GPS, fall, etc.) is collected and uploaded to an online data portal. The mobile device application also allows users to relevant information. [3]

"Smart stick for the blind and visually impaired people."

One of the many problems that people have little control over is blindness. One of the biggest challeng es, like crossing the street, taking the train, or going to other public places, is transportation. To do this, they always need help. However, in the absence of such support, they can sometimes remain unprotec ted.Their dependence on others undermines their self-confidence. They always walk on their own, using a cane or touching or poking things that get in their way. This is dangerous for them and others as it ca n lead to many accidents. Because we live in a technology rich society, we decided to help these disabled people by producing technology-based solutions. Smart Stick is our name.It is a device that uses a lot of joysticks to check for problems to help the user. With many sensors installed, it will detect all obstacles in its path. The micr ocontroller will collect the data and send it as vibrations alerting the user to the barricade. This is a ver y useful tool, very useful for blind people [4]

"Multi-functional blind stick for visually impaired people."

Routing inside or outside is a big problem that people can see. It was difficult to get out because the ro ads were bad. They should always be careful to avoid accidents such as hitting fixed or moving objects climbing or descending stairs, slipping,and falling on slippery surfaces.They may also have,problems and want to tell their relatives or friendwhere they are.

Thanks to the use of technology, many problems faced by visually impaired people can be solved. TheInte rnet of Things (IoT) paradigm is used conceptually to provide a conduit between the environment and the blind. Obstacles such as obstacles, stairs,and wet floors can be detected using a variety of sensors. The sm art curtain model described here is a simple, smart,and inexpensive device that includes many IoT sensors and modules. Additionally, the solution provides a way to inform likes about the user location.In addition, a software program has been developed to help visually impaired friends manage the installation of the ca ne. Sticks disappearing at home can be a big problem. [5]

III. Block Diagram
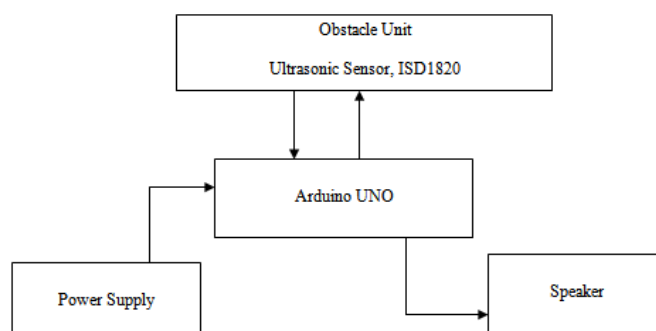
IV. PROBLEM IDENTIFICATION

Visually impaired individuals face numerous challenges while navigating through their surroundings independently. One critical issue they encounter is the difficulty in detecting and avoiding obstacles, which can lead to accidents, injuries, or a loss of confidence in mobility. Traditional white canes provide limited assistance, primarily detecting obstacles on the ground but often failing to identify higher obstacles or overhanging objects. To address this problem, there is a need for a Smart Blind Stick that incorporates

advanced technologies to enhance obstacle detection and provide comprehensive guidance, enabling visually impaired individuals to navigate safely and confidently through their environment.

V. METHODOLOGY/EXPERIMENTAL

Smart Blind Rod uses the HCSR04 ultrasonic sensor to monitor the path ahead. When the sensor detects s an object in its path, the buzzer will sound and the LED will light up.A blind man barely changed his way after hearing the bell. So, people can easily find their way without getting hurt. This smart stick works the sa me as an ultrasonic rangefinder.
You can also display the distance value in centimeters in real time on the Arduino serial monitor. When you have a schemaMini Arduino project, use the zipper to connect all the lights to the bar.

VI.RESULTS AND DISCUSSION
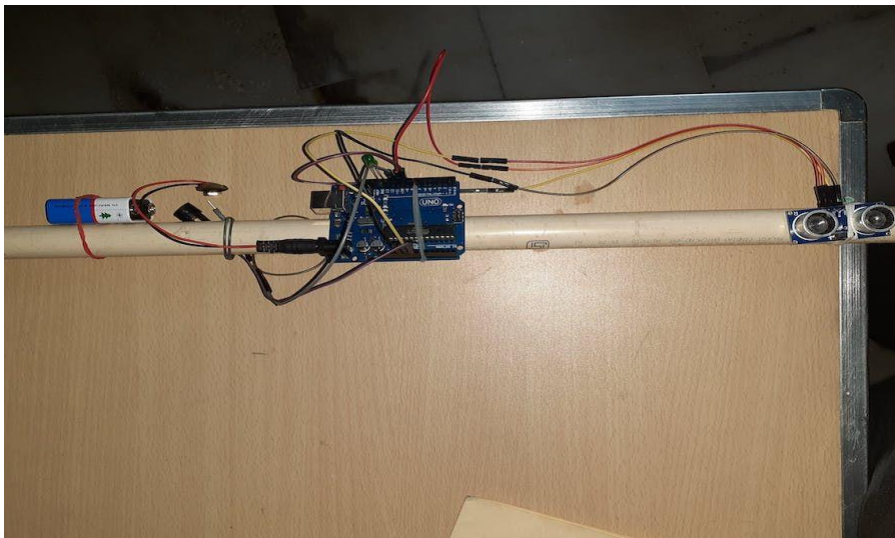
Hardware Implementation on the top view (Fig.1)
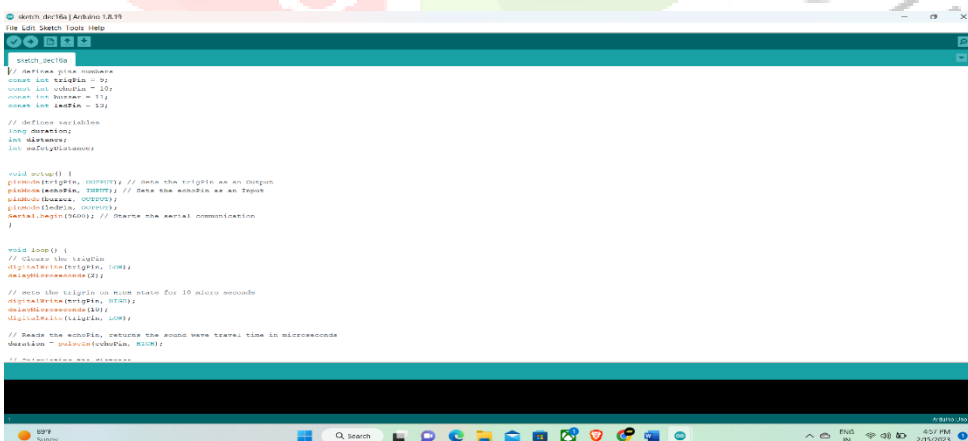
Serial Monitor output (fig.2)

VII.CONCLUSION

The system has undeniably fast response time, low cost, reliability, portability,
and navigation reliability. Although tightly packed with sensors and other components, the system is lightw
eight. Other parts of the system have also been improved, as the range of ultrasonic sensors can be extended
and media impact calculation methods can be used by providing wireless communication between devices i
n the body. Blind or visually impaired people in all developing countries have been at the forefront of the de
velopment of these solutions

IX.REFERENCES

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