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ULTRASONIC SMART GLASSES FOR VISUALLY IMPAIRED PEOPLES

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ABSTRACT

This device has a set of glasses and an integrated obstacle detecting module. a processing unit, a buzzer and audio component, or an output device. The processing unit is coupled to the output device and the obstacle detecting module. The obstacle detection module essentially comprises of an ultrasonic sensor, a control module for processing, and an MP3 player for output. The control unit operates the ultrasonic sensors, gathers data about the impediment in front of the user, processes that data, and then outputs the appropriate information through the mp3 player. These Ultrasonic Smart Glasses for the Blind are a portable, user-friendly, lightweight, affordable equipment. The vision impaired may effortlessly navigate and avoid obstacles with the aid of these spectacles.

I. INTRODUCTION

Blindness is a highly widespread impairment among people all over the world. Worldwide, 285 million people are visually impaired, 39 million are blind, and 246 have low vision, according to the World Health Organization (WHO). Around 90% of people who are blind or visually impaired reside in developing nations. Blindness is a curse for those who are in need. They require assistance with all daily tasks and walking outside. In order to make them independent and free from the curse of blindness, a method is thus described in the paper. If an object is found in this protocol but the distance is larger than 1 m, it does not detect it; if the distance is less than 100 cm, it senses the object and then guides. Numerous applications likewise employ the same strategy. One of the goals of the smart glass system is to provide blind persons with excellent environmental accessibility. Blind persons today face a major challenge because they are always dependent on others when making purchases. There are some chances that someone will cheat. We will create these projects in order to make them autonomous and ensure that they are aware of every thing they buy. The goal of this initiative is to simplify blind people's lives. Although there are many standardised tag readers for cell phones that can be used to distinguish between items in a store or at home, these readers are difficult to use for people who are dazed or outwardly impeded because they rely on the client's eye movement to focus the scanner tag in the camera's field of view. We show a mobile application that uses the phone's built-in camera to continuously guide a client who is visibly impaired to the standard tag on a bundle. The client is prodded with sound cues to move the camera near the scanner tag until it tends to be settled by the camera. At that point, the standardised tag is decoded and the related item data is read so that anybody can hear using content to-discourse. Trials with a volunteer who is visually impaired show evidence of our framework's concept; the volunteer was able to locate standardised tags, which were subsequently meant to be item data that was declared to the client. Although there are many standardised identification readers available for differentiating items in a grocery store or at home on mobile devices, such readers are restricted to dazzled or visibly disabled people due to their reliance on the client's visual input to focus the scanner tag in the camera's field of view.

II. LITERATURE REVIEW

- System For Blind People (International Journal of Open Information Technologies ISSN: 2307-8162 vol. 7, no.5, 2019.

It provided GPS-based real-time help and was incredibly comfortable, simple to use, and effortless to navigate. Smart sticks powered by Raspberry Pi can detect objects and alert the blind via buzzer sound. A thorough analysis of the suggested system will aid in choosing a novel approach to the current system.[1]

- Md. Mohsinur Rahman Adnan "Design and Implementation of Smart Navigation System for Visually Impaired (International Journal of Engineering Trends and Technology (IJETT) – Volume 58 Issue 2 - April 2018)

The apparatus that aids the blind in detecting stairs is described. It uses a pair of sunglasses with an ultrasonic sensor and buzzer attached. It is employed to find the stairs. [2]

- Jinqiang bai-"Smart guiding glasses for visually impaired People in indoor environment" (IEEE journal paper, Vol. 63, No. 3, August 2017).

Describes the obstacles detection module, which is mounted on sunglasses and equipped with an ultrasonic sensor, a processing unit, and a buzzer that detects impediments and emits a buzzing sound to assist the blind. [3]

- Rohit agarwal (2020) "low cost ultrasonic smart glasses for blind"(IEEE conference paper)

Suggested a mechanism to aid users who are blind in their navigation. The suggested architecture and design will make it possible for blind individuals to walk around freely and independently. In this article, we examined the current electronic assistive devices for the blind. In comparison to existing systems, the one that was offered was more beneficial and effective. In terms of localisation, it will be able to accurately pinpoint the blind person's location with the aid of the GPS in the event that s/he gets lost or encounters any hazard. [4]

- S.Gangwar , "A Smart Infrared Microcontroller-Based Blind Guidance System", Hindawi Transactions on Active and Passive Electronic Components,Vol.3, No.2, pp.1-7, June 2013.

Designed a smart stick for the blind that uses infrared (IR) sensors to provide early warning of an obstruction. The stick detects obstructions and uses vibrating signals to inform visually impaired persons. The smart stick, however, is primarily focused on detecting obstacles; it cannot help the blind in an emergency. Additionally, the IR sensors are only particularly effective in detecting the closest obstruction from a close distance. [5]

- S.Chew , "Electronic Path Guidance for Visually Impaired People", The International Journal Of Engineering And Science (IJES), Vol.2, No.4, pp.9-12, April 2012

Blind spot, a smart white cane that integrates GPS technology, social networking, and ultrasonic sensors to aid those with visual impairments in navigating public settings, was proposed. By employing ultrasonic sensors, the GPS locates the barrier and warns the blind to avoid running into it. However, since ultrasonic measures the distance of the obstruction, GPS did not demonstrate its effectiveness in tracing its location. [6]

- Benjamin etal, "Design of microcontroller based Virtual Eye for the Blind", International Journal of Scientific Research Engineering & Technology (IJSRET), Vol.3, No.8, pp.1137-1142, November 2014.

Developed a smart stick with laser sensors that can detect curbs and impediments. Using a microphone, a high-pitched "BEEP" was used to indicate the presence of obstacles. The laser cane has a very straightforward and user-friendly design. Only obstacles can be detected by the stick; it is unable to support cognitive and psychological processes. There is only a beeping sound that causes obstacles, and there is no one to guide them. [7]

- Syed Tehzeeb Alam, Sonal Shrivastava "Smart Device for Blind People" Journal: International Journal of Engineering Research & Technology (IJERT), ISSN:2278-0181, Vol. 4 Issue 03, March 20

Syed Tehzeeb Alam stated in 2015–16 that a smart cane with nearly identical settings to the guide cane had also been produced. This cane detects impediments using servomotors and ultrasonic sensors. A microprocessor that responds to commands like right, left, straight, etc. is located inside the cane. However, this approach also has several drawbacks, like the inability to fold and the need for a vast area or space to be placed. [8]

III. MOTIVATION

Visually impaired individuals often face challenges when it comes to getting around in unfamiliar environments, which can limit their independence and ability to live a fulfilling life. Smart glasses equipped with ultrasonic sensors can detect nearby obstacles and provide real-time feedback to the user through auditory signals and buzzer. This can help visually impaired individuals avoid obstacles and navigate their surroundings with more confidence and independence.

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IV. OBJECTIVE

The ultrasonic smart glasses is an innovative glasses designed for visually disabled people for improved navigation. We here propose an advanced smart glass that allows visually challenged people to navigate with ease using advanced technology. It is Cost efficiency, Light weight, Portable & easy to use.

V. PROPOSED SYSTEM

In this suggested approach, blind persons wear smart glasses with sensors so they can identify objects. Here, a distance sensor picks up on obstacles and, in accordance with that information, gives the user a sound output for direction. The suggested system deals with the more affordable and accurate obstacle detection with broad coverage. Low cost, ease of use, and assistance in monitoring the patient are benefits. The obstruction in front of a person is found utilising soundwaves by an ultrasonic sensor at a specific distance. Here, a transceiver is an ultrasonic sensor. When the transmitter detects the objects, ultrasonic waves are released. Inside the ultrasonic sensor are the transmitter and receiver. The time elapsed between the broadcast and received signals is calculated. This is used to compute the distance between the object and the sensor. The Arduino uno board that we modified served as the brains of this creation. The Arduino assists in controlling and sensing items in a real-time setting. The Arduino Software (IDE), our Integrated Development Environment that runs both online and offline and is shared by all of our boards, is used to programme the Arduino Uno. The Arduino receives a signal if the ultrasonic sensor successfully uses sound waves to identify the objects, at which point it will play a sound to promptly warn the user.

VI. CONCLUSION

The main objective of this project is that it can be a Third Eye for the Blind is to design a product which is very much useful to those people who are visually impaired and those who often must rely on others. It is an innovation which helps the blind person to move around and go from one place to another with speed and confidence.

VII. REFERENCES

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