Smart Shoes for Blind Person

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ABSTRACT: Eyes play an important role in our daily lives and may be the most precious gift we have. This world is clear to us because, with eyesight, we are fortunate. Yet there are some people who have lost the ability to imagine these things. Because of this, they are going to have a lot of difficulties moving easily in public areas. Wearable devices should also be designed for such visually impaired individuals. A smart shoe is the concept of a wearable device to provide visually impaired people with directional details. This paper provides a reflection on managing the challenges that blind people search for by smart shoes. Visual disability is handled by a significant portion of the general population. So it can be built for blind people with obstacle detection and water recognition to stay away from this navigational shoe. Four vibration motors are used in this scheme to offer the best possible indications, such as right, left, front and back. As the heading indicates, the motor will begin to vibrate. So people with visual impairments can go anywhere, without much of a stretch. In the project, the IR sensor is used for obstacle detection, the obstacle is distinguished and the buzzer will turn ON around then.

KEYWORDS: Blind, Eye, Shoes, Sensor, Infra-red (IR), visually impaired, Assistance, Navigation.

INTRODUCTION

An embedded system, often with real-time computing constraints, is a computer system with a dedicated purpose inside a larger mechanical or electrical system. It is also integrated as part of a complete unit, including hardware and mechanical components. Many devices in common use today are powered by embedded systems. For mobile systems, Android is an operating system developed by Google [1]. It is based on the Linux kernel and is optimized for mobile devices such as smartphones and tablets with a touchscreen. The user interface of Android is primarily based on direct manipulation, using touch gestures such as swiping, clicking, and pinching, along with a virtual text input keyboard to manipulate on-screen objects.

The eyes are identified as the soul's window, which is the meaning of the eyes. The eye is a critical part of the human body that helps a person to learn about it. Blindness hampers a person's ability to do their survivor's everyday tasks and earn salaries. According to a recent World Health survey, The Organization (WHO) of India is home to approximately 30 percent of the world's total blind. India's population of visually disabled individuals has now crossed 12 million, which will rise in the coming days. From the numbers, it is clear how big the blindness problem in India [2].

Many people suffer from extreme visual impairment because they are stuck in their familiar world. People who suffer from complete blindness. Also basic things, such as flipping on the fan, finding their everyday stuff or going on a walk, cannot be completed. The key concern with blind people the lack of self-esteem and physical integrity is what causes them to lose self-confidence. They need to memories the location of each and every object of their need and challenge every time they step into a new environment. Therefore, they need some tool or system that can assist them in their mobility and by doing everyday chores. Blindness is a qualitative concept that defines the clinical condition, As a result of complete vision loss, individuals have no experience of light. Blindness also extends to those who have so little vision that, as vision substitution abilities, they have to rely primarily on other senses. Visual deficiency, on the other hand, is a qualitative term used when the state of vision loss is

characterized by a loss of visual control at the level of the organ, such as visual acuity loss or visual field loss.

Tactile screens for the fingertips and palms are several of the assistive devices for the blind that exploit touch as the replacement sense. Typical touch screens contain vibrator arrays or upward/downward moveable pins as mechanisms for skin indentation. An groundbreaking touch stimulation interface based on EAP soft actuator technology is the bandage-sized tactile monitor. Like a band-aid, it is smooth and flexible and can be wrapped around the finger. This new wearable display could be used to transmit visual information to the blind as a Braille display or as a multipurpose touch display.

LITERATURE REVIEW

The collective use of various types of sensors, especially the active - passive combination, can be of great value to a complete and reliable obstacle detection sensing system. In order to identify an obstacle in different lighting or weather conditions, any precise form of technology might have hitches to satisfy all the required needs. The muddled context and complex moving patterns of all objects in urban streets that might appear on a road scene require erudite processing of sensor inputs. A sensor - fusion and segmentation approach can be used to solve this issue. From the point of view of science, various sensing systems, such as ultrasonic sensors, microwave radars, laser scanners and computer vision can be used for obstacle detection tasks.

Most people in India face the issue of visual impairment, which prevents them from being independent. It becomes a real challenge for them to locomotive when in an unknown setting. Where obstacles move away from the visually impaired person, in order for the blind to improve their sense of hearing or some guide to locate him in the new environment [3]. Where a stick, trained dog or other assistive dog and electronics equipment for movement is used. The aim of the paper is to design a visually impaired person's smart assistive shoe so that they get rid of the cane and make them more independent. In this fast-paced life-now-a-day, this will also allow them to live freely. Artificial vision is 83 percent of human physiology, the most essential aspect of human physiology. It is by sight that knowledge, human beings get from the world. In 2014, World Health Organization (WHO) figures reported that there are 285 billion people worldwide with visual disability, 39 billion blind people and 246 people with low vision. The walking cane and guiding dogs are the oldest and most traditional mobility aids for people with visual impairments. The disadvantages of these aids are the range of movement and the transmission of very little information. With the rapid advancements in modern technology, both hardware and software have developed the opportunity to provide smart navigation capabilities.

Android use is limited to its features that are not visual, but can also support a person with visual disability. With the sole assistance of the hardcoded keys on the Android computer, the user needs to be able to open his application without having to view anything on the device. To design a new system for the autonomous mobility of a visually impaired person, all the features of the sensors, the Arduino microcontroller and the android must be combined. The IR sensor and buzzer will not give accurate result to the blind people, this is the main drawback of previous project, in previous project IR sensor are the object detecting sensor, the problem associated with these reasons and less efficiency and loss the accuracy to detect object and one more problem is it will not provide clean information to blind people.

Both on the hardware and software front, with the rapid advancements in modern technology, have brought the ability to provide intelligent navigation capabilities. A lot of Electronic Travel Aids (ETA) have recently been developed and devised to assist blind people to navigate safely and independently. In this project, the device has been developed as part of the shoe of the blind person, and in this project

ultrasonic sensors and speakers that provide blind people with more precision in object detection and clean details.

A wide variety of visual abilities and needs are defined by the word "visual impairment." Assistive technology selection should be the product of a team process that takes input from the family, educators, paraprofessionals, and the student into account. It is important to note that the best option for a student is not always "high-tech." Selected instruments should represent the particular strengths and needs of the student, the tasks that he needs to be able to perform, and the environment in which he will be operating.

CONCLUSION & DISCUSSION

This paper proposes smart shoes for obstacle detection and navigation by visually impaired people, after analyzing the effects of several approaches outlined in this paper. With Arduino, which is a form of embedded device, smart shoes are purchased. Instead of providing a complex, non-portable system, the embedded system addresses all the functions that a user needs to perform in that case. As the user walks with the sensors enabled, the processing of data will be performed dynamically. The processing of the values is transmitted to the Arduino board from the sensors and to the smartphone via the device hub. This will be low in difficulty and time, and the obstacle will be identified in a fraction of seconds. According to the real time routes and the obstacles coming in between, the proposed system would automate. Obstacles are processed and the communication is initiated according to the Android interfacing algorithm by the given algorithm programmed into Arduino.

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