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A Survey on Blind Stick Using Ultrasonic Sensor with Voice Announcement and GPS Tracking

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ABSTRACT: Blind people need some aid to feel safe while moving. Smart stick comes as a proposed solution to improve the mobility of both blind and visually impaired people. Stick solution use different technologies like ultrasonic, infrared and laser. The software concept together of the structure of the respective application has been presented in detail. This application is for assisting blind and partially sighted people for smartphone use. It is equipped with a lot of predefined voice commands many activities can be performed including making calls, sending and receiving text messages, using the “phone book” with ease, determining the user’s position, obtaining information about present time, and controlling the battery level. Full assistance for forgotten commands and charging connect or disconnect will be provided for blind peoples in this App. The Blind Stick of the blind user will also be included in the system. The blind stick will be equipped with sensors and will detect the obstacle in the user’s path. It will calculate the distance of obstacle from user and convert it into footsteps. The user will be given a voice message that the obstacle is certain footstep ahead.

KEYWORDS: GPS, GSM, microcontroller, Ultrasonic Sensor, water sensor

I. INTRODUCTION

Visually impaired people are the people who find it difficult to recognize the smallest detail with healthy eyes. Those who have the visual acuteness of 6/60 or the horizontal range of the visual field with both eyes open have less than or equal to 20 degrees. These people are regarded as blind. A survey by WHO (World Health Organization) carried out in 2011 estimates that in the world, about 1% of the human population is visually impaired (about 70 million people) and amongst them, about 10% are fully blind (about 7 million people) and 90% (about 63 million people) with low vision. The main problem with blind people is how to navigate their way to wherever they want to go. Such people need assistance from others with good eyesight. As described by WHO, 10% of the visually impaired have no functional eyesight at all to help them move around without assistance and safely. This study proposes an improved technique for designing a smart stick to help visually impaired people for their navigation. In this system, the ultrasonic sensors are used to detect obstacles by using ultrasonic waves. By sensing the obstacles, the sensor passes the received data to the microcontroller. The microcontroller processes the data and calculates if the obstacle is close enough to the person. If the obstacle is not close to the microcontroller, the circuit does not do anything. If the obstacle is close enough to the microcontroller, it sends a signal to a buzzer. The system consists of two ultrasonic sensors, one for detecting any obstacles in the path of navigation and the other one is used to detect pits (by finding the depth). We can assign two different buzzers for two u

II. LITERATURE SURVEY

[1] Shruti Damhare et.al In this paper presents a theoretical model and a system conception to produce a sensible electronic aid for blind individuals. The system is meant to produce overall measures – Artificial vision and object detection, real-time help via GPS. The aim of the system is to produce a low cost and efficient navigation for blind, which provide a way of artificial vision by providing data concerning of the environmental state of affairs static and dynamic objects around them. The advantage of the system lies within the in disputable fact that it will persuade be terribly inexpensive answer to many visually handicapped person worldwide. The projected combination of varied operating units makes a period of time system that monitors position of the user and provides twin feedback creating navigation a lot of safe and secure.

[2] Pankaj Patil et.al In This paper focuses on coming up with a tool for visually impaired people who facilitate them in move severally comfortable to use. The device is coupled with a GPS to spot the placement of the blind man. moreover, it provides voice tuned in to avoid obstacles supported inaudible sensors. Associate emergency button is additionally provided to the system. The complete device is intended to be little and is employed in conjunction with the stick.

[3] Dr. Sarika Raga et.al This project presents a style and implementation of sensible walking stick that helps the blind individuals to travel on an individual basis. The projected hardware system consists of Arduino Nano, IR sensor, voice playback module, GPS receiver module and therefore the GSM. The detection of obstacles is completed using associated IR device. The IR device detect the presence of associate obstacle ahead of it and passes the information to Arduino nano. Method the information received and calculates whether the obstacle is shut enough or not. The processed information is fed to the voice playback module that provides voice help to the visually handicapped person through a speaker to avoid the collision between the obstacles. To create a lot of helpful the stick is additionally mounted with the wetness device that detect and alerts the blind if any wetness content is there to avoid slippery methods. The GPS receiver has been used for safety purpose to trace location of the user. If the blind folks would like associate facilitate then they can trigger an emergency button that is mounted on the stick then the GSM will send the situation info to the predefined contact numbers inside two minutes. This whole setup are going to be mounted on the stick. All effort is being created to create this stick is to be cheaper in addition as simple to use. With of these options the blind folks will improve their navigation ability and to not rely upon anyone whereas walking in unknown places

III. PROPOSED SYSTEM

The main objective is to provide a talkative assistance to blind people. We are going to develop a intelligent system that works efficiently good in outdoor. Current navigation device for the visually impaired focuses on traveling from one location to another, this system focuses on designing a device for visually impaired people that help them to travel independently which is comfortable to use. This device is used to help blind people to move with the same ease and confidence as a sighted people. The device is linked with a GPS to identify the location of the blind person. Moreover, it provides the voice alert to avoid obstacles based on ultrasonic sensors. An emergency button is also added to the system. The whole device is designed to be small and is used in conjunction with the stick. Blindness or visual impairment is a condition that affects many people around the world. This condition leads to the loss of the valuable sense of vision. The need for assistive devices was and will be continuous. There is a wide range of navigation systems and tools existing for visually impaired individuals the blind person truly requirements and identifying objects.

IV. CONCLUSIONS

It is worth mentioning at this point that the aim of this study which is the design and implementation of a smart walking stick for the blind has been fully achieved. The Smart Stick acts as a basic platform for the coming generation of more aiding devices to help the visually impaired to navigate safely both indoor and outdoor. It is effective and affordable. In a developing country like India, there is a need for a cost-effective solution so that most of the people can have an effective product as proposed in this paper.

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