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TACTILE SYSTEM FOR VISUALLY IMPAIRED

GOMATHI.L[1], MATHANKUMAR.S[2]

Student[1], Associate Professor[2]
Department of Biomedical Engineering [1,2]
V.M.K.V. Engineering College, Vinayaka Missions University, Salem, Tamilnadu[1,2]

Abstract:
The main aim is to design a system which would help the visually impaired people to function on their own and to make them behave like normal human being without any support. He/she would not require assistance for walking and other activities. They will come to know about the happenings around them by speech signals. As the available aids are not so advantageous, our system will be overcoming that hindrance faced by the past and present. This project has features which helps the visually impaired to acquire an artificial vision through sense of hearing. The person can move independently to any location he/she likes without asking the traveling route from others. All things which are being done by normal humans can also be done by differently talented people too. This project when implemented can change the life of the needy.The main aim is to develop a system capable of interpreting and managing real world information from different sources to support mobility-assistance to any kind of visual impaired persons: blind, partially sighted, and people with progressive loss of vision. Environmental information from various sensors is acquired and transformed either into enhanced images for visual impaired people or into acoustic maps presented by headphones.

Keywords: Visually impaired, Speech signals, Ultrasonic detector, Mobility-assistance, GPS module

I INTRODUCTION:

The proposed system helps the user to get the layout of the indoor and outdoor facility, and gives the blind a broad picture of what the environment is like. The user may also get distance and navigation information between destinations. As the user walks around, the system guarantees travel safety by employing timely obstacle prompting, through speech the path can be made easy and simple.

The proposed system consist of an embedded system based microcontroller unit which consist of an ultrasonic sensors used for detecting the objects and the system produce sounds about the position of the object using a speaker circuit. The Ultra sonic transmitter continuously emits signals. The signal returns back to receiver after hitting on solid objects, in order to detect the obstacle. For navigational purpose GPS module is used. A temperature sensor which senses increase in temperature in the surrounding areas also integrated in this system. The temperature range is set to a certain level. The speaker circuit is used for the output of speech when there is an obstacle in front.

II METHODOLOGY&ACCOMPLISHED WORK:

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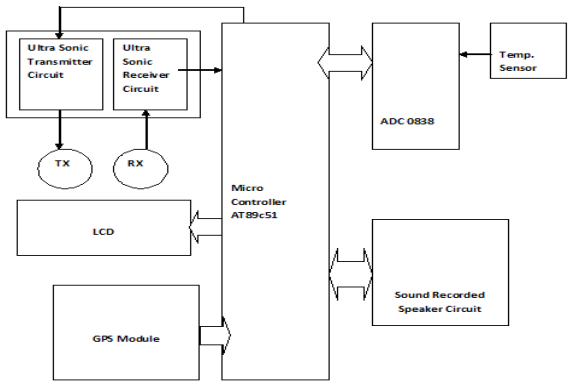

Figure 2.1 Block diagram of tactile system for visually impaired

Blind and visually impaired people are at a disadvantage when they travel because they do not receive enough information about their location and orientation with respect to traffic and obstacles on the way and things that can easily be seen by people without visual disabilities. The conventional ways of guide dog and long stick only help to avoid obstacles, not to know what they are. Navigation systems usually consist of three parts to help people travel with a greater degree of psychological comfort and independence: sensing the immediate environment for obstacles and hazards, providing information about location and orientation during travel and providing optimal routes towards the desired destination. Ultrasound sensors are used to locate the obstructions in the detection path. Thus, it reduces the possibility of embarrassment by helping the user avoid inadvertent cane contact with other pedestrians. The system also measures the distance between the user and obstacles.

III ADVANTAGES:

The most important objectives are that the device be easy to use and consumer-friendly. Ease of use implies that it must be intuitive, accurate and weather resistant, and it must operate continuously and not interfere with other user activities. To be consumer-friendly it should be affordable, safe, and comfortable. These objectives are further broken down in the table below.

- Easy to handle
- Consumer friendly
- Accurate
- Operates continuously

DISADVANTAGES:

- Delay in switching process
- Limited program memory in microcontroller
- It is not water resistant

APPLICATIONS:

- Blind can easily find the free path.
- GPS module will scan and leads the blinds to pre stored areas in the microcontroller.
- The device can detect the fire.
- Device can detect all the obstacles (such as parked cars, trees, etc…).

IV CONCLUSION:

This proposed model enables the visually impaired person to function independently like normal humans. This device for blind people will improve the quality of their life. The problem with the existing system is the delay Encountered and the efficiency of it is not sufficient. The main aim of serving the mankind is achieved by providing sense of sight to the needy by this project and we achieved the goal by our proposed method.

Thus the project can be concluded as a self-operated technological device which reduces the risks of life of a visually impaired person. It also help the person to travel in the unknown environment and also care the person from the obstacles and dangerous by giving a free path.

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