



Electronic Shoes To Assist Visually Challenged

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Abstract: The main objective of this project is to provide an acoustic assistance to the blind people and also to deal with the problems faced by them to walk like the normal human beings. Thus, the project aims to develop a device that would serve as a guiding assistance to them. The paper focuses on designing a device for visual impaired (or blind) people that would help them to travel independently and also with more ease. One of the biggest problems that the visual impaired one's face is while travelling because when they walk in the indoors and outdoors, they are not well aware of information about their location and orientation with respect to traffic and obstacles on their way unlike the normal beings. The technology proposed in the paper serves as a solution for visual impaired people. The project consists of the smart shoes that alerts visually-impaired people over obstacles coming between their ways and could help them in walking with less collision. The main aim of this paper is to address a reliable solution encompassing of shoe that could communicate with the users through voice alert and pre-recorded messages.

Index Terms – visually impaired, smart shoes, voice, message

I. INTRODUCTION

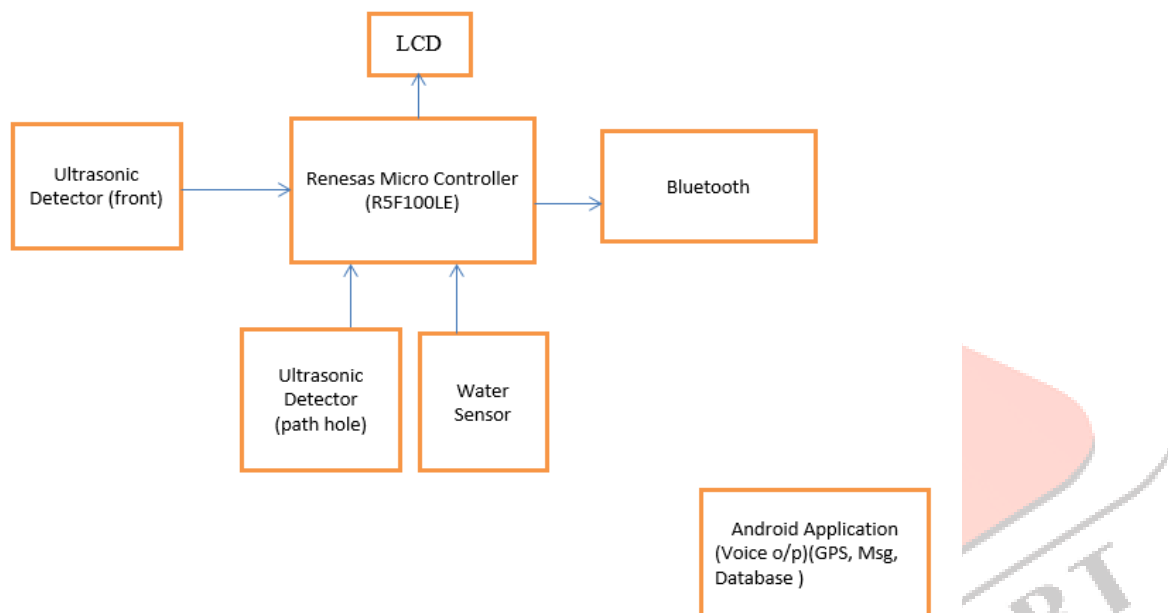
People with visually impaired faced most of the challenges in the environment. The long Hoover Cane used by them is not advantages while walking and travelling. Using smart shoes for visually impaired people need not to be depending on others for mobility India contributes about 21% of the blind people over total population. In a million population, there are around 53 persons that are visually impaired, 46 thousand are having low vision and around 7000 have completely lose the vision

II. LITERATURE SURVEY

The number of research has shown clear signs that gesture controlled technologies are now in the interest of the people. Though there are different aspects and many points to mention from the research, but this survey study has more interest in the following categories, as these are important areas of gesture based user interface. It has been about 30 years of research and researchers have been working continuously on gesture based system. Most of the researches are based on hand gestures. Direct control via hand posture is immediate, but limited in the number of Choices. There are researches about body gesture, finger point movement. In the early stage, researchers used gloves with microcontroller and connected with the device through a wire. Head gesture and gesture with voice were also in the research, but hand gesture was the most dominant part of gesture control system. Users Most of the research of the survey use or target the general users of any age. Initially it was mostly for computer users to work on the objects or presentation. Wheelchair users are also highly considered for accelerometer based gesture controlled system. Most of the last 5 years investigations are focused on elderly and disable people. Researches show that gesture based applications can be used for many different things, entertainment, controlling home appliance, tele-care, tele-health, elderly or disable care. The scope of the application shows us the importance of more researches in a gesture controlled system. Most applications are to replace traditional input devices like keyboard and mouse, accessible application for elderly-disable like accelerometer. . Now people can interact with any media using gesture to control wide range of applications. We have got gesture based commercial products in 2003. Gestures have been captured by using infrared beams, data glove, still camera, wired and many inter-connected technologies like gloves, pendant, infrared signal network server etc in the past. Recent vision technique, video and web cam based gesture recognition has made it possible to capture any intuitive gesture for any ubiquitous devices from the natural environment with 3D visualization.

Sl No.	Methods	Advantages	Disadvantages
[1]	Real time assistance via GPS and camera	The system is low cost.	Design complexity is very high.
[2]	Pulse echo technique	The accuracy is high.	Power requirement is high.
[3]	Android application	Accurate and Reliable.	Takes few seconds to give output response
[4]	High speed obstacle avoidance	Detects the obstacle Faster	Efficiency is low
[5]	voice operated navigation	Helps disabled persons	Only for visually challenged

III. METHODOLOGY



As we see in diagram above Renesas microcontroller is used to embed all the sensors and module used to make shoe. The two ultrasonic sensor is used for obstacle and path hole detection which will be placed in certain angle on shoe. A water sensor is used to detect water source so that blind can recognize and take alternate path. An LCD display is used for our convenience to check required operation. An android application is built and connected to shoe through Bluetooth, it consists of voice commands, a database of operations is stored and location is sent using GPS. The shoe operates in such a way that it senses obstacles, path holes or water in the road and the information is sent to app through Bluetooth. The information is stored and the responses is sent using recorded voice messages.

Construction: The components previously mentioned are integrated with each other to a common microcontroller i.e., Renesas microcontroller. Each component is unique with its functionality and the purpose that they serve.

Coding: Renesas microcontroller is coded using Embedded C. An android application is built for the android phones which serves as an interface between the Smart Guider and the user. This android application is built using Android Studio and Coded using Java Programming language.

IV. CONCLUSION

An electronic shoe is built which will help the blind to recognize path holes, obstacles, water using respective sensors and also the application designed to provide voice commands and Bluetooth module helps in sending the data from microcontroller to the desired application. The GPS location is also sent to the required person when the panic button is used.

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