AN UNIQUE METHODOLOGY ENABLING BUS BOARD NAVIGATING SYSTEM USING WSN

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ABSTRACT

It is known that the technological advancement in these days is developing at a faster pace. The utilization of the technologies in various sectors are highly employed. Even though we use technology in various sector, the employment of technology for disabled are very low. The blind people find it very difficult to use various services like travelling in bus, ATM transactions etc. Whereas travelling in bus is an important way for the transportation etc. Whereas travelling in bus is an important way for the transportation which they cannot do on their own way. So we propose a system which helps them to find their route bus without any help from others. We utilize a smart system for enabling the facility to the blind people in their transportation.

Keywords :- *Zigbee, Arduino, Voice IC, Bluetooth.*

1.INTRODUCTION

For a significant number of visually impaired persons especially in the developing world, public transport is, often, not a matter of choice but an absolute necessity. It is their sole medium of access to employment, community resources, medical care and recreational opportunities. As per India's 2011 census, 15 million of the world's 37 million blind people are Indians and the impairment increases with age. Of these, only 32.8 percent are employed. The lack of means of reliable and safe transportation is clearly mentioned as one of the contributing factors. Using this device not only the visually challenged person gets an alert when a bus is approaching but also the driver of the bus gets a signal that a visually challenged person is waiting to board the bus, hence he can then stop the bus a bit longer ensuring that the person has boarded the bus properly. We propose a system which helps them to find their route bus without any help from others.

2. LITERATURE SURVEY

2.1 An Interactive Wireless Communication System for Visually Impaired People Using City Bus Transport (Hsiao-Lan Wang , Ya-Ping Chen , Chi-Lun Rau and Chung-Huang Yu.)

In this project the author has discussed about the visually impaired people where they have difficulty in accessing information about public transportation systems. Several systems have been developed for assisting visually impaired and blind people to use the city bus. Most systems provide only one-way communication and require high-cost and complex equipment. The purpose of this study is to reduce the difficulties faced by visually impaired people when taking city buses, using an interactive wireless communication system. The system comprised a user module and a bus module to establish a direct one-to-one connection. When the user inputs 4-digit numbers, the user module immediately sends out the information.

If the bus module receives the matched bus number, it buzzes and the warning LED flashes to notify the bus driver that someone is waiting to board on the bus. User tests were conducted by two visually impaired people in a simulated vehicle and a city bus. The success rate of interactive wireless communication, recognizing the arrival of the bus and boarding the correct bus reached 100% in all of the tests. The interactive wireless communication aid system is a valid and low-cost device for assisting visually impaired people to use city buses.

2.2 Effective Fast Response Smart Stick for Blind People (Ayat Nada, Samia Mashelly, Mahmoud A. Fakhr, and Ahmed F. Seddi)

In this project the author has discussed about the visually impaired people where they find difficulties detecting obstacles in front of them, during walking in the street, which makes it dangerous. The smart stick comes as a proposed solution to enable them to identify the world around. In this paper we propose a solution, represented in a smart stick with infrared sensor to detect stair-cases and pair of ultrasonic sensor to detect any other obstacles in front of the user,within a range of four meters. Moreover, another sensor is placed at the bottom of the stick for the sake of avoiding puddles. Speech warning messages and the vibration motor are activated when any obstacle is detected. This proposed system uses the microcontroller 18F46K80 embedded system, vibration motor and ISD1932 flash memory. The stick is capable of detecting all obstacles in the range 4 meter during 39 ms and gives a suitable respect message empowering blind to move twice his normal speed because she/he feels safe. The smart stick is of low cost, fast response, low power consumption, light weight and ability to fold.

2.3 BUS IDENTIFICATION SYSTEM FOR THE VISUALLY IMPAIRED: EVALUATION AND LEARNING FROM PILOT TRIALS ON PUBLIC BUSES IN DELHI (Dheeraj Mehra, Deepak Gupta, Vishwarath.T, Neil Shah, Piyush Chanana, Siddharth, Rohan Paul, Balakrishnan.M, P.V.M. Rao.)

In this project the author has discussed that many studies have established the need and utility of accessible urban transport system for visually impaired persons. However, most public transportation systems, especially in the developing countries, are not accessible and this is often listed as one of the major bottlenecks for social and economic inclusion of visually impaired. Onboard, the bus identification and homing system has been developed to address these needs. A radio-frequency based, completely user-triggered system helps the user first to identify the route number and then enables the user to board the bus using the auditory cues from the entrance of the bus. This study discusses a quantitative evaluation of real-life field testing that helps assess the effectiveness in enabling independent boarding of public buses. Further, it also describes specific requirements that got identified during the trial phase. We have also discussed the design improvements which enable the installation of the bus module in varying buses of different service providers. Objective of our study has been to generate empirical evidence that would facilitate the move towards incorporation of such a system in public buses globally. The positive feedback received confirms that the system enables independent access to the visually impaired without compromising on their safety.

3. EXISTING SYSTEM

The existing system fails to provide an accurate mapping to the blind people. The blind people obstacle indication is only provided by this system. This fails to provide efficiency while routing the blind person to the bus.

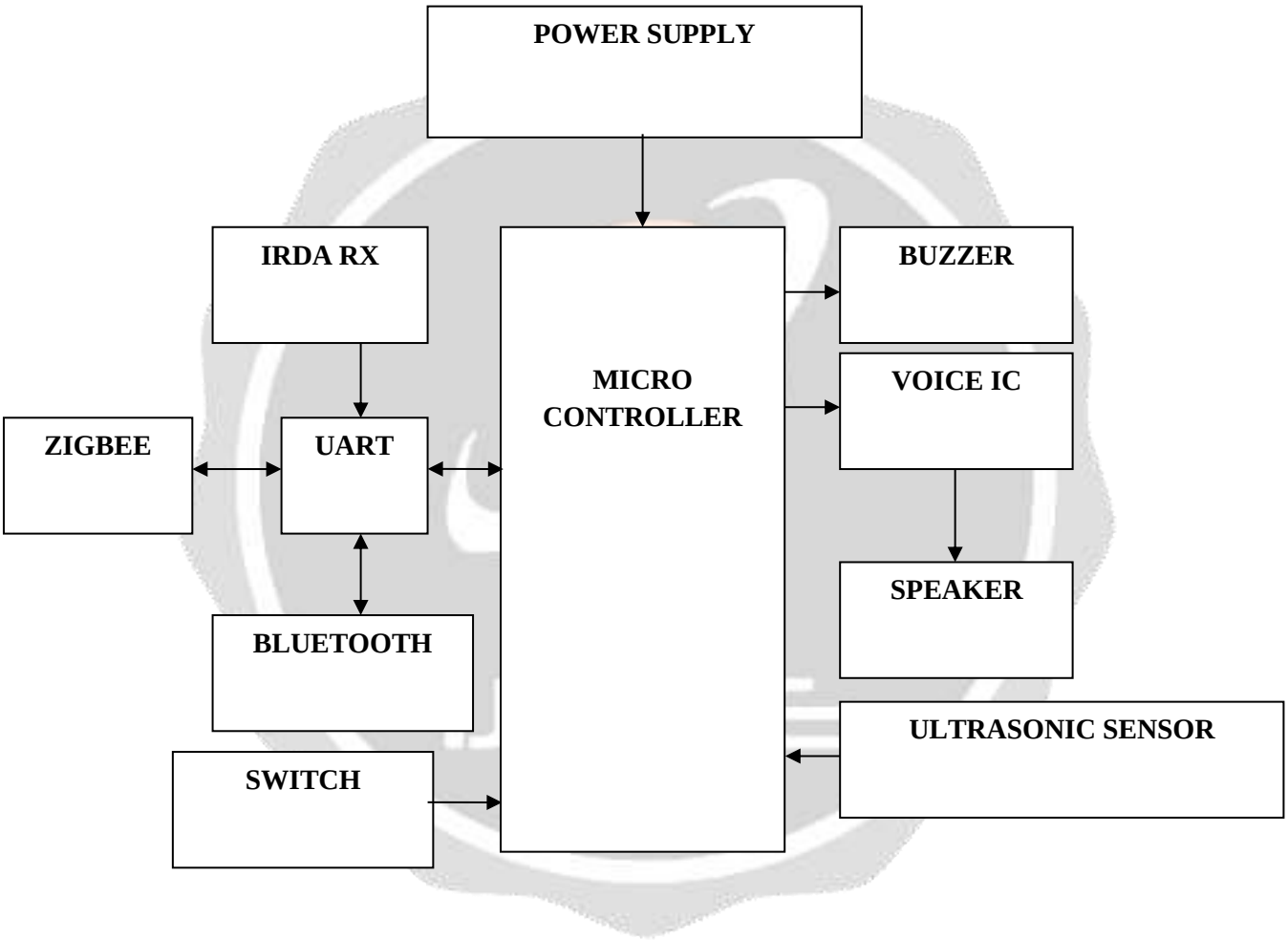
4. PROPOSED SYSTEM

The proposed system consists of three sections. First section is the android section. The android section is used to convert the speech format to text format. The converted text is transmitted to the next section (stick). The next section is the stick section. The stick section receives the text data transmitted by the android with the help of Bluetooth. The received data is stored. A Zigbee receiver is used in the stick section to receive the data from the bus section. The bus section consists of a Zigbee transmitter. The bus section transmits the bus details. The bus details are received by the stick section. The stick section compares the data's received by the android section and the bus section. Whenever the data is matched, then the voice signal alerts the blind people indicating the bus is arrived. Then an IRDA transmitter is connected to the bus section. Two IRDA are used in the bus section to differentiate between the left and right section. The IRDA receiver in the stick section detects the

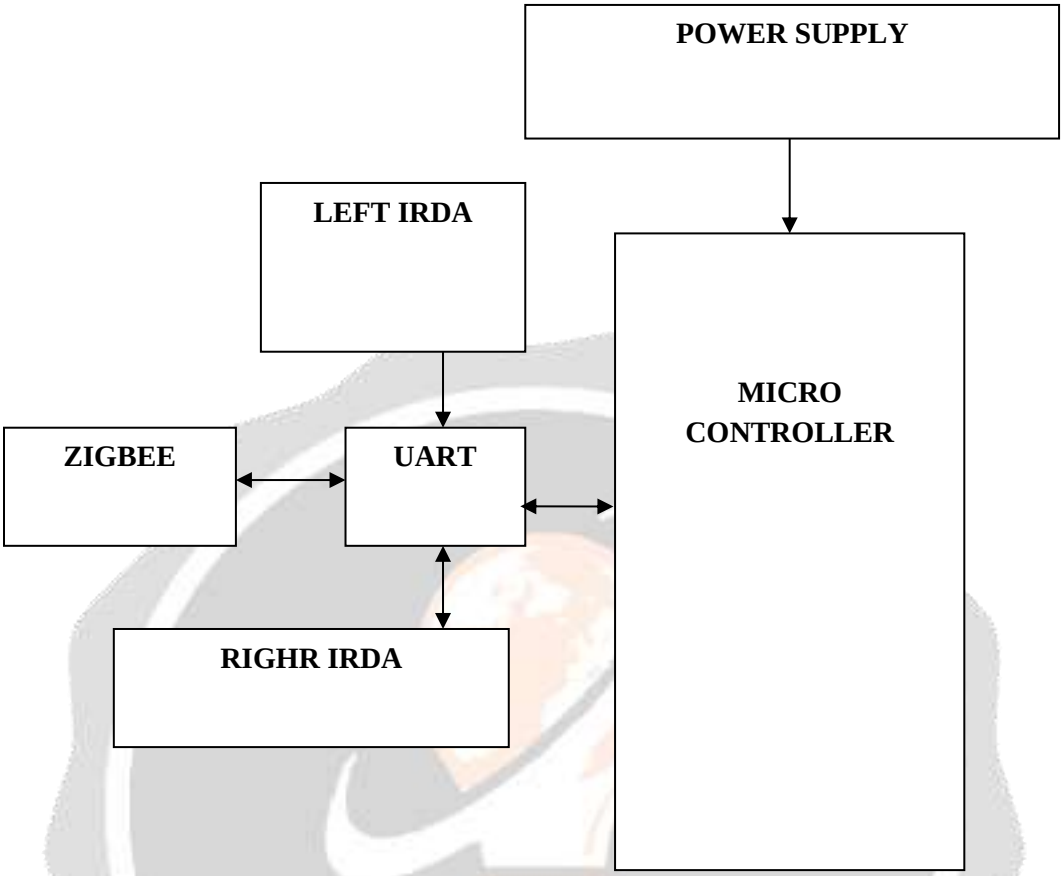
range and routes the user to the bus entrance by sending voice command signals to the blind people. And also an ultrasonic sensor is used to detect the obstacle in their way to board the bus. And also a switch is provided to the blind people to indicate the people boarding bus about the presence of blind to board the bus. While navigating, the blind presses the switch a buzzer attached to the walking stick starts buzzing. This provides indication to both the people boarding the bus and the bus driver about their entry in the bus.

5. BLOCK DIAGRAM:

5.1 STICK SECTION :

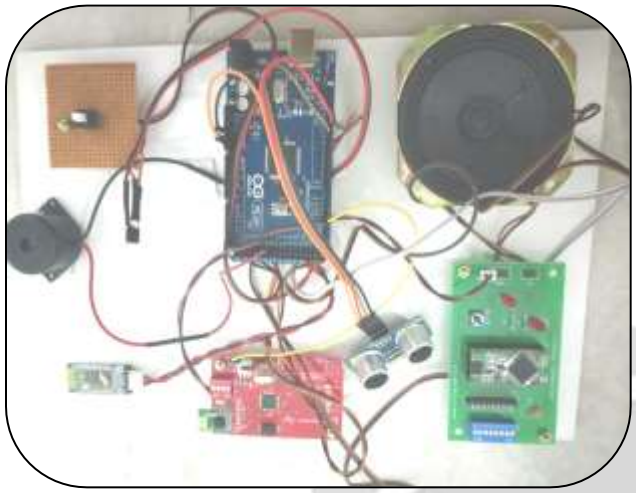


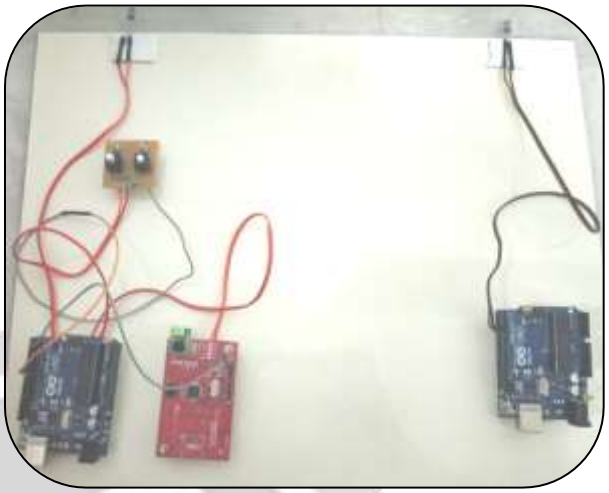
5.2 BUS SECTION :



5.3 ANDROID SECTION :

6. ENTIRE SETUP :





7. CONCLUSIONS:

There are nearly 285 million blind people in the world which is a huge segment of society. Helping blind people to get familiar with technology in order to become more independent on their daily life is a necessity that everyone should be aware of. Thus, this paper presented a new approach to bus identification system for VIPs. This new prototype has many advantages which make it a good alternative to the current approaches since it facilitates for the VIPs the searching of the destination and the finding of the appropriate bus number. With this added device, a whole life of those people will change and now they can contribute positively to their society and overcome their weaknesses related to the ability to move freely and without the help of anyone. Also, the financial analysis showed that the components of such a system are cheaper than other systems; however, the performance is higher.

8. REFERENCES:

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