Bus Detection System for Blind People using RFID

M.Mamatha
Assistant Professor,Dept of CSE
MGIT,Hyderabad

Abstract- *This paper presents Bus detection using RFID (Radio Frequency identification) for visually challenged Peoples to make them easier travelling without any assistance. This system consists of two subsystems i) Bus detection system ii) Bus Station system. In the bus detection subsystem, the nearby stations will be easily detected and then announced through a voice message inside the bus. Moreover, any existing blind person in the surrounding area of the station will be detected by the bus subsystem to alert the bus driver about the number of blind persons. In bus station system if the coming bus is detected by the RFID Reader it gives alert to Blind person by means of voice output. Because every bus has unique RFID tag to detect. A complete system prototype has been constructed and tested to validate the proposed system. Output performance of this system satisfies the all the parameters of Functionality, cost and safety.*

Keywords- RFID, RF, Raspberry PI.

I. INTRODUCTION

Blind people need a special requirements and services including the public transportation to give them the rights and ability to move smoothly and independently from one place to another. One of the requirements for ease and comfort in enjoying life is the ability to move independently from one place to another using different transportation means such as cars, metro ...etc. However, not everybody can simply depend on his own in travelling like some categories of disabled people. One of these categories is blind people who face many problems in mobility from place to another. Public transportation is not an easy to use and access by blind people in many countries. For example, in the case of buses, blind people have difficulty in recognizing and estimating the arrival of buses at the bus stations. They cannot read the bus number to identify the correct bus to board. This paper presents a system to help blind people to travel smoothly and independently from one place to another by providing complete and clear information. The existence of blind people at the bus station to alert the bus driver, the approaching bus station, and the buses arrival and their routes at a bus station.

Problem Definition: Blind People are desperately in need of special requirements and services including the public transportation to give them the rights and ability to move smoothly and independently from one place to another. One of the requirements for ease and comfort in enjoying life is the ability to move independently from one place to another using different transportation means such as cars, metro..etc. However, not everybody can simply depend on his own in travelling like some categories of disabled people.

II. EXISTING AND PROPOSED SYSTEM

2.1 Existing System: Several systems had been proposed for guiding blind people. Here, we will just mention the most related ones to the theme of our system. One of these systems is a central announcement system based on Bluetooth technology . In this system, Bluetooth devices are installed in both the bus and the bus station which are connected to a processing subsystem. When a bus approaches the station, the two Bluetooth devices of the bus and the station will connect to each other. After that, the bus Bluetooth device will transmit a message containing bus information to the station's processing subsystem. The transmitted message will be read by a text to speech converter which is interfaced with the processing subsystem in the bus station. Then, an announcement message that contains the bus information will be generated through a speaker. But there are two disadvantages in this system: it allows connection of only two devices at once and the connection between devices may be lost under certain conditions

2.2 Proposed System: In this Proposed System RFID is used as a medium of communication between Blind person and Bus .This system has 2 subsystems i) Bus detection system ii) Bus station system Bus detection system has RFID tag every bus has unique Tag which has unique address Bus station System consists of Raspberry PI interfaced with RFID Reader if the coming bus is detected it gives alert to the Blind people Blind Person. And we the obstacle is their we got alert by using ultrasonic. An RFID-based system to assist the blind is described in , Here, each bus has RFID tag which contains information about the bus number and the coming destinations.

Likewise, each blind person should have a portable device. The portable device contains RFID reader, headset, and control subsystem. The main idea of this system is that the RFID reader of the portable device will detect the approaching

buses to retrieve the bus information from their tags. The bus information will be used to generate an individual audio message about the arrived buses for each blind person through the headset. Unfortunately, in this proposed system the driver has no idea about the blind people existence in the station.

Radio Frequency (RF) does not refer just to radio broadcasting but rather encompasses all of the electromagnetic spectrum. RF energy is classified according to frequency. The range of frequencies is called the Radio Spectrum. While there is no precise beginning or end to frequencies making up the RF spectrum, Figure 1 shows the generally accepted ranges and class designations.

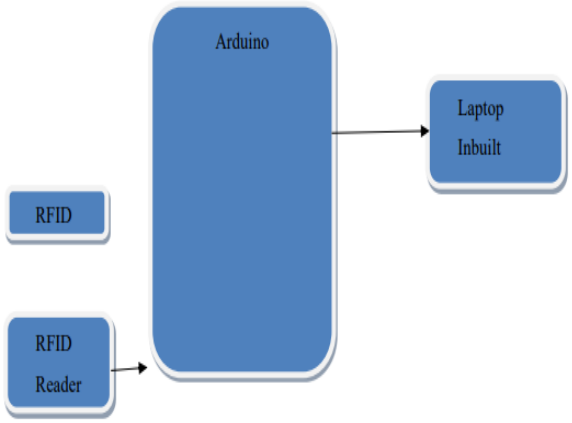

Fig 1:Block Diagram

BLOCK DIAGRAM EXPLANATION

- RFID Tag is coming under bus detection system which is placed on the bus if it is comes near to the Blind person it detects
- RFID Reader is interfaced with Raspberry pi if the bus is detected by reader Raspberry Process those information
- Every tag has unique Id which is considered as a Bus number if the reader receives the tag signal
- Laptop inbuilt Speaker is the voice library used in Raspberry Pi bus number is given in the form of voice alert to the Blind person
- Bus details and Blind person details stored in My SQL Database and every transaction gets stored in database
- To develop database XAMPP Package is used in python
- From the database we can monitor how many Blind Persons are boarding the bus.

III. RESULTS

Here, each bus has RFID tag which contains information about the bus number and coming destinations. Likewise, each blind person should have a portable device. The portable device contain RFID reader, headset, and control subsystem. RFID reader of the portable device will detect the approaching buses to retrieve the bus information from their tag and the particular voice will be played through speaker

IV. CONCLUSION

Since the estimated number of blind people over the world is between 40 to 45 million, special services should be provided to them in order to give them the right to live as others do. In this paper, we presented a bus detection system for blind people using RFID. The proposed system is easy and provides a convenient service for all the passengers; not only the blind ones. The system has two subsystems which are: the bus subsystem and the station subsystem. Bus subsystem announces the coming stations in the bus route for all passengers. Moreover, the bus driver will be provided with the number of blind people who required the bus and their destinations. The station sub-system will give announcement of the approaching buses. A prototype of the proposed system was successfully built and tested.

REFERENCES

[1] New York Transportation Statistics. Available from: http://transportation-modescity.findthedata.org/q/1447/1033/How-many-people-use-public-transportation-to-commute-inNew-York-New-York. Accessed 25 Novmber 2015.
[2] Hersh, M.A., Johnson, M.A. Assistive Technology for Visually Impaired and Blind People, Springer, 2008.
[3] Miesenberger, K. [et al.] [eds.] Computers Helping People with Special Needs, LNCS, vol. 4061 Springer Berlin / Heidelberg, 10th International Conference, ICCHP 2006, Linz, Austria, July 11-13, 2006.
[4] Sanchez J., Maureira E., “Subway mobility assistance tools for blind users”, LNCS, vol. 4397, pp. 386-4042007.
[5] Jerry T., Goh H., Tan K., “Accessible Bus System: A Bluetooth Appli-cation,” Assistive Technology for Visually Impaired and Blind People, pp. 363-384, 2008.
[6] Noor, M.Z.H., Shah A. ; Ismail, I. ; Saaid, M.F. “Bus detection device for the blind using RFID application,” 5th International Colloquium on Signal Processing & Its Applications, pp. 247 – 249.2009.