Research Article

"SMART BUS ALERT SYSTEM FOR EASY NAVIGATION FOR BLIND PEOPLE USING ANDROID APPLICATION"

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ABSTRACT

The work addresses to help the visually impaired people. Final aim of this project is to design and develop an effective, reliable and low-cost navigation system for blind and visually impaired people. The basic principle is to create a wearable system that acquires information from the context in which the user requires to have a Smartphone and others smart devices which is transmitting information in a way that is understandable for the blind. Achieving this goal would be a significant improvement in the state of the art and would allow a better integration of the blind in active society. In this work, we present the first outcomes of the project as well as the first prototype that has been implemented.

INTRODUCTION

Out of the 6.7 billion people that populate the world, 161 million are visually impaired. Each visually impaired individual faces different challenges based on their specific level of vision. With the rise of various support-based organizations, more visually impaired people have been given the opportunity for education and many other means. But still the issues of navigation for the blind are very complex and troublesome especially when they walking down on street and also navigate to distant places by public transport system. In this project we propose a Smart bus alert system using wireless sensor networks (WSNs). The blind people on the bus station are provided with a Mobile Application which is recognized by the GPS Module in the bus. The input data or information about the destination will be given by blind person so that he will be informed about the bus arrival, if the destination of blind person is matched with the route of bus, he/she will be notified with an audio note that the bus is arrived.

Problem Statement

To design an Android application which achieves the configuration this builds a safe route framework for the blind people to help them in going from their present area to their destination.

Objectives

Each visually impaired individual faces different challenges based on their specific level of vision. In this project we propose a Smart bus alert system using wireless sensor networks (WSNs).Blind can undoubtedly get the data about the transport to achieve destination, so travelling make easy to him. The blind people on the bus station are provided with a Mobile Application which is recognized by the GPS Module in the bus. This system has many advantages like easy to use, wide area range, easy to implement in vehicles, more effective, huge capacity etc.
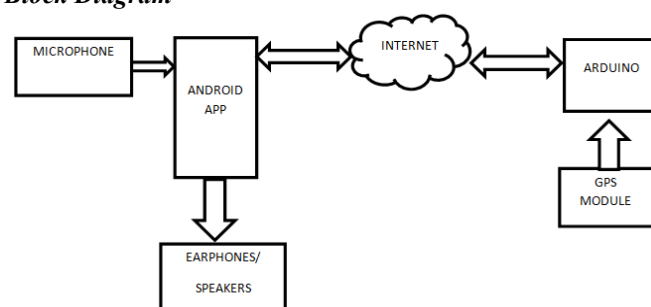
Block Diagram

Diagram: Block diagram of smart bus alert system

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Descriptions

Stage 1: Acquisition of bus arrival information

The blind person will have the application of Smart bus navigation, so that the blind person can easily get the information about bus arrival.

Stage 2: Intake of the destination to be travelled by the blind person

The blind person gives an audio input of the destination where he wishes to reach to the system

Stage 3: Reception of information by the bus unit

The blind person gives the input about destination through the microphone which is connected to the Smartphone and voice module translates the voice of blind person to text and sends it to microcontroller by accessing the internet.

Stage 4: Processing of bus information

Once the received signal changed over to text, it should be matched with the destination database present on the bus module so that the framework can illuminate the blind person if that bus is heading off to his wanted destination and in the event that he ought to take that specific bus or wait for the next one.

### Stage 5: Audio output for blind interaction

Once the received signal has been decoded, the information is utilized to encourage the sound interface. A voice playback will be received on Smartphone, so that blind person can hear it though earphones or speaker. For example, getting on and off the transport. In this anticipate GPS is utilized for the visually impaired individual to understand that his stop has arrived. At the point when the transport contacts the visually impaired individual's wanted destination he is again educated by his module that he ought to get off the transport

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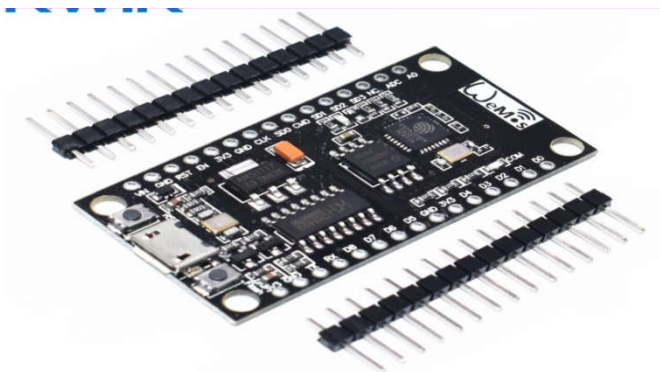
RESULT

When the person reaches the bus station, he can find the buses that pass through a particular location with the help of Smartphone. When the bus approaches the bus station, there is an indication to blind person through headphones that the bus is arrived. This is achieved with the help of Smartphone application and the bus module present in the bus. Finally when the bus reaches the destination station, it is announced to the blind person through headphones or speakers.
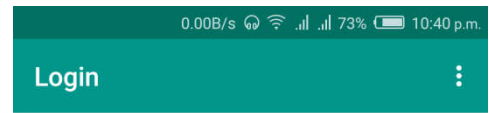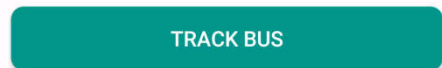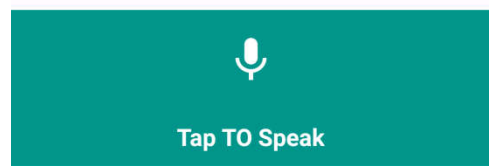

CONCLUSION

With this proposed scheme, a visually impaired person can successfully travel from his location to his desired destination using a bus independently without any hassle**.** Bus tracking system is very useful and important mainly in cities. This system has many advantages like easy to use, wide area range, easy to implement in vehicles, more effective, huge capacity etc. This system was made of a tracking module containing GPS-GSM model to access dynamic vehicle location and send it to server. Then people can access this information from their android mobile phones.

Advantages

1. Easy to use
2. Blind can undoubtedly get the data about the transport to achieve destination, so travelling make easy to him
3. Tracking of bus system gets simpler.
4. Effective, reliable and low-cost navigation system
5. Time management can be done
6. Useful for everyone

Disadvantages

1. It is required to have smart phones with internet connection
2. In order to display Google Maps data in a Map Fragment, you must register with the Google Maps Service and obtain a 40 characters Maps API Key

Applications

1. Navigation of bus system
2. Tracking of any vehicle
3. For route selection.
4. Location access to blind people
5. System tracking is possible
6. Controlling of unit through navigation.

References

1. Siddhartha Sarma, "Bus Tracking & Ticketing using USSD Real-time application of USSD Protocol in Traffic Monitoring", *Journal of Emerging Technologies and Innovative Research* (JETIR) www.jetir.org , Dec 2014 (Volume 1 Issue 7).
2. R. Ramani, S. Valarmathy, Dr. N. SuthanthiraVanitha, S. Selvaraju, M. Thiruppathi, R. Thangam, " Vehicle Tracking and Locking System Based on GSM and GPS ", MECS I.J. Intelligent Systems and Applications, 2013, 09
3. K. Mahajan, JS Chitode, "Solid waste bin monitoring using zigbee', *Journal of Engineering Research and Application,* (Vol 4-(6), 161-164, 2014)
4. Zadar, Croatia Passenger 'BUS Alert System for Easy Navigation of Blind', 2013 International Conference on Circuits, Power and Computing Technologies [ICCPCT-2013]
5. Rishabh Gulati (2011), 'GPS Based Voice Alert System for the Blind', *International Journal of Scientific and Engineering Research*, Volume 2, Issue 1, pp 1-5

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