Blind Aid

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Abstract - *In field of assistive technology for visually impaired people the trivial approach followed is building the hardware based systems. These system include object avoidance system, voice recognition system and tracking feature but each of these proposed system are taking a hardware approach which is viable methodology but it has some of the issues.*

The existing system uses hardware module such as HM2007 for voice recognition, ZigBee module for location tracking. This types of modules provide accuracy but are prone to failure and expensive to replace or repair if a failure might occur it can affect the entire system. The system is not durable enough to work efficiently. So to overcome some of the drawbacks of the existing systems involving durability, portability and lack of user acceptance, the system proposed takes and alternative methodology into consideration which is realized using the mobile phones which overcome the drawbacks of portability as well as user acceptance along with developing a cost effective system.

The system is a prototype developed using the android application which will run on any modern smartphone with internet connection. The android platform is used to provide operational efficiency and easy user acceptance along with extremely lower cost. The three main building blocks of the prototype app are the background voice assistance, google speech recognition system and simple touch interface. The voice assistant will guide the user on how to enter the desired source and destination bus stops. The touch interface is how the user interacts with the app to perform desired actions. The speech recognitions system is used to capture the voice input of the end user for entering source and destination bus stops. A simple GUI is used to display the desired bus details for the requested source and destination.

Key Words: Zigbee, HM2007, Voice Assistance, Google Speech Recognition System, GUI.

1. INTRODUCTION

We use buses to travel from source to destination. Travelling becomes easy if the environment is familiar to us. If we are in some remote location if becomes quite difficult for us to find right bus. Imagine how difficult it would be for blind person of the environment is unfamiliar. Current technologies like Zigbee, RFID are efficient but are not feasible to carry everywhere. To overcome this barriers there might be some technology build which will aid the user and is easy to carry. The proposed system is an android application which will assist user to travel from source to destination. Nowadays everyone is having an android phone. The proposed system must be installed in android device. The application is fully voice assisted which will provide details about buses from the given location. The purpose of implementing this system is to develop a system which is handy and easy to use by user. The system will also help elderly people to travel independently without any aid.

2. LITERATURE SURVEY

2.1. G.Lavanya ME.(2013)," Passenger BUS Alert System for Easy Navigation of Blind".

The system uses wireless sensor network. The desired bus the blind wants to take is notified to him using speech recognition system HM2007. The blind gives voice input about the place he wants to go using the microphones and voice recognition system recognizes it. The input is then analyzed by the micro controller and the bus numbers for the respective locations are generated and provide to the blind. The system used ZigBee trans-receivers on the buses. The system was efficient and did the job but was not cost effective as it involved uses of hardware increasing the overall cost and would be quite difficult to implement. There was need to reduce the cost and to implement the same features using the existing available facilities with no extra hardware requirements. So taking this feature into accounts the current thesis takes the voice recognition features into consideration but the system is entirely moved onto the android devices which are portable and has the built in GPS and microphone functionality which will reduce the cost and will provide the ease of usage.

2.2. Rishabh Gulati(2011), GPS Based Voice Alert System for the Blind.

The system describes the dynamic user interface and ease in operability was studied. The system is realized using a GPS module and voice module and interfaced with PIC16F877 micro controller. The working of the system incorporates two stages; first the location based audio recording stage and the second navigation of the blind person using the signal from the GPS receiver. The system employed an automatic location announcement system. The location announcement feature however lacked the way of communicating the location to the other person to overcome this drawback the current thesis build on the

GPS enabled location announcement feature along with way of communicating the location to the other person which can be useful in cases of emergency.

2.3. Somnath koley, Ravi Mishra(2012), Voice Operated Outdoor Navigation System for Visually Impaired Persons.

Blind People uses white canes which helps them to find any obstacles in their way & also use them for avoidance. Guide dogs can also be of limited aid for finding the way to a remote location. So our goal is to create a portable, simple less costly system that will allow Blind peoples to travel through familiar and unfamiliar environments without the aid of guides. Several guidance system has been developed for vision impaired people, but these systems tends to be expensive, also make use of a client server approach. This system consists of two distinct components: retrieving bus information from database and sending location of user to their emergency contacts . The paper described here focused on the development and evaluation of a Navigation system that makes use of GPS (the Global Positioning System) and voice.

From the past event and the existing approach the below Drawback are been noted:

1. Cost Effective System.
2. Lack of user acceptance.
3. Lack of portability
4. High chances of system breaking due to hardware failure.

Considering all the drawbacks into account we have formulated a proposed system which covers all the above mentioned drawbacks.

1. Low cost system is used.
2. System is accessible to everyone.
3. No special external hardware is needed.
4. Software based system leading to low chances of complete system failure.

3. FLOWCHART
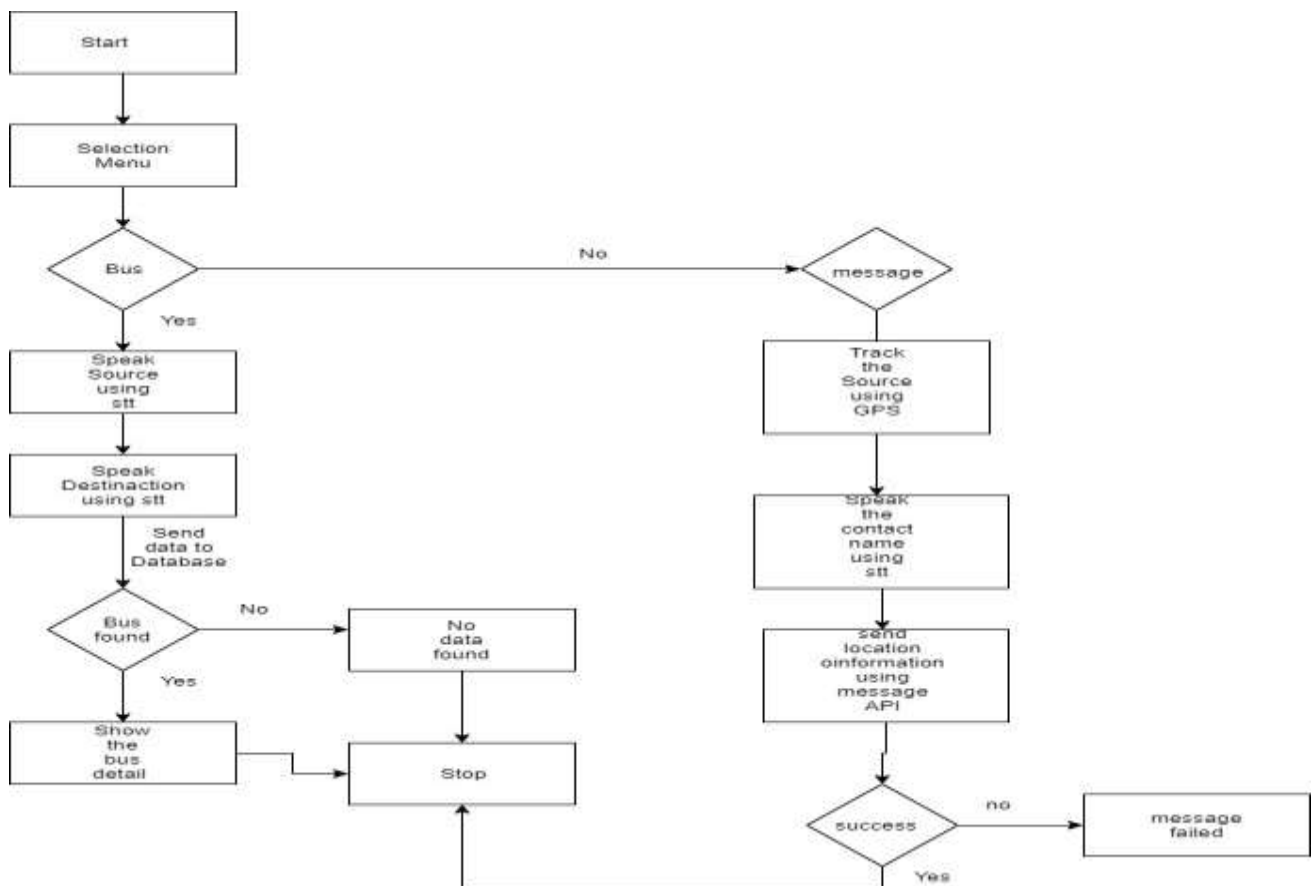
The user starts by selecting one of the two options from the selection menu.

IF the selected option is BUS.

1. The user is prompted to enter the source location via STT(speech to text).
2. The user is prompted to enter the destination location via STT(speech to text).
3. The recorded source and destination are communicated to the user for the reconfirmation that the correct data is entered.
4. The recorded values of source and destination are sent to the database.
5. If the bus for that particular source and destination route are found they are shown to the user.

 IF the selected option is MESSAGE.

1. The user is given the information about the option that is currently selected by the user.
2. The info about the stored emergency contacts is also given to the user.
3. The current location of the user is recorded using the inbuilt GPS functionality.
4. User is prompted to speak the name of the person he/she wishes to send the message.
5. The current location information is automatically sent to the said emergency contacts using existing message API.

4. IMPLEMENTATION

In this section the implementation of Blind-Aid application has been described. In section A of this topic, the actual methodology used is been described with respect to all the modules. Section B, are the snapshots of the application with their description showing the implemented application in detail.

    A) Methodology Used.

The system is a prototype developed using the android application which will run on any modern smartphone with internet connection. The android platform is used to provide operational efficiency and easy user acceptance along with extremely lower cost. The three main building blocks of the prototype app are the background voice assistance, google speech recognition system and simple touch interface. The voice assistant will guide the user on how to enter the desired source and destination bus stops. The touch interface is how the user interacts with the app to perform desired actions. The speech recognitions system is used to capture the voice input of the end user for entering source and destination bus stops. A simple GUI is used to display the desired bus details for the requested source and destination.
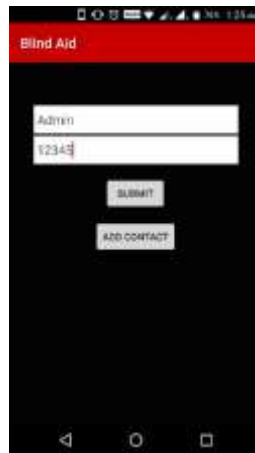
    B) Snapshots.

Home Page

The above figure shows the home page of Blind Aid application. Basically there are two buttons one is to get details about a particular bus from database and the other is to send an emergency message to our contact person with our location details(latitude and longitude values are sent through SMS).

Admin Login Page

This is an another application which will be handled by bus corporation. The admin can add, modify, or delete bus details by using this app. Admin has to log in by using the above credentials and can perform the operations. To add emergency contact details click on the Add Contact button.

To enter bus details

This page is use to add information about bus routes, their departure time, arrival time, bus number. After successful entry we will get a prompt saying Data Inserted.
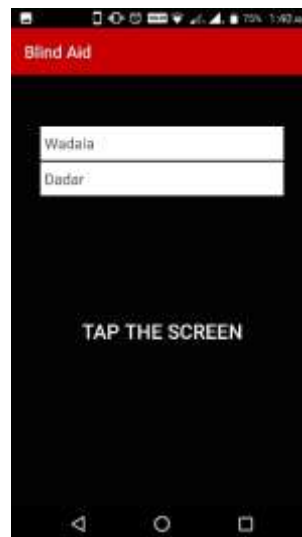
Data Retrieved

Here the data which is present in database can be retrieved by providing source and destination. This can help admin to check if there is any modification needed.

Enter Source through Voice.

As our app is fully voice assisted, the blind person has to give his inputs through voice. Before entering the source user has to tap the screen which will guide the user to how to enter the data. On first tap user has selected the source and will be told to tap again to enter the value. Here the blind person enters value as Wadala in source field. The app will recognize the voice and accordingly display the result on screen. The user will be told to again tap the screen to enter the destination.

Enter Destination through Voice

Here again the process is same use has to tap the screen to enter the destination. Here the destination value is Dadar. Now to retrieve the data user has to again tap the screen.

Desired Result

On fourth tap the desired result will be displayed. Total 4 taps must be given on screen to get the desired result. The result will be displayed on the screen in the form of Alert Dialog Box as well it will be spoken by the app.

Add Contact Details
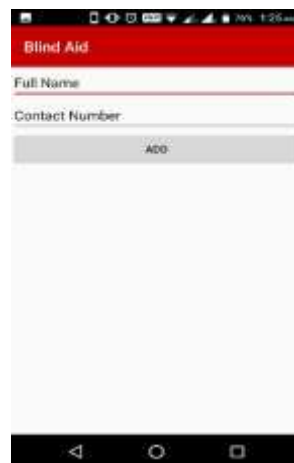
There is an additional feature in our app called as emergency contact. If the user is lost in remote location, the user can share his location to his contact person which is registered in database. The user has to enter the name and phone number of the contact person.

Emergency contact page
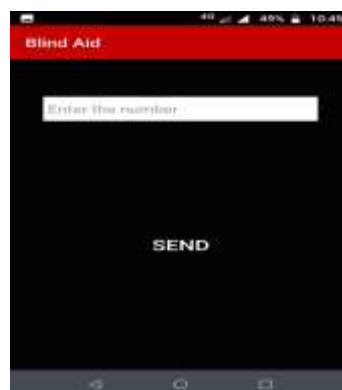
Here the user has to speak the name of the person from his emergency contact list.

Message Sent.
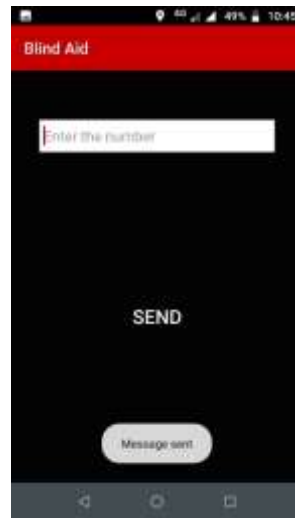
An indication is given for successful delivery of the message.

Location Details

This are the details which will be shared to the contact person. This values are nothing but the longitude and latitude values of the current location. By entering this values in Google Maps you will get information about the current location of the blind person. Each message will charge some cost according to the subscribers recharge plan.

5. FUTURE SCOPE

In future scope of this application, the blind person will be notified by the application, that the bus is crowded or not. This will help the visually impaired to decide whether to catch the current bus or wait for another. With some changes in the application, it can be further used to notify all the intermediate stops between the source and destination.

This application can be further modified to be used by people i.e., elderly person, physically challenged or other normal users. Also this application can be extended to be used for other transport systems (e.g. Train), in near future.

6. CONCLUSION

The Project entitled "Blind-Aid" has been developed and this satisfies all proposed requirements. The system is highly scalable and user friendly. All the system objectives have been met. All phases of development were conceived using methodologies. The application will execute successfully by fulfilling the objectives of the project. Further extensions to this application can be made as required with minor modifications.

ACKNOWLEDGEMENT

REFERENCES

[1] G. Lavanya ME,"Passenger BUS Alert System for Easy Navigation of Blind" 2013 International Conference on Circuits, Power and Computing technologies.

[2] 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.

[3] Ravi Mishra and Somnath Koley, (2012) ,'Voice Operated Outdoor Navigation System For Visually Impaired Person'. International Journal of Engineering and Technology. Vol 3, Issue 2.pp.15