

Design and Implementation of Smart Eye Navigation by using GPS and RFID Technology

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Abstract: According to the visual impaired and blindness statistical report released by the World Health Organization, new estimates has been made in the few years back, year 2010, the visual impaired and blindness in the globe, where overall population involved in prevalence of visual impaired is 285 million, 246 million having low vision whereas, 39 million are blind. The data of eye prevalence stated above shows that the large amount of eye disease patient throughout the world cannot be just ignored. In Malaysia, there is a number of visual impaired or the blind in the nationwide which cannot be abandoned yet needed to support in terms of assistive facilities and etc. Navigation is a very basic need of every individual. Every single person wants a way from the source to the destination that is safe, short, correct and free from obstacles. A person suffering from different disabilities such as visually impaired people have similar demands. Visually impaired people have to memorize each and every path, which is a very tedious task.

Keywords – Visually impaired Person, RFID Navigation and GPS.

1. INTRODUCTION

Many systems are available in the market that supports outdoor navigation. These systems can interact with the visually impaired people by providing them with an output in form of audio and by taking input in the form of speech. The main technologies used in such systems are GIS, GPS, radar, ultrasonic, speech and RFID (Radio-Frequency Identification) technology. However, indoor navigation is restricted because of concrete walls as the GPS signals are blocked. Thus, GPS-based navigation system is no longer effective inside a building for the purpose of navigation.

RFID technology was taken into consideration to provide a solution for the problem associated with indoor navigation assistance. Meaningful placement of RFID tags in the indoor environment is very necessary to provide efficient navigation to the blind. RFID technology is a method for remotely storing and retrieving data using devices called RFID tags and RFID Readers. There are two different types of tags namely, passive and active. Passive RFID tags lack built-in power supply and the active one has its own power supply. RFID tags can be deployed in locations that are important to the user.

2. Development stage

Finding the registered RFID tags information comparing the information with database
A Database Management System is essentially a collection of interrelated data and set of program to access this data. This collection of data is called

Database. The primary objective of database is to provide convenient environment to retrieve and store database information. Database system support single user and multi user database at a given time, on the other DBMS allows many users simultaneously access the database.

A database system consists of two parts namely, Database Management System and Database Application. DBMS is the program that organizes and maintains the information whereas the database application whereas the database application is the program that lets us view, retrieve and update information stored in DBMS.

3. DBMS offers the following services

- 1) Data Definition: It is a method of data definition and storage.
- 2) Data Maintenance: It checks whether each record has fields containing all information about one particular item.
- 3) Data Manipulation: It allows data in the database to be inserted, updated, deleted and sorted.
- 4) Data Display: This method helps in viewing data.
- 5) Data Integrity: This ensures the accuracy of the data.

In this Project, an RFID-system with an RFID reader integrated into the user's handling with a speaker, which computer Voice. An emphasis is placed on the architecture and design allowing for a truly integrated pervasive environment with minimal visual indicator in future to the outside observer.

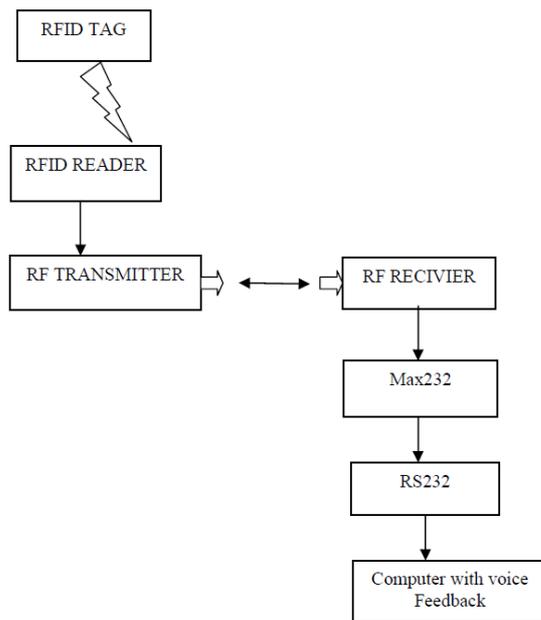


Fig.1: Block diagram of RFID technology

- Port capturing modulus.
- Reading Rs232 port.
- Finding the registered RFID tags information.
- Comparing the information with database.
- Call the default voice command.
- Recognize the blind who want to take the bus by RFID technology (like Reader).
- Send bus number that the blind want to take to the bus.
- Receive the bus number of the bus and sent to the blind (the blind can hear information about bus number by headphone).

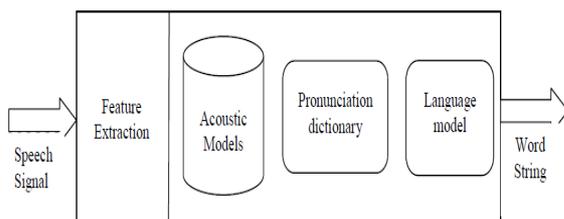


Fig.2: Speech recognition process.

- Speech recognition system is the project was to build a robust whole word recognizer.
- That means it should be able to generalize both from speaker specific properties and its training should be more than just instance based learning.
- This is supposed to be the case, but the researcher intended to put this into practice.

- To reduce the difficulties of the task, a very limited language model was used.
- Future research can be directed to more extensive language models. In systems acoustic information is sampled as a signal suitable for processing by computers and fed into a Recognition process.
- The output of the system is a hypothesis transcription of the utterance

For implementation purposes the following sub-processes were taken.

- Building the task grammar.
- Constructing a dictionary for the models.
- Creating transcription files for training data.
- Encoding the data (feature processing).
- (Re-)training the acoustic models.
- Evaluating the recognizers against the test data.

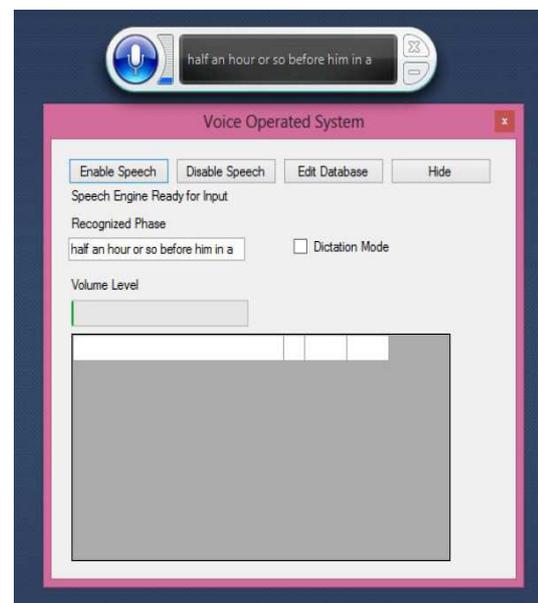


Fig.3: Snapshot of Speech recognition system



Fig.4: Snapshot of Text to speech converter

4. Conclusion

In the designing of our projects, we have kept in mind the user. In the implementation part which interacting with the user we had given lot of guideline to user with various messages. C# very good programming languages for implementation of any data base projects because it has powerful control with which you can easily implement various facilities in our projects. The screen is very user friendly.

REFERENCES

- [1]. A.M. Kassim, H. I Jaafar, M.A. Azam, N. Abas, T.Yasuno, “Design and Development of Navigation System by using RFID Technology,” IEEE System Engineering and Technology, pp. 258-262,19 - 20 Aug. 2013.
- [2]. Richard F. Joseph, Anand A. Godbole, “An Intelligent Traveling Companion for Visually Impaired Pedestrian,” 2014 International Conference on Circuits, Systems, Communication and Information Technology Applications (CSCITA), pp.283-288, 2014.
- [3]. A. M. Kassim, M. H. Jamaluddin, M. R. Yaacob, N. S. N. Anwar, Z. M. Sani and A. Noordin, “Design and Development of MY 2nd EYE for Visually Impaired Person” 2011 IEEE Symposium on Industrial Electronics and Applications (ISIEA2011), Langkawi, Malaysia, September 25-28, 2011.
- [4]. Abbas M. Ali, Md Jan Nordin, “Indoor navigation to support the blind person Using weighted topological map”, 2009 International Conference on Electrical Engineering and Informatics (IEEE) 5-7 August 2009, Selangor, Malaysia.
- [5]. Kassim A.M., Jamri, M.S., Aras, M.S.M, Rashid, M.Z.A Yaacob M.R, “Design And Development Of Obstacle Detection And Warning Device For Above Abdomen Level,” 2012 12th International Conference on Control, Automation and Systems Oct. 17-21, 2012 in ICC, Jeju Island, Korea.
- [6]. Fernandes, H., Vitor Filipea, Paulo Costac, João Barrosoa, “Location based services for the blind supported by RFID Technology,” 5th International Conference on Software Development and Technologies for Enhancing Accessibility and Fighting Info-exclusion, DSAI 2013.