

Wireless Handheld Device for Visitor Guidance and Tracking System

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Abstract— This is the world of wireless technology. Number of system and applications using wired data transfer now are replaced by wireless communication media. We are developing this system for big premises such as colleges, hospitals, industries, etc. Our aim is to use this wireless technology for visitor guide and visitor tracking application. The system will consist of one handheld unit given to a visitor at an entrance of premises by security person. The visitor will enter the destination where he wants to go or the person to whom he wants to meet. This handheld unit to reach the destination. He doesn't need to ask anyone. Another feature of this system is that it is wirelessly connected to security unit located in security cabin, where the security person will be able to track the visitor on premise map on security person's cell phone. There will be wireless link between handheld unit and security unit. For this we use Bluetooth and RF media for data transfer.

Key words: Visitor Guidance & Tracking System, Wireless Handheld Device

I. INTRODUCTION

Today many systems and applications using wired data transfer now are replaced by wireless data communication. People visiting to a big premises such as schools, colleges, Industries. They face many problems for finding their destinations. So our aim is develop the handheld device for the visitor guidance.

The main purpose of wireless handheld device for visitor guidance and tracking system is that to guide the visitor in the big premises as well as to track the visitor in the big premises. In this system the RFID technology is used for guide the visitor, Bluetooth is used for transferring the location of the visitor that is for the tracking purpose.

A. Map Demonstration

Following figure shows the map demonstration of the wireless handheld device for visitor guidance and tracking system.

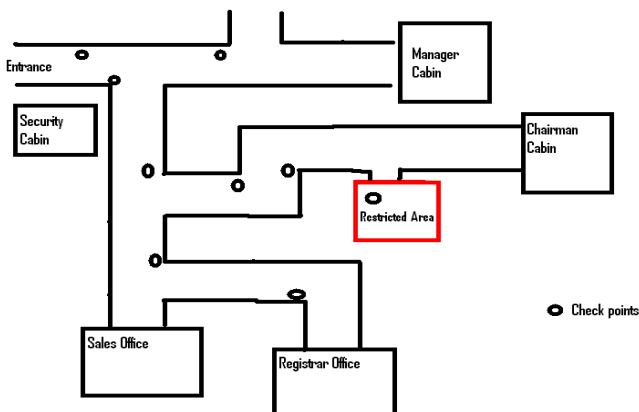


Fig. 1: Map Demonstration

From this figure suppose this is an industrial area, it includes the security cabin, manager cabin chairman

cabin, registration office, sales office, restricted area, etc. At each corner or at each location the RFID tags are placed. Suppose the visitor is entered into the industrial area and he don't know the path of the destination. Then first there is a security cabin in that the security guard is present. The security guard give the give the handheld device to the visitor and enter all the information about the visitor in to his cell phone.

Then suppose the visitor wants to go to the manager's cabin then he will enter that key on the handheld device. Then that handheld device will guide the visitor to reach the destination. In other hand the security guard see the visitor track on his cell phone so security guard will maintain the security in the industrial area. Also if the visitor is enter in the restricted area then handheld device will give the indication that this is an restricted area that is the warning message is given to the visitor.

II. PROBLEM STATEMENT

To overcome the problem mentioned below the wireless handheld device for visitor guidance and tracking system is useful.

- Visitor faces many problems in the big premises to reach his destination.
- Wastage of time of the visitor.
- Proper guide is not present in the big premises.
- If the visitor is thief then he will be track by this system.

III. PROPOSED SYSTEM

In order to overcome all the problems which are occurred in the big premises, the wireless handheld device for visitor guidance and tracking system is useful. We develop this system using ARM7, Bluetooth, keypad, audio amplifier, RFID technology to give the proper guidance to the visitor in the big premises as well as to track the visitor in the big premises.

Following figure shows the block diagram of wireless handheld device for visitor guidance and tacking system.

1) Handheld Unit:

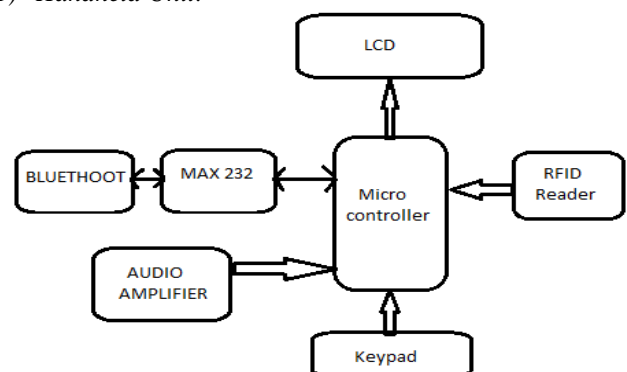


Fig. 2: Handheld Unit

2) Security Unit:

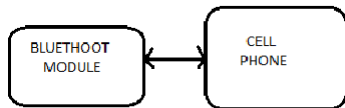


Fig. 2: Security unit

A. LPC2138 Microcontroller:

Microcontroller is the basic part system which controls its overall working.

1) Features of LPC2138:

- The LPC2138 is a TDMI-S based high performance 32-bit RISC microcontroller.
- It has thumb extensions 512KB on-chip flash ROM within system programming and in application programming.
- 8-ch 10 bit ADC 32KB RAM.
- Vectored interrupt controller.
- Two UARTs, one with full modem interface.
- Two I2C serial interfaces.
- Two SPI serial interfaces.
- Three 32bit timers, Watchdog timer
- Real time clock with optional battery backup.
- Brown out detect circuit
- General purpose I/O pin.
- CPU clock up to 60Mhz
- On-chip crystal oscillator on- chip PLL

B. RFID:

- RFID reader is connected to the microcontroller.
- RFID technology that uses communication through the use of radio waves to transfer data between a reader and an electronic tag attached to an object.
- RFID is used for the purpose of identification and tracking.
- It involves the hardware known as interrogators (also known as readers), and tags (also known as labels), as well as RFID software or RFID middleware.

C. Bluetooth:

- We will use HC-05 for Bluetooth module. HC-05 module is an easy to use Bluetooth SPP (serial port protocol) module, designed for transparent wireless serial connection setup.
- Serial port Bluetooth module is fully qualified Bluetooth V2, 0+EDR (Enhanced data rate) 3Mbps Modulation with complete 2.4GHz radio transceiver and baseband.
- It uses CSR blue core 04 external single chip Bluetooth system with CMOS technology and with AFH (Adaptive Frequency Hopping Feature).

D. LCD:

- A liquid crystal display (LCD) is a thin, flat display device made up of any number of color or monochrome pixels arrayed in front of a light source or reflector.
- Each pixel consists of a column of liquid crystal molecules suspended between two transparent electrodes, and two polarizing filters, the axes of polarity of which are perpendicular to each other.

- Without the liquid crystal between them, Light passing through one would be blocked by other.

E. App Inventor:

- App Inventor for android is an open source web application originally provided by Google, and now maintained by the Massachusetts Institute of Technology (MIT).
- It allows newcomers to computer programming to create software applications for the android operating system (OS).
- It uses a graphical interface, very similar to Scratch and the Star Logo TNG user interface, which allow users to drag-and-drop visual objects to create an application that can run on android devices.
- In creating App Inventor, Google drew upon significant prior research in educational computing, as well as work done within Google on online development environment.

IV. CONCLUSION

The project "Wireless Handheld Device for Visitor Guidance and Tracking System" has been successfully completed and tested with integration of the feature of every hardware component for its development. Presence of every block has been reasoned out and placed carefully thus contributing to the best working of unit. The project has completed using very simple and easily available components making it lightweight and portable. This helps visitors to move in any premises such as Industry, School, Colleges etc. with the help of RFID technology. The audio amplifier is also interfaced for audio playback for the recorded voice messages relevant to particular location. Finally we can conclude that this project application gives a very good feature and there is huge scope for further research and development for using the same with the help of advanced technology.

ACKNOWLEDGMENT

We are profoundly grateful to our staff members and parents for their guidance and continuous encouragement about project. We would like to express our deepest appreciation for fulfillment of project towards Dr. T. K. Nagaraj, Principal, JSPM's Bhivarabai Sawant Institute of Technology and Research, Wagholi (Pune). At last we must express our sincere heartfelt gratitude to all persons who helped us directly and indirectly during this work.

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