

RFID based E-Tourist Guide

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Abstract - This project presents design and application of an autonomous E-tourist guide system with provision of multi-language (English and Marathi) to help tourist in new geographical region with their mother language or well-known language. RFID tags are provided for login purpose and then tourist can autonomously carry the handheld, portable device in the region and submit the device while leaving the area hence no human power is required and autonomously runs the system. Voice module is used for storing the audio notes. At every new place roamed tourist notify with the text message by system with help of GSM module. Message contains information of that place. In build facilities of latest ARM 32 Cortex processor stm32 are used for developing features and is operated at very low power consumption with very latest graphics because OLED is used as display device. Thereafter, network coverage is not further required as the applications execute in standalone mode. Hence system enhances guiding systems and improving tourists experience in their touring.

Key Words: RFID tags, Voice module, GSM module, STM32, OLED

1. INTRODUCTION

The goal of the project is to build a city tourism guide that will make it easier for both domestic and international tourists to explore the city. Tourists face several problems and are misled by misleading the information due to the lack of a proper tourist guide. As is normal, when a tourist enters a city, they must employ skilled tourist guides to describe the city's details. We must pay a considerable sum of money to receive such services and for each specific location to be explained. tourist will need to find another guide. It is too costly for most of the tourists And one another problem is that mostly of them aren't expert because they work part timers in summer-season as guide, As a result, they can give tourists incorrect information because they are unable to recall facts such as temperature, heights above sea level, weather conditions, dates and historical significance, and so on. Using an Android smart phone tourist guide, this tourist guide can display a map of the desired area, measure distance between two locations, and display basic information about a tourist attraction. smart

phone. It is freely available any time whenever a tourist needs. When visiting a foreign city, the biggest issue that anyone encounters is the language spoken there. It is a significant obstacle when communicating with visitors, knowing the customs, and past of a place, which raises the likelihood of being misguided by the wrong people and having a stressful experience. As a result, this device will assist tourists during their journey.

2. LITERATURE REVIEW

"Geofencing on the Real-Time GPS Tracking System and Improving GPS Accuracy with Moving Average, Kalman Filter and Logistic Regression Analysis" paper says, Signals emitted from GPS satellites. Calculates your own location by detecting GPS receivers on earth. The GPS data obtained in this study was sent to a remote server via GSM and GPRS and turned into a real-time tracking system. The location of the GPS device can be monitored instantly by observing the application map screen from devices such as computer and phone. This monitored location has a certain delay considering the factors such as the arrival time of the GPS data to the device and the time the device connects to the internet. The system developed by authors consists of two parts. The first is to receive GPS position data using the Sim908 device and send the data to a server using GSM and GPRS technologies. The second is the display of GPS data via web or Android application. It is very difficult to follow a location on the application screen

"Authenticated Toll Collection and Tracking of Vehicles using RFID" presents the best arrangement over cash misfortune at toll square by decreasing the labor required for gathering of cash and furthermore can lessen the traffic in a roundabout way bringing about decrease of time at toll court. In their undertaking they have presented the methods, for example, Radio Frequency Identification. This procedure will incorporate the RFID tag and per user which as a team with one another can be utilized to recognize the vehicle personality. The heap cell

plate which is presented for gauging the vehicles to group them in various classifications as light and substantial vehicles

“Password Protected GSM based Device” presented the plan and usage of a GSM based wireless security framework which take an exceptionally less power. In that system a unique password is set to open locker or door, which is only known to authorize person. The user uses this password again and again so somebody can hack that password and also if password leaks then it affect security of system. GSM (Global System for Mobile Communication) technology is used to communicate input signal from appliances to output message on device. That means after detection of any intrusion GSM Modem sends the appropriate message to house owner's phone. The signals or data which comes from sensors or other equipment digitize it by GSM module and send it to receiver

“Arduino based Student Attendance Monitoring System using GSM” by paper showed Radio Frequency Identification (RFID) student attendance monitoring system which provides the functionalities of registering students and recording attendance. On the point of passing into the lecture room, the students have to register their attendance using own personal RFID tag. The RFID reader then reads and transfers the code of the respective tags to the controller. It compares the tags code with database stored in the microcontroller and access command is displayed on the LCD. A GSM module is incorporated in the system which provides a messaging platform for informing parents/guardian of students of their ward attendance in schools or colleges

“An innovative mobile electronic tourist guide application” paper showed the design and implementation issues of a “mobile tourism” research prototype, which brings together the main assets of the two aforementioned approaches. Namely, it enables the creation of portable tourist applications with rich content that matches user preferences. The users may download these personalized applications (optimized for their specific device's model) either directly to their mobile device or first to a PC and then to a mobile terminal (through infrared or bluetooth). The authors represented a prototype mobile tourist guide application, the myMytileneCity guide. This prototype implementation is entirely based on the powerful Java technology, on both the web and the client

tier, in order to take advantage of its inherent platform-independence and suitability for web applications

3. Objectives

- To share the information of place in text format along with the voice assistance for tourist record.
- Maintain a travel history and record of every tourist who visited the place.
- To notify user with current temperature, bad weather report, any other alert intimation.
- Provide help if tourist misplace or stuck in danger situation
- Make a system work efficiently with or without internet availability.
- To make system long lasting for almost 48 hours.
- Replace smart phone guide with the proposed system.
- Avoid human intervention for system operation or maintenance.

4. PROPOSED SYSTEM

Primary need and main USP of this project is its multi-language support. Even though Google guide also can be used as a tourist guide but while using smart phone as a tourist guide user need to connect phone continuously with internet facility Global Positioning System (GPS) and due to use of internet and GPS power requirement is high hence smart phone cannot last for long time

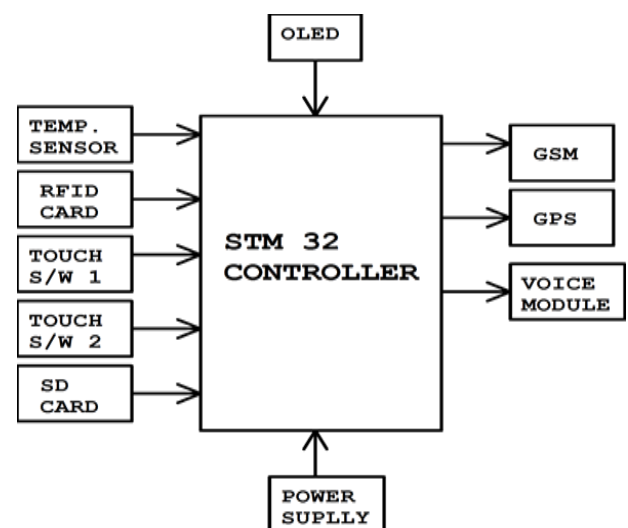


Fig-4.1: Block Diagram for Proposed System.

RFID cards will be used for login purposes so when user will swap their card to the RFID-reader they are prompted to use the system. After authenticating RFID tags are swapped by the tourist first welcome message sent on the tourist mobile number which contains date, time, location and temperature at the time of card swapped. And on the hardware side, Tourist name will be displayed on the screen. If the internet or GPS is not working then also system works properly only location (latitude, longitude) not contained in the message. When tourist reach on place 3 actions take place, which are as follows.

- Spot name display on screen
- Audio in selected language start
- Text message containing information sends on tourist number
- Figure shows photos of screens displaying spot names at different places.
- Next location count down
- Screen continuously showing the next location timing. This countdown immediately started after information of current place is dictated in the selected language and text message send on the tourist mobile number and to store the audio notes Voice module is used up to 256 audio files can be added to the system Following that, network coverage is no longer needed because the applications run in self-contained

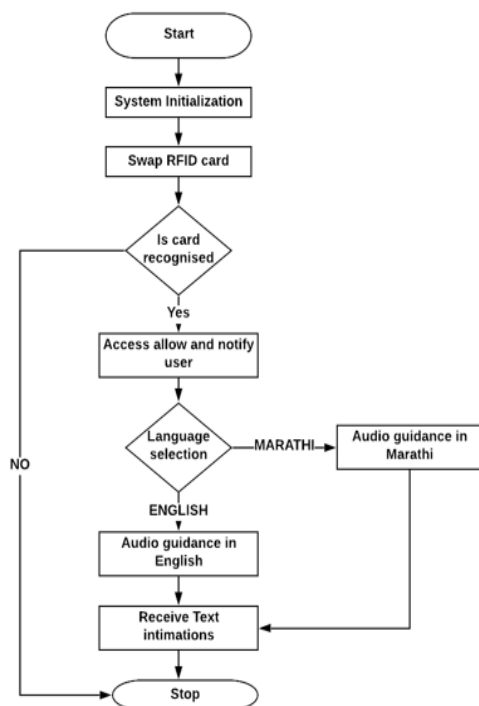


Fig 4.2: Flow-Chart For Proposed System.

5. SYSTEM REQUIREMENT

5.1 Software Used:

- Arduino IDE
- Altium
- Orcad

5.2 Hardware Used :

- STM32
- OLED
- Touch switch
- RFID reader
- GSM
- GPS
- Temperature Sensor
- Power Supply

The block diagram of the proposed system **Fig-4.1** mentions some major parts which are described below

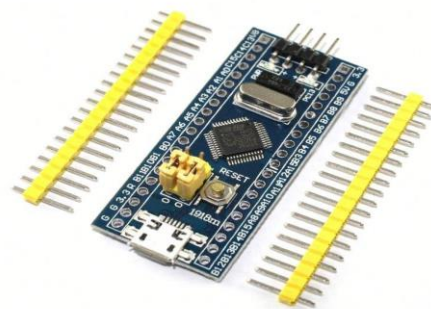


Fig 5.1 : ARM 32 Cortex processor based stm32

STM32 is a 32-bit microcontroller integrated circuit family from STMicroelectronics. All STM32 chips, including the Cortex-M33F, Cortex-M7F, Cortex-M4F, Cortex-M3, Cortex-M0+, and Cortex-M0, are based on the same 32-bit ARM processor heart. On the inside, each microcontroller contains a processor core, static RAM, flash memory, a debugging interface, and various other components.



Fig 5.2 : GSM Module

A GSM or GPRS module is a chip or circuit that allows a mobile device or a computer to communicate with a GSM or GPRS system.

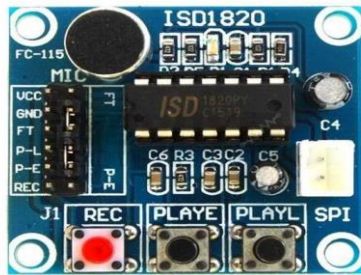


Fig 5.3 : Voice Module

A voice module is small recorder that allows user to record audio this modules include push buttons for partial or complete message playback.



Fig 5.4 : RFID Card Reader

An Radio-frequency identification RFID reader is a system that gathers data from an RFID tag, which is used to track particular objects. Radio waves are used to move data from the tag to the reader. RFID is a technology that, in principle, works similarly to bar codes. However, the RFID tag does not have to be scanned immediately, nor does it need to be in direct line of sight of a reader. The RFID tag must be within the context of an RFID reader.

6. CONCLUSIONS

The project is proposed to make a tourist system work efficiently with or without internet availability which can be often applied in such a way that the system's construction is not too complicated, resulting in less maintenance problems. RFID has eliminated the insecurity created by the use of internet-based applications while Google Maps can also be used as a tourist guide, by using a mobile phone as a tourist guide, the user must keep the phone connected to the internet at all times. Because of the use of the internet and GPS, the power demand of a smart phone is high, and therefore it cannot survive for an extended period of time. Thus the objective of this paper is to build a system that can overcome the shortcomings of using gps for navigation and key selling point of this project is its multilingual assistance

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