2581-4575

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IOT BASED SMART PARKING MANAGEMNET SYSTEM USING RFID TECHNOLOGY

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ABSTARCT: The concepts of smart cities have always been a dream. There have been advancements made from the past couple of years to make smart city dream to reality with the development of technology, smart devices are becoming more common in everyday life. In this paper an IoT based smart parking Management system using RFID technology is implemented. The IR sensors are placed in front of the parking places and Buzzer is used for indication. If the parking slot is empty then LED will blink and parking slot is full LED will be OFF. When vehicle is parked the RFID will read the information and cut the respective amount and by using IOT location will be sent through SMS to owner Using GSM and GPS technologies.

KEY WORDS: RFID, IoT, ARM, IR sensor and GSM.

I. INTRODUCTION

Internet of thing (IoT) has the ability to transfer data through network without involving human interactions. IoT allows user to use affordable wireless technology and also helps the user to transfer the data into the cloud. IoT helps the user to maintain transparency. The idea of IoT started with the identity of things for connecting various devices. These devices can be controlled or monitored through computers over internet. IoT contains two prominent words "Internet" and "Things", where Internet is a vast network for connecting servers with devices [2]. Internet enables the information to be sent, receive or even communicate with the devices. The parking problem causes air pollution and traffic congestion [5]. In today's scenario, parking space is hard to search in a day to day life for the people. According to the recent survey, there will be a rapid increase in the vehicle's population of over 1.6 billion around 2035 [8]. Around one million barrels of world's oil is being burnt everyday [5]. Thus, smart parking system is the key solution to reduce the waste stage of the fuel. The solution for the problems is being raised. The smart parking can be a solution to minimize user's time and efficiency as well as the overall cost of the fuel burnt in search of the parking space. In this, the data is collected from the sensor and through analyzing and processing, the output is obtained [6]. This data gets transmitted in the devices which

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extracts the relevant information and sends it to the Arduino device which gives the command instruction for the data to the particular devices simultaneously.

Arduino sends the signal to the servo motor along with GSM module which further gives instructions and notification to the user. When the user enters in the parking area, RFID card allotted to the registered user is scanned by the reader module thus ensuring the security of the user identity. This enables the user to get the information of the available parking space as well as SMS notification to the registered user's mobile number. It consists of three parts where first part is the parking area which include Arduino devices along with IR Sensor. The user interacts with the parking area with the help of these devices. The second section of the paper includes the cloud web services which act as a mediator between the user and the car parking area. The cloud is updated according to the availability of parking area. The cloud service is administered by the admin but it can also be viewed by the user to check the availability. The third section of the paper is the user side. The user gets notified for the availability via SMS through GSM module. The user interacts with the cloud as well as parking area. The user gets the notification when the parking availability is full which saves the time for the user.

II. LITERATURE REVEIW

The sensors used in IoT based smart parking system stores and accesses data from remote locations with the help of the cloud these factors give raise to cloud of things (COT). The nodes could be monitored and controlled from any location the system that we propose provides information regarding the availability of the parking slots with the help of the mobile application the users from the remote location can book the parking slots [2].

An algorithm is used to increase efficiency of cloud-based parking system and network architecture technology is used. This algorithm is used to find the lowest cost parking space. Considering the number of parking space available and also considering the distance of the parking space from the user. The user can directly access the cloud-based server and find the information on the parking space. The user can also install an application in their mobile phones to access this information. With the help of this algorithm, waiting time of the user to find a parking space can be minimized. Security aspects are not included in this paper [3].

A wireless sensor node along with smart phone application is being used to find the parking space. Since, wireless technology is used here the system has high accuracy and efficiency. In this system, onboard units are used to communicate with other vehicles. The user parks his vehicle in any one of the several bays available a mechanical lift lifts the vehicle out. A ticket key and id are given to the user and it is only known to the user which is used to retrieve the vehicle. The user need not carry any paper ticket since an RFID card is given to the user. The technology used here is economical. Security features must be improved to protect the user's privacy [4].

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The author of smart parking system the survey has divided detector system and vehicle sensors into two math categories as intrusive sensors and non - intrusive sensors. Intrusive sensors are installed in holes on the road surface by tunneling under the road. Non-intrusive sensors do not affect the surface of the road and it can be easily installed and maintained. Smart parking system helps us to resolve the grounding problems of the traffic congestion and it also reduces the emission from a car.

[6] A paper proposes efficient way to unfold the issue of parking availability in the real time scenario and to reduce the time consumption. In this, the data is sent locally with devices which filter the data. This signal is transmitted over the cloud for the process as well as for evaluation which uses machine learning algorithms. This paper uses mobile phone application that connects the user with the real time traffic status via Google API. Thus, traffic congestion is avoided. This paper does not provide the reservation facility for the car parking [5].

III. PROPOSED SYSTEM

The above figure (1) shows the lock diagram of proposed system. The entire system is controlled by the ARM. In this mainly RFID Reader, IR Sensors, GSM, GPS, LCD Display and Buzzer are used. The each component is explained below in detailed manner.

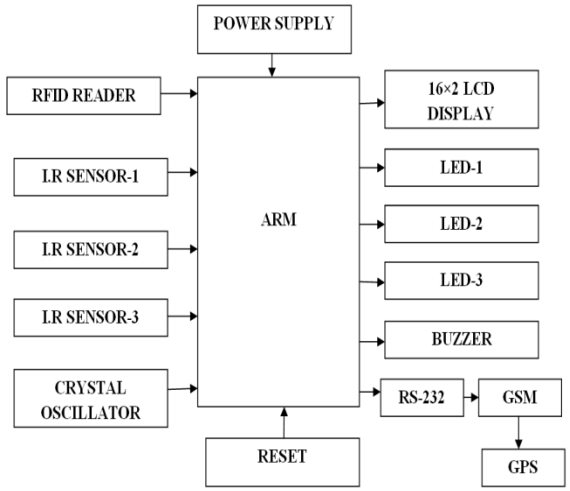

Fig. 1: BLOCK DIAGRAM OF PROPOSED SYSTEM

A. ARM

The LPC2148 microcontrollers are focused around a 16- bit or 32-bit ARM7TDMI-S CPU with constant imitating and implanted follow help, which consolidate microcontroller with inserted high velocity streak memory extending from 32 kb to 512 kb. A 128-bit wide memory interface and one of a kind quickening agent building design empower 32-bit code execution at the most extreme clock rate. For discriminating code size applications, the option 16-bit Thumb mode decreases code by more than 30 percent with negligible execution punishment.

Because of their little size and low power utilization, LPC2148 are perfect for applications where scaling down is a key prerequisite, for example, access control and purpose of-offer. Serial interchanges interfaces running from a USB 2.0 Full-speed gadget, various UARTS, SPI, SSP to I2c-transport and on chip SRAM of 8 kilo

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Bytes up to 40 Kilo Bytes, make these gadgets extremely appropriate for correspondence entryways and convention converters, delicate modems, voice distinguishment and low end imaging, giving both extensive cradle size and high transforming force.

B. IR SENSOR

An infrared sensor is an electronic device that emits in order to sense some aspects of the surroundings. An IR sensor can measure the heat of an object as well as detects the motion. These types of sensors measure only infrared radiation, rather than emitting it that is called as a passive IR sensor. This sensor can be used for most indoor applications where no important ambient light is present. It is the same principle in ALL Infra-Red proximity sensors. The basic idea is to send infra red light through IR-LEDs, which is then reflected by any object in front of the sensor

C. RFID READER

Radio frequency identification reader (RFID reader) is a device used to gather information from an RFID tag, which is used to track individual objects. Radio waves are used to transfer data from the tag to a reader. RFID is a technology similar in theory to bar codes. However, the RFID tag does not have to be scanned directly, nor does it require line-of-sight to a reader. The RFID tag it must be within the range of an RFID reader, which ranges from 3 to 300 feet, in order to be read. RFID technology allows several items to be quickly scanned and enables fast identification of a particular product, even when it is surrounded by several other items.

D. GSM

Global System for Mobile Communications (GSM) modems are specialized types of modems that operate over subscription based wireless networks, similar to a mobile phone. A GSM modem accepts a Subscriber Identity Module (SIM) card, and basically acts like a mobile phone for a computer. Such a modem can even be a dedicated mobile phone that the computer uses for GSM network capabilities.

E. GPS

The Global Positioning System (GPS) is a U.S. space-based global navigation satellite system. It provides reliable positioning, navigation, and timing services to worldwide users on a continuous basis in all weather, day and night, anywhere on or near the Earth.

F. BUZZER

A buzzer or beeper is an audio signaling device, which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include alarm devices, timers. Early devices were based on an electromechanical system identical to an electric bell without the metal gong.

A. LCD DISPLAY

LCD is used to display the data. 16x2 is the LCD that has been used i.e. 16 characters in 1 line, total 2 lines are there. It requires +5V to operate. It is connected to port 2 of microcontroller. It acts as an output to microcontroller. It uses ASCII values to display the character.

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IV. RESULTS

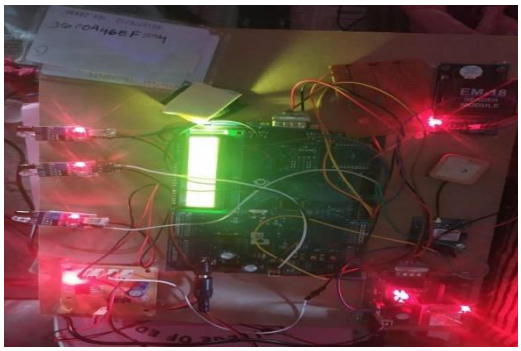

Fig. 1: VIEW OF EXPERIMENTAL KIT

V. CONCLUSION

The advancement of internet of things and cloud technologies has given rise to the new possibilities in terms of smart cities. Smart parking facilities have always been the core of constructing smart cities. The system provides a real time process and information of the parking slots. This paper enhances the performance of saving users time to locate an appropriate parking space. It helps to resolve the growing problem of traffic congestion. As for the future work the users can book a parking space from a remote location.

VI. REFERENCES

[1] Amir O. Kotb, Yao-chunShen, and Yi Huang "Smart parking Guidance, Monitoring and Reservation: A Review," IEEE-ITSM, pp.6- 16.Apr-2017.

[2] Supriya Shinde1, AnkitaM Patial2, pSusmedha Chavan3,Sayali Deshmukh4, and Subodh Ingleshwar5 "IOT Based Parking System Using Google", I-SMAC,2017,pp.634-636.

[3] HemantChaudhary, PrateekBansal., B.Valarmathi," Advanced CAR Parking System using Arduino", ICACCSS, 2017.

[4] Nastaran Reza NazarZadeh, Jennifer C. Dela,"Smart urban parking deducting system" ICSCE, 2016, pp-370-373.

[5] PavanKumarJogada and VinayakWarad, "Effective Car Parking Reservation System Based on Internet of things Technologies ".BIJSESC, 2016, Vol. 6, pp.140-142.

[6] Prof. Yashomati R. Dhumal1, Harshala A. Waghmare2, Aishwarya S. Tole2, Swati R. Shilimkar2,"Android Based Smart Car Parking System"-IJREEIE, Vol. 5, Issue 3, pp-1371-74,mar-2016.

[7] Faiz Ibrahim Shaikh, Pratik NirnayJadhav, Saideep Pradeep Bandarakar" Smart Parking System based on embedded system and sensor Network" IJCA, vol.140.pp.45-51.Apr-2016.

[8] RicardGarra, Santi Martinez, and Francesc Seb"e" A PrivacyPreserving Pay-by-phone Parking system"IEEE-TVT, pp.1-10, Dec2016.

[9] Fei-Yue Wang, Liu-Qing Yang, Fellow, Jian Yang, [2016]," Urban Intelligent Parking system based on Parallel Theory", IEEEComputing, Networking and Communications, Mobile Computing and Vehicle Communications.

[10] Fei-Yue Wang, Liu-Qing Yang, Fellow, Jian Yang," Urban Intelligent Parking system based on Parallel Theory", IEEE-ICNC, 2016.

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