ISSN (Online) 2456 -1304

International Journal of Science, Engineering and Management (IJSEM)
Vol 2, Issue 12, December 2017

Smart Parking Application using IOT

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Abstract:-- **The paper describes the designing an advanced smart parking system using IOT technology. The devices can be turned ON/OFF using a mobile through server(Wi-Fi). Internet of Things (IOT) plays an important role in connecting the surrounding things in the environment to the network and made easy to access the things not connected to internet from any remote location. The main objective of the smart parking system is to reduce the traffic in the parking place. Usually people are facing lot of problems on parking vehicles in avaliable parking slots in a city. It's very necessary for the people to improve with the growing technology. In this paper we discuss a Smart Parking System which helps the user to find the nearest parking area and gives availability of parking slots in that respective parking area. It mainly focus on reducing the time and in finding an empty parking lots .It also avoids the unnecessary travelling through filled parking lots in a parking area in search of empty slot. Thus it reduces the fuel consumption and in turn reduces carbon emission.**

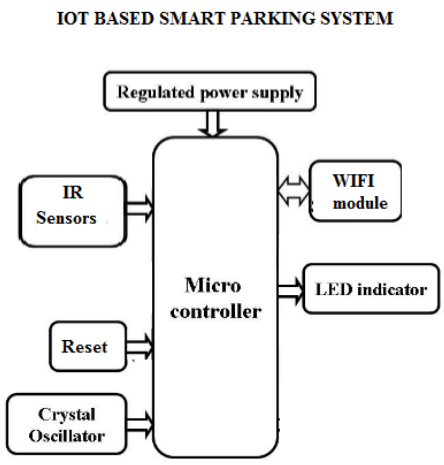
Keyword:-- **Social Network, Hierarchical Classification.**

1. INTRODUCTION

The project aims at designing an advanced smart parking system using IOT technology. The devices can be switched ON/OFF using a mobile through server(Wi-Fi). Automation is the most frequently spelled term in the field of electronics. The hunger for automation brought many revolutions in the existing technologies. These had greater importance than any other technologies due to its user-friendly nature. These can be used as a replacement of the existing switches in home which produces sparks and also results in fire accidents in few situations. Considering the advantages of Wi-Fi an advanced automation system was developed to monitor the status of parking slots. Wi-Fi (Short for Wireless Fidelity) is a wireless technology that uses radio frequency to transmit data through the air. Wi-Fi has initial speeds of 1mbps to 2mbps. Wi-Fi transmits data in the frequency band of 2.4 GHz. It implements the concept of frequency division multiplexing technology. Range of Wi-Fi technology is 40-300 feet. The controlling device for the monitoring in the project is a Microcontroller. The data collected by the Microcontroller. Microcontroller reads the data and sends the data over Wi-Fi to the IOT web page. The Microcontroller is programmed used embedded „C" language. II. PROJECT OVERVIEW An embedded system is a combination of software and hardware to perform a dedicated task. Some of the main devices used in embedded products are Microprocessors and Microcontrollers. Microprocessors are commonly referred to as general purpose processors as they simply accept the inputs, process it and give the output. In contrast, a microcontroller not only accepts the data as inputs but also manipulates it, interfaces the data with various devices, controls the data and thus finally gives the result. The project "IOT based Smart Parking system" was designed such that the status of parking slots can be known from anywhere in the users webpage.

2. BLOC DIAGRAM

In this chapter the block diagram of the project and design aspect of independence modules are considered.



The main blocks of this project are:
1. Micro controller (16F73)
2. Crystal oscillator
3. Regulated power supply (RPS)
4. LED Indicator
5. Wi-Fi module
6. IR sensor

3. MICRO CONTROLLER

Microprocessors and microcontrollers are widely used in embedded systems products. Microcontroller is a programmable device. The microcontroller used in this project is PIC16F73.The PIC16F73 CMOS FLASH-based 8-bit microcontroller. It features 200 ns instruction execution, self-programming, an ICD, 2 Comparators, 5 channels of 8-

ISSN (Online) 2456 -1304

International Journal of Science, Engineering and Management (IJSEM)
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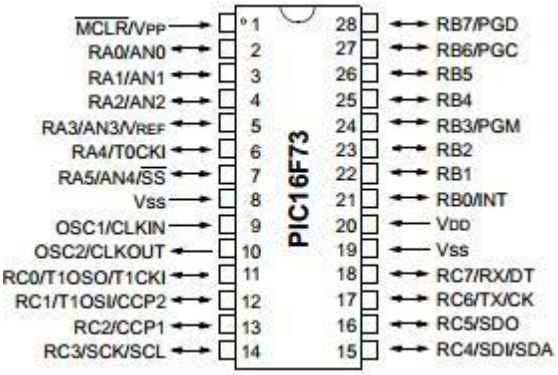
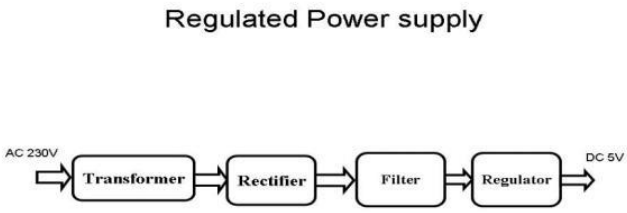
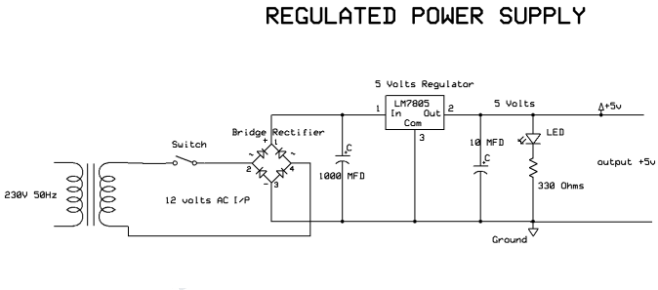
bit Analog-to-Digital (A/D) converter, 2 capture/compare/PWM functions, a synchronous serial port that can be configured as either 3-wire SPI or 2-wire I2C bus, a USART, and a Parallel Slave Port.



4. REGULATED POWER SUPPLY





The components mainly used in above figure are

- 230V AC mains
- transformer
- bridge rectifier(diodes)
- capacitor
- voltage regulator(IC 7805)
- resistor
- LED (light emitting diode)

5. WIFI MODULE

Express if Systems Smart Connectivity Platform (ESCP) of high performance wireless SOCs, for mobile platform designers, provides unsurpassed ability to embed Wi-Fi capabilities within other systems, at the lowest cost with the greatest functionalit0079.

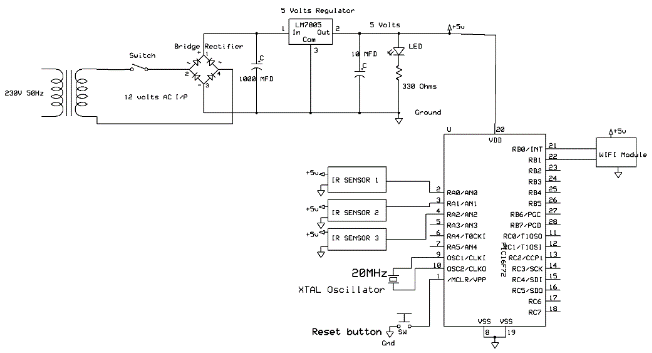
6. IR OBSTACLE DETECTION SENSOR

IR Sensors This sensor is a short range obstacle detector with no dead zone. It has a reasonably narrow detection area which can be increased using the dual version. Range can also be increased by increasing the power to the IR LEDs or adding more IR LEDs.

7. SOFTWARE DESCRIPTION

This project is implemented using following software"s:
1) Express PCB – for designing circuit
2) PIC C compiler - for compilation part
3) Proteus 7 (Embedded C) – for simulation part

8. WORKING



Our project “IOT based Smart parking system” is mainly intended to monitor the status of the devices through server (Wi-Fi).

The controlling device of the whole system is a Microcontroller. Wi-Fi module, IR sensors are interfaced to the Microcontroller. IR sensors are fed as input to the

ISSN (Online) 2456 -1304

International Journal of Science, Engineering and Management (IJSEM)
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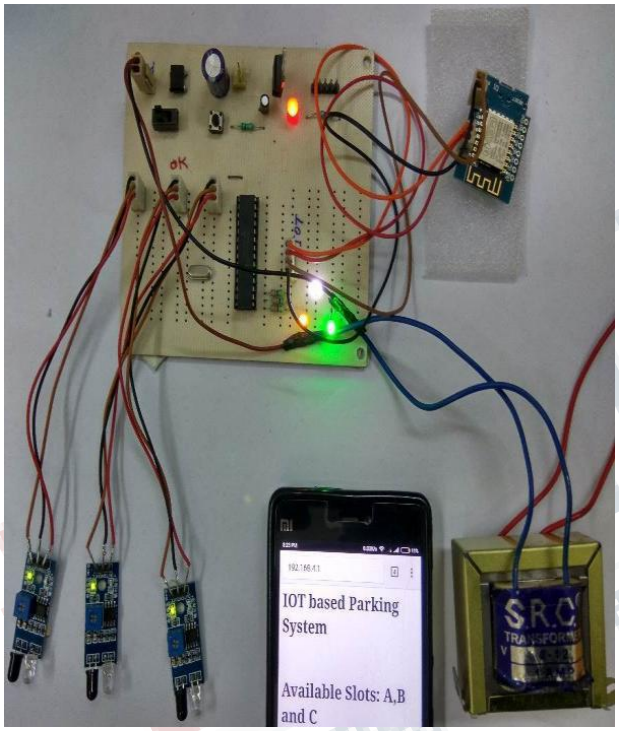
Microcontroller. The Microcontroller processes this data and transmits over Wi-Fi, which will be received from MOBILE. In achieving the task the controller is loaded with a program written using Embedded „C‟ language. The user who wants to park the vehicle is connected to the Wi-Fi network of that particular parking lot through the password. The IR sensors send the status to the microcontroller where the data processing is done. The microcontroller sends information to the webpage about the status of the slot to the user using IOT. This way the user can easily find a parking slot without any congestion and in less time.

9. RESULTS



The project “IOT based Smart Parking system” was designed such that the status of parking slots can be known from anywhere in the users webpage. This is achieved using Wi-Fi communication.

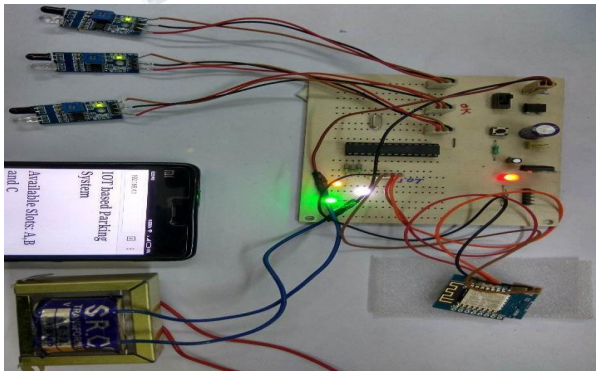


Fig.7. Working model of project In this system, the user has to be connected to the Wi-Fi network of that particular parking area through which he is given access to the webpage and can know about the status of the parking slot.

10. CONCLUSION

1. The objectives of this project have been achieved. The hassle in searching for available parking lots has been completely eliminated by reserving the lots via IOT system.

2. The security feature of the system is enhanced with the password requirements upon entrance to the parking lot.

3. The designed system could be applied everywhere due to its ease of usage and effectiveness.

11. FUTURE SCOPE

This project can be extended by adding an application of booking the parking slot before reaching the destination. This can be achieved by using GSM and RFID communication.

12. REFERENCES

[1] L. Atzori, A. Iera, and G. Morabito, “The Internet of things: a survey,” Computer Networks, vol. 54, no. 15.

[2] KaivanKarimi and Gary Atkinson, —“”What the Internet of Things (IoT) Needs to Become a Reality””, White Paper, FreeScale and ARM, 2013.

[3] T. Taleb and A. Kunz, “Machine Type Communications in 3GPP Networks: Potential, Challenges, and Solutions,” to appear, IEEE Commun. Mag.

[4] Bilodeau, V.P. Intelligent Parking Technology Adoption. Ph.D. Thesis, University of Southern Queensland: Queensland, Australia, 2010.

[5] Li, T.S.; Ying-Chieh, Y.; Jyun-Da, W.; Ming-Ying, H.; Chih-Yang, C. Multifunctional intelligent autonomous parking controllers for carlike mobile robots. IEEE Trans. Ind. Electron.

[6] Faheem1, S.A. Mahmud, G.M. Khan, M. Rahman and H. Zafar,“”A Survey of Intelligent Car Parking System””, October 2013.

[7] S. Alam, M. M. R. Chowdhury, and J. Noll, “Senaas: An event-driven sensor virtualization approach for internet of things cloud,” in Networked Embedded Systems for

Enterprise Applications (NESEA), 2010 IEEE International Conference on, November 2010.

[8] Choeychuen, K. Automatic parking lot mapping for available parking space detection. In Proceedings of the 5th International Conference on Knowledge and Smart Technology (KST), Chonburi, Thailand, 31 January–1 February 2013.

[9] Z. Schelby, K. Hartke, and C. Bormann, (Aug. 28, 2013) ,,,,Constrained application protocol (CoAP),"""" CoRE Working Group Internet-Draft. [Online].

[10] Keat, C.T.M.; Pradalier, C.; Laugier, C. ,,"Vehicle detection and car park mapping using laser scanner"""".