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IOT Based Smart Car Parking System for Smart Cities

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ABSTRACT

In recent times the concept of smart cities have become very popular. Thanks to the Internet of things the idea of smart city now seems to be completed. Consistent efforts are being made in the field of IoT in order to maximize the productivity and reliability of urban infrastructure. Problems such as, traffic congestion, limited car parking facilities and road safety are being addressed by IoT. In this paper, we present an IoT based cloud integrated smart parking system. The proposed Smart Parking system consists of an on-site deployment of an IoT module that is used to monitor and signalize the state of availability of each single parking space. A mobile application is also provided that allows an end user to check the availability of parking space and book a parking slot accordingly.

Keywords: Internet of Things, Smart Parking, Smart City.

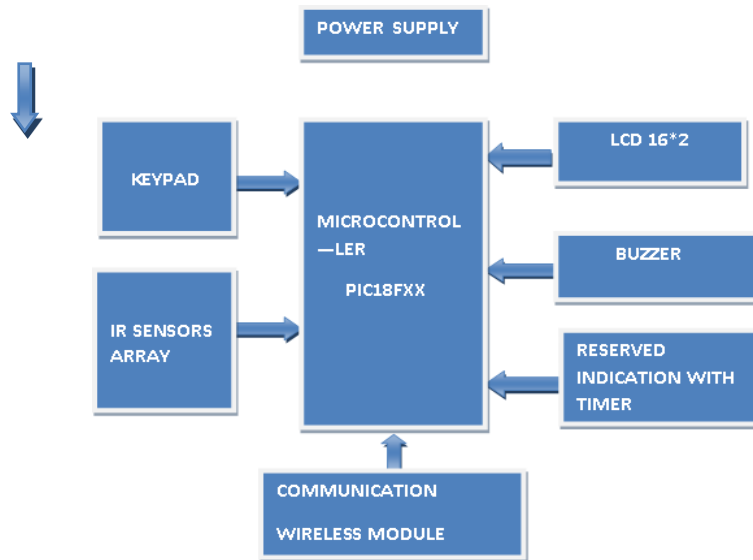


1. INTRODUCTION

The concept of Internet of Things (IoT) started with things with identity communication devices. The devices could be tracked, controlled or monitored using remote computers connected through Internet. IoT extends the use of Internet providing the communication, and thus inter-network of the devices and physical objects, or 'Things'.

Internet means a vast global network of connected servers, computers, tablets and mobiles using the internationally used protocols and connecting systems. Internet enables sending, receiving, or communicating of information. Thing in English has number of uses and meanings. Dictionary meaning of 'Thing' is a term used to reference to a physical object, an action or idea, situation or activity, in case when we do not wish to be precise. IoT, in general consists of inter-network of the devices and physical objects, number of objects can gather the data at remote locations and communicate to units managing, acquiring, organizing and analyzing the data in the processes and services. It provides a vision where things (wearable, watch, alarm clock,

3. BLOCK DIAGRAM

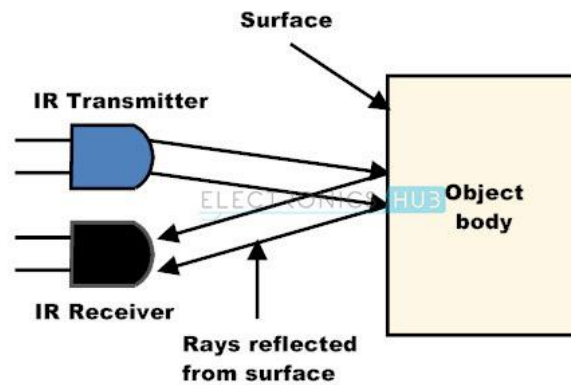


- **Power Supply**

Power supply gives 5v supply to the PIC microcontroller and other block also work on 5v DC.

- **IR Sensor**

The IR sensor used to detect the car in parking. If car is present then it shows on cloud as that parking slot is allowed if not allowed then it will shows that parking slot empty.



- **Reservation**

If you booked parking then from booking time then it will booked for next 5 minutes and countdown start at timer.

- **Buzzer**

If any other person parked their car in booked slot then alarm will get buzzed periodically for some time as per set.

- **LED**

On LED we will show the indication of booked slot.

- **LCD**

LCD part is used in security area for check out the parking is allotted or free.

4. WORKING PRINCIPLE

Algorithm

- Start.
- Turn on the power supply.
- IR sensor will get activated.
- Search online for empty parking slot from android application.
- Space detection will start.
- If space is detected data sends and stored on cloud by sending system status by GSM.
- LED will start showing the number of parking slots.
- Display on front LCD that the slot is booked.
- Else go to step 5.
- Shows space on cloud.
- We can now book empty parking slot online.
- LED indication will get off.
- IR sensor will open a gate.
- End.

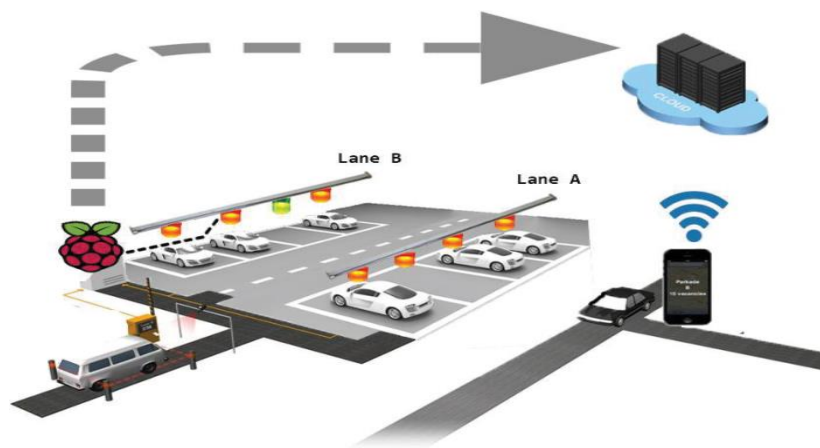
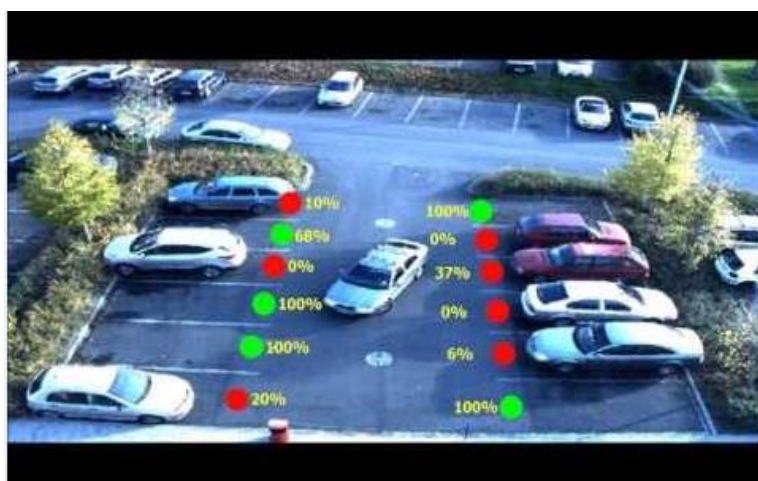
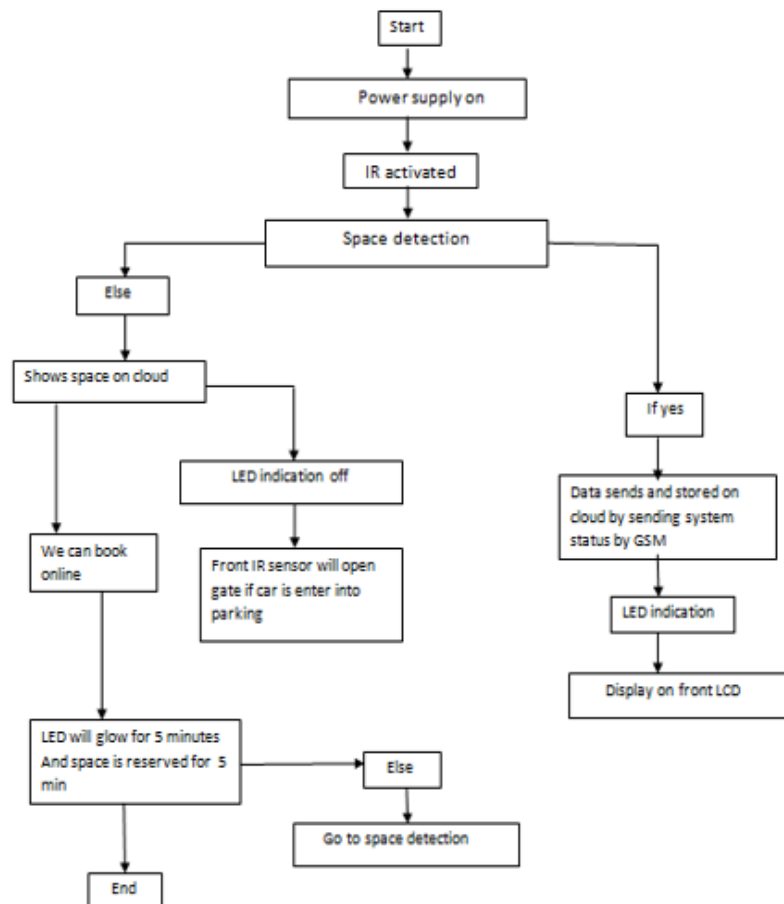


Figure 1: Smart Parking System



5. FLOW CHART



6. CONCLUSION

The concept of Smart Cities have always been a dream for humanity. Since the past couple of years large advancements have been made in making smart cities a reality. The growth of Internet of Things and Cloud technologies have given rise to new possibilities in terms of smart cities. Smart parking facilities and traffic management systems have always been at the core of constructing smart cities. In this paper, we address the issue of parking and present an IoT based Cloud integrated smart parking system. The system that we propose provides real time information regarding availability of parking slots in a parking area. Users from remote locations could book a parking slot for them by the use of our mobile application. The efforts made in this paper are indented to improve the parking facilities of a city and thereby aiming to enhance the quality of life of its people.

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