Scientific Journal of Impact Factor (SJIF): 4.72

e-ISSN (O): 2348-4470
p-ISSN (P): 2348-6406

International Journal of Advance Engineering and Research Development

"Emerging Technologies in the Computer World", January -2017

Smart Parking Cloud Based System

The Parking Solution

Prof. M.P.Nerkar[1],Umang Mahant[2], Megh Makwana[3], Shubham Bhalerao[4]

[1,2,3,4] *Computer Department , AISSMS IOIT*

Abstract — *This project is based on an intelligent cloud based service which increase the interactivity between the user and the parking lot providers, by providing real time viewing of parking space. We are illustrating various cases to improve the accuracy of vehicle detection in the parking space, the sensors are used in the following cases:-1)Infrared 2)Ultrasonic 3)Proximity 4) Infra red and ultrasonic the efficient of each sensors will be measured along with their drawbacks of each case. Real time traffic monitoring is the main feature of our project such kind of technology can be used in vertically upward parking lot structures which would emphasis on building the parking space in a upward manner rather than outward, which would result in more parking space and less area will be used.*

Keywords- *Cloud-based intelligence insert; Proximity sensors; Ultra-sonic sensor; Infra-red sensors; Mobile App; Analysis; Data mining; Passwords ; Verification ; Data Authentication.*

I. INTRODUCTION

Our solution is to provide the user with a real time viewing of vertically upward parking structures which enables the user to view occupied/unoccupied parking space at the very instance, also the number of parking vehicles in the parking space which are yet to be allocated parking space. This enables the user to check availability from their devices from anywhere around the city via our application. To access the application authentication of user is done prior using its service by linking their adhar card number to the database as unique identification. Due to the rapid increase of vehicles in major cities there is going to be a need for more parking space with low area usage.

II. RELATED WORKS

The parking lot are used by every citizen on a everyday basis [1]. There are various types of assistance involved in parking systems [2]. The driver has to search for a parking slot in parking zone. In order to reduce the effort of the driver, the parking systems provide guidance to the driver for parking the car. Based on this concept various parking systems are developed. The information transmissions are made by mobile and web services in some systems [3, 4]. Then various sensors and technologies are used for implementing parking systems.The parking application extends to reservation for parking, automatic payment for parking and identification of car and vehicle license plate recognitions using camera [5].The devices of parking system perform various functionalities based on the technology of the parking system. Some of the functionalities are monitoring, collection of data, and transmission of data[6].

III. SMART PARKING SYSTEM

The smart parking system is implemented in many environments with various features, which solve their problems faced in their day to day activities.There are three tired functionalities, the lowest level comprising the functions of sensing, data transmission as well as data storage is made in a middle tier, and upper tier deals with client interfaces. Based on the observation and previous studies we noticed that parking space reservation could help drivers to reduce the search time dramatically. Therefore, we propose smart parking detection system, built on advanced sensing and web based communication technology. The smart parking system has been developed by allocating the slot in parking area. Because of proper allocation, various problems can be solved. The customers can reduce time consumption by the smart systems. The single problem can be solved by different solutions. This considers the performance parameters for each approach. Thus considers the efficiency issues. Vehicle detection in smart parking space can be done with the help of various sensors like:- 1)Ultrasonic 2)Infrared 3)RFID 4)Proximity 5)CCTV Image processing 6)Laser 7)Acoustic. Ref the Fig.1 for details.

We are using various cases for object detection with single sensors as well as combined sensors to improve the accuracy. Sensors used are :- 1)Ultrasonic 2)Infrared 3)Proximity.

The performance of proximity is much better than CCTV in terms of computation, cost, durability, efficiency. Ultrasonic and infrared are used as alternatives to improve the precision.

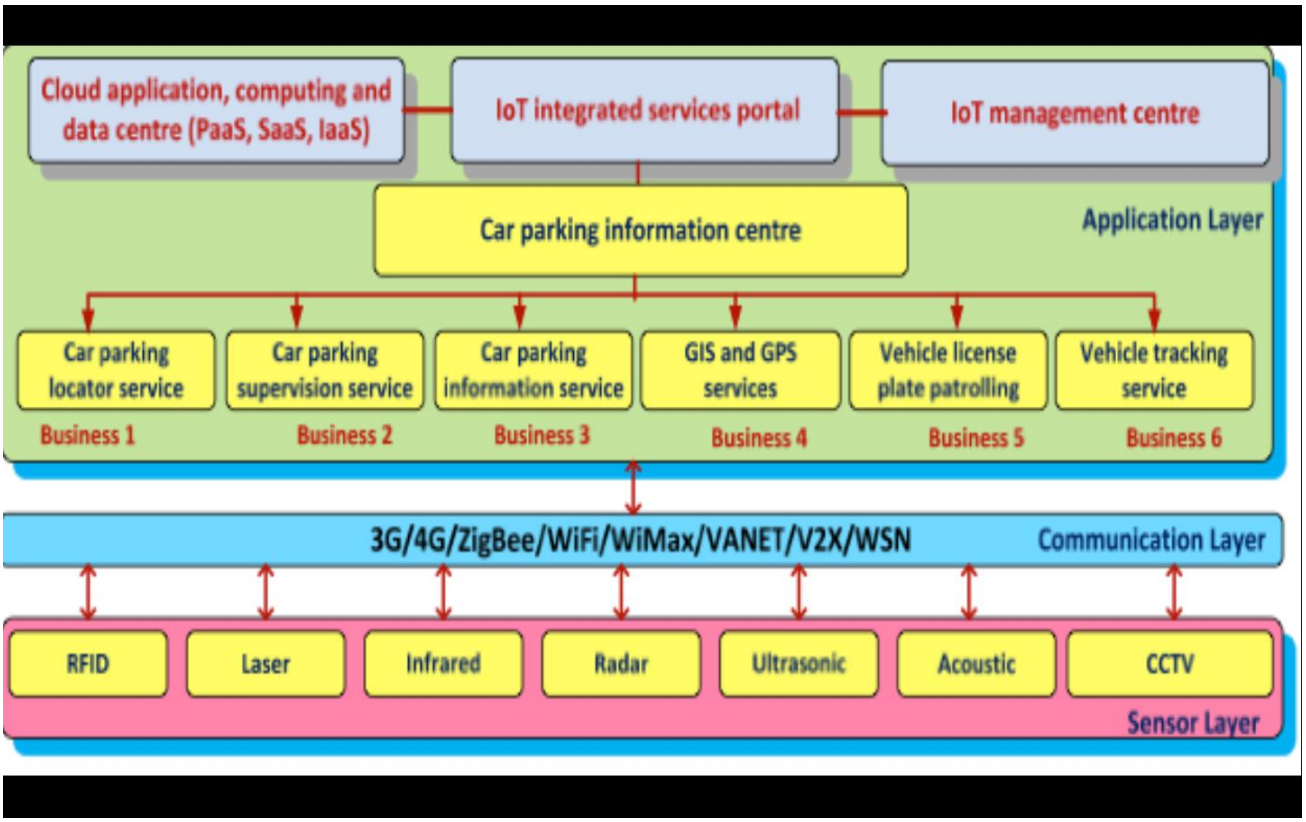

Fig. 1. Basic Architecture

IV. GOAL AND OBJECTIVE

The main objectives of the proposed system are:
1. Alleviate the parking contention
2. Balance the benefits between parking service providers and drivers,
3. Reduce the amount of traffic searching for parking.
4. The system includes a comprehensive and integrated solution without human intervention.
5. The smart system detects the car automatically and stores the parking slots information in a dynamic database.
6. The system uses Web application and mobile smart devices that facilitate fare situation
7. Provide the user with information about available parking spaces.
8. Reduce fuel and time consumption of the user while searching for empty parking space.
9. Help expand parking system in an upward manner.

V. STATE DIAGRAM

Working of system of the smart parking is diagrammatically explained in state diagram. The client can access the dynamic database of the smart parking system though a android application. That can be done by creating an account on the app by filling up the details of the user and later can be used by authenticating the password to show the available parking slots to the user at runtime. The application is the dynamic representation of various parking spaces available in the parking arena. It gives the most accurate data by sensing it through various sensors. The updation of information is then synced with the cloud. The sensors are used in the following cases are:- 1)Infrared 2)Ultrasonic 3)Proximity 4) Infra red and ultrasonic the efficient of each sensors will be measured along with their drawbacks of each case.

A. Infrared Sensor

Infrared sensors identify the occupancy status of a parking space by detecting changes in the energy emitted by vehicle and the roads . Whereas the sensors are able to be implemented in a multilane environment to measure vehicle speed, the sensitivity of the sensor is reduced in heavy rain, snow and dense fog. And also certain models are not recommended for presence detection.[3]

B. Ultrasonic parking sensor

The Ultrasonic sensors transmit pulse waveforms between 25 to 50 kHz to the road by detecting transmitted energies, which are reflected back the sensor. They are easy to install but are sensitive to the environment.

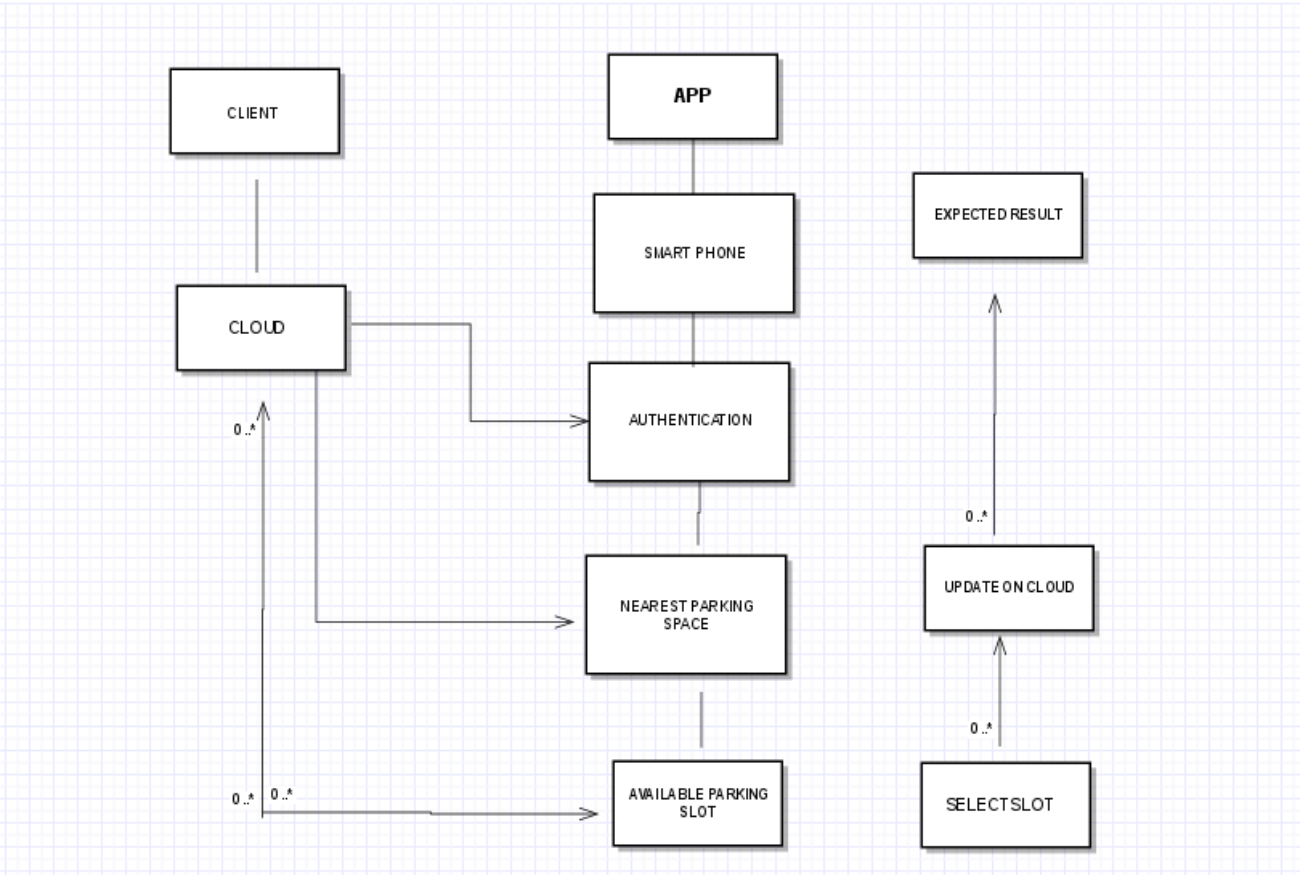

Fig.2. State Diagram

VI. CONCLUSION

Due to a exponential increase in traffic in major cosmopolitan cities managing parking lot facilities have become a major issue, the development of a real time automated system would provide the user with nearest parking lot facility along with real time monitoring of parking space. Thus reducing the users time, fuel, energy of finding a vacant parking space on his own.

REFERENCES

[1] Samir A. El-Seoud1, Hosam El-Sofany2 and Islam Taj-Eddine "Towards the development of smart parking systems using mobile and web technologies"2016.

[2] Ashwin Sayeeraman, P.S. Ramesh "Zigbee and Gsm based secure vehicle parking management and reservation system"2012.

[3] Jihoon Yang, Jorge Portilla,Teresa Riesgo"Smart Parking Service Based on wireless sensor network"2012.

[4] P.Dharmareddy, A.RajeshwarRao, Dr. Syed Mustshak ahmed,"An intelligent Parking Guidance and Information System using image processing technique"2013.

[5] Manjusha Patil, Vasant Bhonge "wireless Sensor Network and RFID for smart parking System" 2013.

[6] yangfeng geng, Christos G. "New smart parking system based on resource allocation and reservations"2013.

[7] Hitlal al-kharusi, Ibrahim al-bahadly "intelligent parking management system based on image processing"2014.

[8] NoorhazrinHanyMohamadHanif, Mohd Hafiz Badiozaman, Hanita Daud " Smart Parking reservation system using short message services ", 31750 Tronoh, Perak, Malaysia, 2012.

