A CLOUD BASED INTELLIGENT VACANT PARKING HOLDING GUIDANCE SYSTEM USING INTERNET OF THINGS

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Abstract: *One of the major issues that cities are facing these days is the issue of parking. This issue has been going on from a past decade but recently in in few years as the population has significantly increased and the number of cars have increased because of this due to this there is less space for parking and because there is conjunction on the roads this leads to traffic jam .As there are no separate place for parking people tend to park their cars on the street itself due to this there is less space for moving vehicle's to move freely this leads to traffic jam. In recent times the concept of smart cities have gained grate popularity. Thanks to the evolution of Internet of things the idea of smart city now seems to be achievable. 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.*

Keywords—**Internet of Things; Cloud Computing; Smart Parking; Smart City; Cloud of Things.**

1.INTRODUCTION

IOT based parking systems usually obtain information about free parking spaces in a particular   area and process it in real-time to facilitate vehicle parking at available positions. One of the key issues that smart cities relate to is car parking facilities and traffic management systems. Internet of Things (IoT) enables the connectivity with surrounding environmental things to internet and makes easy to access those things from any remote location. The effective use of an IoT technology can ease human life in some aspects. In recent times the concept of smart cities has gained grate popularity. Continuous efforts are being made in the field of smart parking using IOT in order to maximize the productivity and reliability of urban infrastructure. Traffic congestion, limited car parking facilities and road safety are being addressed by IoT. [1]. The parking System is designed in such a way that it is applicable for covered parks open parks and street side parking the cloud based IOT architecture for smart parking system which contains cloud server provider which provides cloud storage to store. Centarized Server which maintains the database about the parking slots available in the city. Navigation System: Signals the availability of parking slots to users and navigates to exact location of nearest parking area from current location.Display device: A monitor or tab is used to display the admin side interface and is capable of modifying the parking lots by observing the device. User device: User can connect with smart parking system with their smart phones or with some browser.

2.EXISTING SYSTEM

Various number of smart parking systems that are based on various technologies like radio frequency identification (RFID), wireless sensor network (WSN), Bluetooth, Wi-Fi, ZigBee etc. as well as agent-based technologies and image processing techniques have been proposed in the literature over the past few years. Among these, a prototype of RFID-based smart sparking application that implements automated check-in and check-out process of the vehicle from parking lot area by using RFID reader is presented.On the other hand, either the sensor node or WSNs have been utilized to design several SPSs. Among these, a prototype of wireless sensor network based intelligent car parking system is presented in [2]. The proposed system deploys low-cost sensor node at each parking lot within some parking field to detect and monitor the status of each parking lot. The detected information about the status of parking slots in parking area etc. The centralized server which manages to store entire smart parking system information such as number of slots availability of vehicles etc. And this Information will have accessed through some secured gateways through network .The parking System consist of various components status of various parking lots is periodically reported to a database via WSN gateway deployed at the parking field. Apart from monitoring the parking field, the system proposed in [2] also provides other services like auto-toll, security management etc. Smart parking (SPARK) management system proposed in [3] also uses wireless sensor networks to perform various functionalities such as remote monitoring of parking area, reservation of parking lot, auto-mated guidance to the parking space etc. The ultrasonic sensornode based SPS presented in [3] provides various functionality that include vacant sparking space detection, tection of im-proper parking, display of available parking spaces, payment facilities etc. The SPS and car parking management system proposed.

3. PROPOSED SYSTEM

The proposed system is the combination of the hardware and software to form a complete module. Exchanging of all the information or data between mobile and sensor circuitry is done by CLOUD. The parking system is made in such a way that it is possible to cover parks, open parks and street side parking.
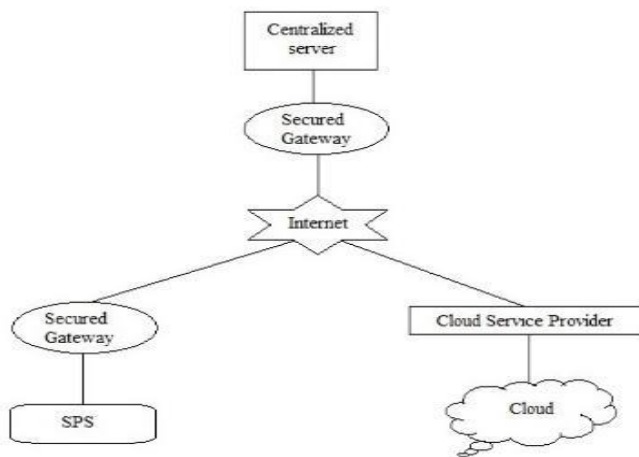
Figure 1.IOT Architecture for Smart Parking.

Figure 1 shows the IOT architecture for smart parking system which contains cloud service provider which provides cloud storage to store information about status of parking slots in a parking area and etc. The centralized server which manages to store entire smart parking system s information such as number of slots, availability of vehicles etc.

This smart parking system which consists of following components. And their functionality includes:

a) Centralized Server: The Centralizes server maintains information about free parking space available in the city.

b) Raspberry pi: the microcontroller which is used to implement our parking system and it is attached with Sensor.

c) IR sensor: Sensor is used to detect the parking slot of parking area continuously to validate the slots which either filled or empty.

d) Navigation system: The navigation system show available parking slots to the users also help let them know the exact location of nearest parking area from current location.

e) Display device: A smart phone or a Tablet is used to display the admin side interface and he is capable of modifying the parking lots by observing the device.

(f) User device: user can connect with the smart parking system with their smart phones or with some browsers

When the availability of parking slots changes, immediately the information is updated to the central server. Then user can access this stored information using internet from any location. With the help this information the parking operators determine free parking areas and analysis can be performed to determine at which time of the day the parking slots are mostly busy or free.
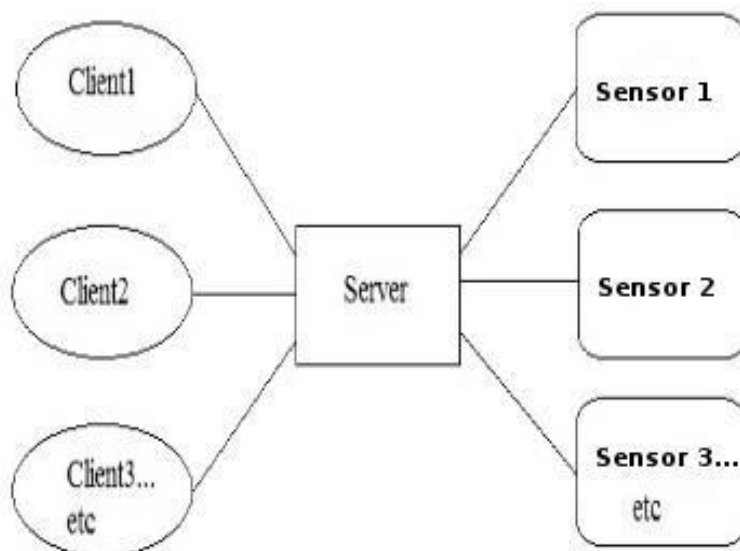

Figure 2.Communication between two or more Sensors

The sufficient user interface is provided to the client so that client can access the clear information about the system. The administrator is capable of creating new parking areas by providing the description or information about the parking area and also manages to add number of parking slots in any particular parking area and even further remove the existing parking slot s in a parking area. The updated timing of each parking slot is shown along with unique number. And more importantly this user interface provides the navigation to their destination.

4.ACKNOWLEDGMET

The idea of smart parking have always been a dream for humanity. In the past couple of years large advancements have been made in making smart parking a reality. The enhancement of Internet of Things and Cloud technologies have give rise to new ideas in terms of smart parking. Smart parking 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 smart parking system which is integrated with cloud. The system that we propose gives real time information regarding availability of parking slots in a parking slot as well as users can book the slot before they visit that parking lot. Users from any locations could pre book a parking slot for them by the use of our mobile application even before they arrive. The efforts made in this paper are indented to improve the parking facilities of a entire city as well as resolve the issues that are related to it.

5.REFRENCESES

[1]   Abhirup Khanna, Rishi Anand " IoT based Smart Parking System", 2016 International
Conference on Internet of Things and Applications (IOTA) Maharashtra Institute of Technology, Pune, India
22 Jan - 24 Jan, 2016.

[2]   Keat, C.T.M.; Pradalier, C.; Laugier, C. Vehicle detection and car park mapping using laser scanner. In Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems, Edmonton, AB, Canada, 2–6 August 2005; pp. 2054–2060. 9.

[3]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. 2010, 57, 1687–1700.

[4] Yoke Jia (Jelyn) Thong, Thuong Nguyen, Qing Zhang, Mohan Karunanithi and Lei Yu, "Predicting Food Nutrition Facts Using Pocket-size Near-Infrared Sensor", Engineering in Medicine and Biology Society (EMBC), 2017 39th Annual International Conference of the IEEE.

[5] Fidelson Tanzil, Lili A. Wulandhari, Sani M. Isa, "Artificial Bee Colony — Based for dietary recommendation in daily nutrition requirements" Knowledge, Information and Creativity Support Systems (KICSS), 2016 11th International Conference of the IEEE.

[6] Amiya Kumar Tripathy, Ditty Varghese, A.J Sudhakaran, Mohit Deorukhkar, Stacy Bardeskar, "Pratibhojan: An alarm based personalized nutrition recommendation system".