

# INTELLIGENT PARKING MANAGEMENT SYSTEM

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**Abstract**—With the rapid development of economy and the improvement of city modernization level, traffic congestion and parking have become serious social problems due to the explosive growth of the per capita amount of vehicle. So we're planning to put forward the design and implementation of smart parking system trying to solve the parking problem. We'll be using infrared sensors which will detect whether the parking slot is available or free. The information will be sent to the server which will store the information. Polling will be conducted to scan the parking slots on regular basis. The server will be updated on regular basis. The user will be able to access the server for the availability of free space. Once the user parks in the free slot, it will be updated into the server with the help of polling.

**Keywords**—Intelligent parking, infrared sensors, multiplexers, controller, router.

## I. INTRODUCTION

Parking problem becomes more universal among most cities in our country, this not only disturbed most motorists and the broad masses of pedestrians, at the same time also caused great impact on public transport and urban order. However, drivers still can't achieve parking information in time in the case of there have enough parking space, lead to the parking "big but useless". Difficulty in obtaining parking space has caused extensive concern of the society from all the walks of life, researches on how to solve the parking problems have great relationship to the people's quality of the life and the establishment of a harmonious society, so obtaining the parking information on time and publishing the empty parking space information is of a great social significance.

The software system proposed is an active park assist system. This system will be designed to assist drivers in parking the vehicle by allowing the driver to choose a parking spot, and automating nearly all of the parking process. By maneuvering the vehicle using various sensors, the application, the active park assist system aims to reduce collisions that might otherwise occur from manual parking, while relieving stress of the driver. More specifically, this system will present the driver with the option to park in a spot, and will also search

for an available spot. Once an available spot is detected, the system will require the driver to confirm the spot. Once confirmed, the system will take complete control over parking the vehicle, notifying the driver once the parking process has been successfully completed (or aborted) and will disengage from controlling the various vehicle subsystems.

## II. INTEGRATED DESIGN

The system composition principle is shown in fig. 1, consists of a mobile client and server side parking lot. Client request parking information to server through webservice interface i.e. the router, then parking lot server queries the database and return the parking information to client. The mobile clients keep real-time update status, to insure the accuracy and validity of the transient information in the process. The parking lot internal server not only implement information scheduling and parking places state information acquisition, but also have a independent management function, besides it is able to make summary of parking information and other specific functions, to realize the digital and intelligent of the parking lot.

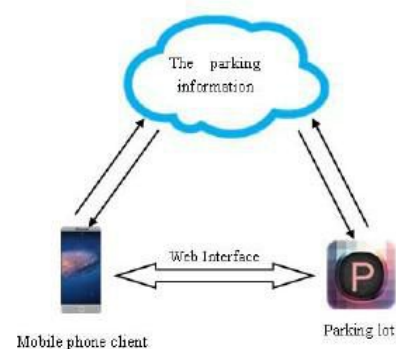


Fig. 1

## III. LITERATURE SURVEY: (EXISTING SYSTEM)

[1] The Research and Application in Intelligent Parking Management System of RFID Anti-Collision Algorithm

In this paper authors proposed a method using RFID and its tag to detect the vehicle and which slot it has occupied ,so basically this paper focuses on parking system management using RFID. Drawback of this could be that there can be RFID tag collisions. To overcome this collision problem RFID anti-collision algorithms such as ALOHA, slotted ALOHA etc have been used.

[2] The Research and Implement of the Intelligent Parking Reservation Management System Based on ZigBee Technology

In this paper authors have implemented intelligent parking system management using zig-bee at bottom level and web services that will be accessed in application layer .The advantage of this paper is that It is platform independent and the disadvantage of this paper is that it is not cost efficient and because of zig-bee central server should always be in range of zig-bee(short range of zig-bee)

[3]Intelligent Parking Management System Based on Image Processing

Authors - Hilal Al-Kharusi, Ibrahim Al-Bahadly.

In this paper authors has use, a camera as a sensor to take photos to show the occupancy of car parks. The reason why a camera is used is because with an image it can detect the presence of many cars at once. Also, the camera can be easily moved to detect different car parking lots. By having this image, the particular car parks vacant can be known and then the processed information was used to guide a driver to an available car park rather than wasting time to find one. The disadvantage of this paper is that when its foggy ,or when the environment is hazy the camera will not be able to take clear images of parking lots .

[4] Smart Parking: an Application of optical Wireless Sensor Network.

In this paper the authors have worked to modify our original WSN and applies it to parking garages. The system can then inform drivers of the number of available parking spaces and in which area should they be directed to. original WSN was modified to include two optical sensor heads. With two sensor heads, vehicles can be distinguished from pedestrians as well as motorcycles. The disadvantage of this paper is that it is not cost efficient.

Fig 2. describes in short the literature survey:

SR NO	Author	Paper name	Problem
1	Satish V.Reve , Sonal Choudhuri	"Management of Car Parking System Using Wireless Sensor Network", ISSN 2250-2459, Volume 2, Issue 7, July 2012	Feasibility of sensors
2	Hilal Al-Kharusi, Ibrahim Al-Bahadly	"Intelligent Parking Management System Based on Image Processing", School of Engineering and Advanced Technology, Massey University, Palmerston North, New Zealand 14 April 2014	Weather problem, Distorted images, Image quality
3	Cui Shiyao, Wu Ming, Liu Chen, Rong Na	"The Research and Implement of the Intelligent Parking Reservation Management System Based on ZigBee Technology", School of Information Science and Engineering University of Jinan.	Short rage

SR NO	Author	Paper	Problem
4	Yuejun Dong, Yan Cui, Fangfang Shan, Zhiyong Dong.	The Research and Application in Intelligent Parking Management System of RFIDAnti-Collision Algorithm", School of Computer Science Zhongyuan University of Technology 450007 Zhengzhou, China.	Collision in RFID systems.

### III. PROPOSED SYSTEM

In the proposed system the following basic steps will be followed:

- Request** : User requests to search for a free parking slot.
- Accept**: The server accepts the request.
- Acknowledgment**: Providing a notification to the user regarding the available space.
- Update** : Continuous polling to check the status of parking slots.

### IV. APPLICATIONS

1. Shopping Mall Parking Management.
2. Roadside Parking Management.
3. Institutions Parking Management.
4. Railways and bus station Parking Management

### V. CONCLUSION

This paper aims to implement the intelligent parking system. The system can not only help people with more convenient parking but also can make management of parking lot more intelligent. Further more, it has the advantages of simple,

convenient and economic practicability, at the same time, saves a lot of time of the user and reduces all the stress of the driver related parking issues.

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