

# i-Parker-A New Smart Car Parking System

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**Abstract** - Parking in major cities, particularly with dense traffic, directly affects the traffic flow and people's life. PARKING is an expensive process in terms of either money or the time and effort spent for the "free spot chasing." Current studies reveal that a car is parked for 95 percent of its lifetime and only on the road for the other 5 percent. If we take England as an example, on average a car was driven for 361 hours a year according to the British National Travel Survey yielding about 8404 hours in which a car would be parked. Now where would you park your car for these very long hours. Cruising for parking is naturally the first problem caused by the increase of car owners globally. Parking areas are found to be quite masses in some places and really rare to find in others. Also parking difficulties end in unessential driving around eye to merely search for an automobile parking space. This thus, on the one hand, causes additional dioxide emissions and deteriorates the setting of town scheme. This is often very true once many of us are at the same time searching for parking places in a very downtown space at peak rush hours. On the opposite hand, it additionally will increase the chance of traffic accidents once drivers ought to seek for parking areas whereas driving. Additionally, unpredictable parking things build it troublesome for folks to set up their quality. All of those degrade the fashionable town scheme expertise, and became a vital challenge within the development of future intelligent transportation systems (ITS).

**Keywords:** ITS(Intelligent Transportation System), parking areas, car parking, unessential driving, downtown space.

## 1. INTRODUCTION

It's still common that individuals have difficulties to park their cars. For instance, it's troublesome for drivers to search out timely vacant parking areas, and navigation help isn't accessible once world Positioning System (GPS) doesn't work well. As a consequence, parking difficulties end in unessential driving around eye to merely search for an automobile parking space. This thus, on the one hand, causes additional dioxide emissions and deteriorates the setting of town scheme. This is often very true once many of us are at the same time searching for parking places in a very downtown space at peak rush hours. On the opposite hand, it additionally will increase the chance of traffic accidents once drivers ought to seek for parking areas whereas driving. Additionally, unpredictable parking things build it troublesome for folks to set up their quality. All of those degrade the fashionable town scheme expertise, and became a vital challenge within the development of future intelligent transportation systems (ITS). Parking areas are found to be quite masses in some places and really rare to find in others.

## 2. GOALS AND OBJECTIVES

The main objective of this paper is to look for the parking slot beforehand, through an application, so as to save the time for the parkers for free spot chasing. The goals of the systems are as follows:

- To minimize the total monetary cost for the drivers and maximizing the utilization of parking resources.
- To build a database in the system which keeps a record for the stolen vehicles.
- To increase the security of parking area.
- To build an application which is attached to an e-wallet which will deduct money from the customer's account as per the usage of the parking slot.
- To compare various techniques and methods used in previous systems for parking systems.

## 3. MOTIVATION

Now a days there is critical problem of traffic due to increasing use of vehicles and due to this the parking problem also increasing. So the motivation behind this work is about better parking management with fair and profitable pricing policies. Also to make the parking system fully automated without the need of any manager or gatekeeper. So we are implementing the application which provides us location based parking which is completely hassle free.

#### 4. LITERATURE SURVEY

The system discussed in [1] by K. C. Mouskos, J. Tavantzis, D. Bemstein and A. Sansil proposes an idea where an innovative methodology to address at least partially the search for parking is through a parking reservation system. A problem faced in major metropolitan areas, is the search for parking space that results in tremendous loss in productivity time, excess pollution, and driver frustration. The most traditional methods utilized to alleviate the search for parking are fixed signs to parking lots, variable message signs that continuously update the number of available parking spaces at specific parking lots, route planning algorithms from an origin to a specific parking lot, as well as disincentives to the use of personal automobiles through parking pricing and strict enforcement of parking violations. In this paper, a mathematical formulation is presented for performing parking space assignment to the users based on the minimization of the system wide parking cost subject to the assignment constraints and the parking lot capacity constraints. The problem can be solved with any commercially available solver and it can be shown to yield binary integer solutions.

Donald C. Shoup[2] Suppose curbside parking is free but all the spaces are occupied, and off-street parking is expensive but immediately available. In this case, you can cruise to find a curbside space being vacated by a departing motorist, or pay for off-street parking right away. This paper presents a model of how drivers choose whether to cruise or to pay, and it predicts several results: you are more likely to cruise if curbside parking is cheap, off-street parking is expensive, fuel is cheap, you want to park for a long time, you are alone in the car, and you place a low value on saving time. The model also predicts that charging the market price for curbside parking—at least equal to the price of adjacent off-street parking—will eliminate cruising. Because the government sets curbside parking prices, planners and elected officials strongly influence drivers' decisions to cruise. The failure to charge market rates for curbside parking congests traffic, pollutes the air, wastes fuel, and causes accidents. Between 1927 and 2001, studies of cruising in congested downtowns have found that it took between 3.5 and 14 min to find a curbside space, and that between 8 and 74 percent of the traffic was cruising for parking. An insightful view in [3] Parking guidance and information (PGI) systems are thought to enable a more efficient control and management of the traffic and the use of the available car park in urban areas. Despite the installation of PGI systems in many cities and their operation for a number of years, the levels of usage of PGI remain much lower than expected. To guide investment and operational decisions, this study examines the existing PGI systems from the drivers' perspective. The results show that PGI is not efficiently used and often ignored by drivers because of the inaccurate or out-of-date nature of the information it is displaying. Habitual behaviour also played an important role in the choices of a car park. However, the results of the research also show that there is a desire for more accurate, dynamic and personalized parking information through different means at pre-trip stage and en-route stage. The results of this survey should provide some guidance in the design of future PGI systems.

Yasuo Asakura and Masuo Kashiwadani[4] suggests that to evaluate the effects of different types of parking availability information on system performance using a simulation model. The model consists of three sub-models; demand, performance and information service models. The model is designed to describe the dynamic interaction between demand and system performance and it is possible to examine the time to time fluctuation of driver's parking choice decisions and resulting congestion in car parks. The model can distinguish the difference of a driver's parking choice behavior between with and without availability information, and compare the effects of the different types of availability information. Numerical examples are calculated and it is found that the difference of effects among information types depends on the congestion level of the system.

The survey is provided in [5] by G. Revathi, V. R. Sarma Dhulipala. In this paper, we explore the concept of the smart parking system and their categories. The classifications of various existing systems are explained. The parking system handles various technologies, and the categories of those techniques are given. The functions of the nodes in wireless sensor networks are classified. The system in [6] proposes the intelligent parking service is a part of ITS (Intelligent Transportation Systems) in which parking facilities are conceived of in terms of various new functions they can provide. This service would not simply manage the internal operation of a parking facility. Rather, it should be designed to be compatible with a wide range of aspects that are intertwined with parking facilities. One of the features of the system developed in NTT is a parking reservation service that allows drivers to reserve a parking spot through the Internet when parking space is available. The system enables motorists to find available parking spaces at their destinations easily and quickly by using the Internet. When used together with a smart card, the system can provide the motorists with recognition and payment services. This paper depicts the service concept of intelligent parking reservation systems and the overview of the prototype developed in NTT. We discuss an intelligent parking system which provides parking lot reservation service by the Internet, and we show some results of feasibility studies.

**Table-1:** Comparative study

Sr.no	Paper Title	Conclusion
1	Pay as you park,	This paper audits diverse Intelligent Parking Services utilized for stopping direction, stopping office administration and gives an understanding into the financial investigation of such undertakings.
2	Effects of parking availability information on system performance: A simulation model approach,	This paper ventures the vehicle navigation and information systems.
3	Cruising for parking,	This paper presents a model of how drivers choose whether to cruise or to pay, and it predicts several results: you are more likely to cruise if curb parking is cheap, off- street parking is expensive, fuel is cheap, you want to park for a long time, you are alone in the car, and you place a low value on saving time.
4	The time looking for a parking space: Strategies, associated nuisances and stakes of parking management in France,	SARECO has led a research study for the PREDIT (French research program) and the ADEME (Agency for environment and supervision of energy) in order to evaluate the stakes linked to the time lost by car users while looking for a parking space in France.
5	The high cost of free parking,	This paper talks about how urban planners typically set minimum parking requirements to meet the peak demand for parking at each land use, without considering either the price motorists pay for parking or the cost of providing the required parking spaces.
6	New smart parking system based on resource allocation and reservations,	The system assigns and reserves an optimal parking space based on the driver cost function that combines proximity to destination and parking cost.

## 5. GENERAL ALGORITHM OF EXISTING SYSTEMS

Step 1:User registers in the application designed for booking the slot for parking.

Step 2: Adds the information into database.

Step 3:The user logs in the application.

Step 4:Then he views the nearest parking in that area.

Step 5: Selects the parking slot(the data is maintained in the database).

Step 6: Payment using e-wallet is done.Also there is a process of cancellation , so if a user cancels his booking continuously three times, he will be charged for one time.

Step 7: Then when the user reaches to the parking slot he has booked there he scans the QR code which was generated at the time of booking which gets displayed on the barricade of each parking slot.

Step 8: Finally, the driver parks his car.

## 6. OUTCOME

It is difficult to find a free parking slot at a place where you need to park your vehicle urgently. The above mentioned systems propose various solutions to this problem. Proposed methods mainly include parking reservation system using various algorithms to find out the nearest parking slot around the driver of the vehicle. Allows drivers/driver assistance systems to effectively recognize the free slots for parking. Reduces traffic in that area by allowing the drivers to find the parking beforehand, before reaching the destination. In some way or the other, existing systems help in managing an intelligent parking system.

## 7. CONCLUSIONS

We have proposed iParker, a new smart parking system that yields optimal solution for dynamically and statically allocating parking resources to parkers—providing flexible reservation options. The new concepts introduced in this is the combination of real-time reservations with share-time reservations. Extensive simulation results indicate that the proposed system significantly cuts the total effective cost and time for all parkers as well as for the owners of the parking area.

Our project can be apply in daily routine to avoid hassle which are generated by the present parking of our vehicles. In our application we use the users location and providing the information about parking, parking slots with their pricing..

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