TYP(Track Your Parkinglot)

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Abstract: Parking in major cities, particularly with dense traffic, directly effects the traffic flow and people's life. PARKING is an expensive process in terms of either moneyor 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.

I.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. Valuation policies had competed vital role within the overall parking handiness for many years. Here comes the necessary question: can we get to have additional parking areas or we would like higher parking management? We tend to believe it's the later and so the motivation behind this work is regarding higher parking management with honest and profitable valuation policies. Consistent with historical knowledge, the costs are inflated and reduced proportional to the expected utilization. Though dynamically dynamic parking costs shall balance the provision and demand for parking and increase overall utilization, it's supported historical knowledge and statistics which cannot be correct enough to possess the right result.

II. LITERATURE SURVEY

According to literature survey after studying different IEEE paper, collected some related papers and documents some of the point discussed here:

1)Mathematical Formulation of a Deterministic Parking Reservation System (PRS) With Fixed Costs

AUTHORS: K. C. Mouskos, J. Tavantzis, D. Bemstein and A. Sansil

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 figed 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. *An* innovative methodology to address at least partially the search for parking is through a parking reservation system. 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.

2) Cruising for parking

AUTHORS: Donald C. Shoup

Suppose curb 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 curb space being vacated by a departing motorist, or pay for off-street parking right away. This paper presents amodel of how drivers choose whether to cruise or to pay, and it predicts several results: you are more likely to cruise if curb parking ischeap, 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 valueon saving time. The model also predicts that charging the market price for curb parking—at least equal to the price of adjacent off-streetparking—will eliminate cruising. Because the government sets curb parking prices, planners and elected officials strongly influencedrivers' decisions to cruise. The failure to charge market rates for curb parking congests traffic, pollutes the air, wastes fuel, and causesaccidents. Between 1927 and 2001, studies of cruising in congested downtowns have found that it took between 3.5 and 14 min to find acurb space, and that between 8 and 74 percent of the traffic was cruising for parking.

3.Understanding drivers' perspective on parking guidance information

AUTHORS: YanjieJi, WeihongGuo, Phil Blythe, Dounan Tang, Wei Wang

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.

4. Effects of Parking Availability Information on System Performance :A Simulation Model Approach

AUTHORS: YasuoAsakura and MasuoKashiwadani

The objective of this paper is 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 aid resulting congestion in car parks. The model cart distinguish the difference of a driver 'sparking choice behavior between with and without availability information, aid compare the effects of the different types of availability information. Numerical examples are calculated aid it is found that the difference of effects among information types depends on the congestionlevel of the system.

5.Smart Parking Systems and Sensors: A Survey

AUTHORS: G. Revathi, V. R. SarmaDhulipala

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.

6. Intelligent Parking Reservation Service on the Internet

AUTHORS: K.lnaba, M. Shibui, T. Naganawa, M. Ogiwara, N. Yoshikai

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.

In this paper, we discuss an intelligent parking system which provides parking lot reservation service by the Internet, and we show some results of feasibility studies

7. Auction-based Parking Reservation System with Electricity Trading

AUTHORS: So Hashimoto, Ryo Kanamori, Takayuki Ito

Parking reservations can reduce the amount of time lost by drivers searching for parking spaces near their destination. For the development and planning of smart cities with electric vehicles, it is important to control parking spaces as places for charging and power management with Vehicle-to-Grid systems. This study proposes an auction-based parking reservation system that includes electricity trading, and uses simulation combined with a driver parking duration model to evaluate it. The driver parking duration model is constructed using actual parking data that can estimate parking times after parking fees have changed.

8. CAR PARKING SYSTEM AN ANDROID APPROACH
AUTHORS: NIKHIL PALDE ,CHHAYANAWALE , SUNITAKUTE

Now days with the increase in vehicle production and world population, more and more spaces and facilities are required. In this project a new parking system called car parking system an android approach is proposed to assist driver to find vacant spaces in a parking in a shorter time. Different technologies are reviewed and compared to determine the best technology for developing this system. This system uses IR sensors to detect the presence of vehicle in parking slot and display the vacant slot. We create the separate application on the smart phone and by using this application we find shorter and easier path to reach the destination with the help of Bluetooth module. Features of car parking system an android approach includes vacant parking space detection, display of vacant parking slots and give direction on smart phone application to move toward vacant parking slot. This project also describes the use of a parking system in proper and efficient manner from the entrances into a parking area until the finding of a vacant parking slot. This prototype of car parking system an android approach will help car owners to improve their facilities inside car parking area to effectively guide car driver to vacant parking slot inside car parking area. This system is designed in two floors and each floor contains three parking slots and we can extend it as per our requirements. This system architecture defines the essential design features such as location of sensors, required number of sensors and LCD display board.

9. IoT based Smart Parking System

AUTHORS: ABHIRUPKHANNA,RISHIANAND

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. 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. The paper also describes a high-level view of the system architecture. Towards the end, the paper discusses the working of the system in form of a use case that proves the correctness of the proposed model .

10. Smart Car Parking Management System Using IoT

AUTHORS: Aniket Gupta ,Sujata Kulkarni , Vaibhavi Jathar

Proliferation in the number of vehicles is leading to problems of vehicles parking at an appropriate place especially the car parking. This indirectly leads to traffic congestion. This is because of the fact that current transportation infrastructure and car park facility are unable to cope with the arrival of large number of vehicles on the road. To alleviate the aforementioned problem, authors proposed a Smart Parking Management System that helps users to automatically find a free parking space with a smaller amount. Smart Parking involves use of Ultrasonic sensor, Arduino Uno, ESP8266-01 Wi-Fi Module, Cloud server. IOT based new parking platform enable to connect, analyze and automate data gathered from devices and execute smart parking possible. Smart parking would enable vehicle occupancy, monitoring and managing of available parking space in real-time that reducing the environmental pollution. Proposed system provides optimize usage of parking space and get considerable revenue generation.

III. EXISTING SYSTEM

The smart parking system implemented mainly in the Europe, United States and Japan (Shaheen et al., 2005) is developed with the incorporation of advanced technologies and researches from various academic disciplines. With its deployment in the car park, it is hoped that it would solve the aforementioned problems faced by the patrons within the car park

1.   .

IV. PROPOSED SYSTEM

We present a new smart car parking system, named TYP, with static resource scheduling, dynamic resource allocation and pricing models, to optimize the parking system for both parking managers and drivers. The contributions of our work include: 1) increasing parking resource utilization, 2) increasing parking revenue, 3) improving parking experience of drivers by lowering cost, parking spot searching and walking times. Our work is different from the one in where a dynamic resource allocation model was proposed. The main limitations of that model are that only reservation for limited period of time (e.g., few minutes) was allowed, fixed price was used and revenue was not taken into account and only a single choice of destination was considered. Whereas our model allows a driver to reserve a parking space for any time in future, the revenue is considered and new pricing models are introduced .We combines parking reservation and pricing models to overcome the parking problems.
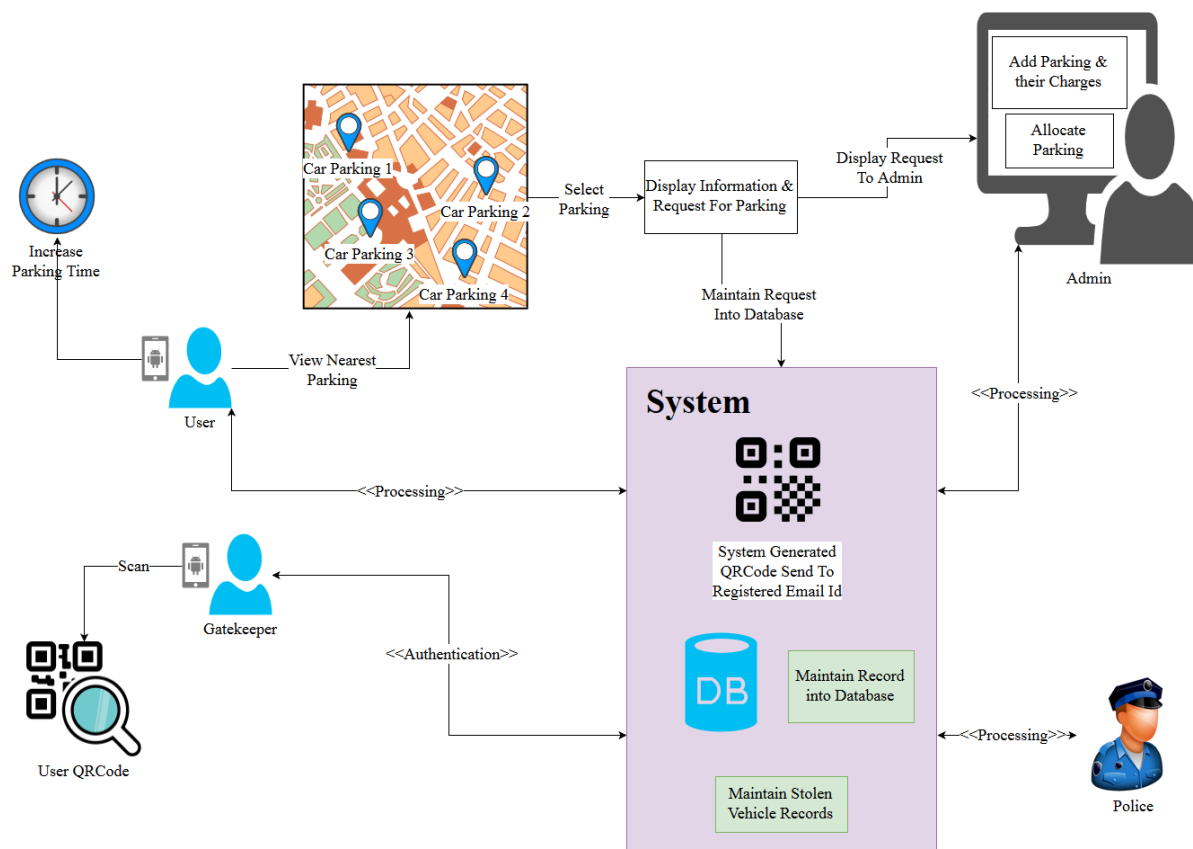
V. SYSTEM ARCHITECTURE

Figure 1. Proposed System Architecture

VI. CONCLUSION

We have proposed TYP(Track Your Parkinglot), a new smart parking system which is based on MILP model 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. We also have proposed pricing policies for both static and dynamic reservations that maximize the profit from parking. Extensive simulation results indicate that the proposed system significantly cuts the total effective cost for all parker.

ADVANTAGES-

1. Time Management.
2. Cost Effective.
3. increasing parking revenue

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