

Smart Parking zone using Machine learning and Image Processing

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Abstract - Now a day's vehicle parking is an important issue and day by day its necessity is increasing. We are still using the manual vehicle parking system and that is why we are facing problems like wastage of time and fuel finding free space around the parking ground when we need to park our car which requires a good amount of lighting. Another issue is chaos that happens while parking because there is no particular system anyone can park anywhere that sometime causes damage to the vehicles while moving out or in the parking. Vehicle ingress and egress are also made more convenient with the implementation of hassle-free payment mechanism. With vehicle detection sensors aplenty on the market, the choices made may defer due to the different requirements in addition to the its pros and cons. Subsequently, the various sensor systems used in developing the systems in addition to the recent research and commercial system on the market are examined as vehicle detection plays a crucial role in the smart parking system.

Key Words: CAR, Machine Learning, SLOT Allocation

INTRODUCTION

Among the challenges that we face in our day to day life one of most unavoidable challenge is parking the car wherever we go. As our need increases our travelling increases but due to increase in usage of vehicles and increase in population we face the tough task of parking our car particularly during busiest hours of the day. During peak hours most of the reserved parking area gets full and this leaves the user to search for their parking among other parking area which creates more trac and leaves them with no indication on availability of parking space. To overcome this problem there is denitely a need for designed parking in commercial environment. To design such parking slot we need to take the account of reservation of parking slot with optimal parking space which depends on the no of parking slot available that particular spot. Additionally minimum hours prior to his expected arrival, the user can pre-book a slot in the area he desires if it is available. This will help reduce the load on the administrator as his physical work reduces drastically and user can search the parking slot through Android Application. we have is to create a completely automated car parking system with minimal human interference. With the rising population in the world, time is of the essence and hence we need to minimize the time taken by trivial activities such as finding a place to park in a busy place and avoid traffic congestion. We have seen in existing systems sometimes accidents can occur in parking situations by cars going at high speed o caused by frustrated drivers unable to find a parking space for a long period of time. In our project we propose a smart and automated car parking model that will help the user in booking their parking spaces beforehand and the vehicle will be able to park automatically once in the parking zone .The difference between our project of automated car parking systems is we hope to minimize human interaction as much as possible and make both the vehicle and the parking area fitted with sensors that will help us execute a safe and efficient way of parking. Hence, we aim to provide a completely safe and automated experience that is robust and can be implemented in real time and hopefully be implemented as the general norm for parking systems in the future. Creating a reliable system that takes over the task of identifying free slots in a parking area and keeping the record of vehicles parked very accurately. This project lessens the human effort at the parking area to great extent such as in case of searching of free slot by the driver and calculating payment for each vehicle using the parking area

1. PURPOSE

Due to the proliferation in the number of vehicles on the road, traffic problems and College Campus are bound to exist. This is due to the fact that the current transportation infrastructure and car park facility developed are unable to cope with the influx of vehicles on the road. To alleviate the aforementioned problems, the smart parking system has been developed Using ML. Car parking is a major issue in modern congested cities of today. There simply are too many vehicles on the road and not enough parking spaces.

Pervasive Decentralization of Digital Infrastructures: A Framework for Blockchain Enabled System and Use Case Analysis

Blockchain technology recently draws the attention of the public, as a dispute that leads to the foundation that the trust - free economical transaction is possible with its distinctive method

A lightweight multi-tier s-mqtt framework to secure communication between low-end iot nodes

OBJECTIVE OF SYSTEM

- Banks find the whole process extremely cost effective.
- To build up a canny, easy to understand robotized car
- stopping framework which diminishes the labour and movement blockage.
- To offer sheltered and secure stopping openings inside
- constrained territory Globally without any restrictions.

LITERATURE SURVEY:

TJong-Ho Shin Hong-bae Jun [1] has introduced the concept of smart parking guidance system and incubated the smart parking guidance algorithm which considers dynamic circumstances of parking a car in a city. To do this, a futuristic parking guidance algorithm based on dispatching rules is proposed. This helps in assigning the car to a vacant place in the parking system. There is two Parking utility function which is used in implementing the dispatching rules and parking choice is done by these parking utility function. A various factor considered in the decision of the parking choice is done by parking utility function. Driving time and distance, the distance on foot, the cost of parking, traffic congestion by guidance itself and possibility to find vacant parking lot when a car enters. To analyze the effect of considering a factor, six different importance according to the total weight of factor are proposed and evaluated the validation of proposed algorithm is performed by the simulation test. For the multi -level car parking system having the different maximum number of concurrent parking requests, six kinds of preferences putting different weight on various decision factor have been evaluated and compared with the base. Using the proposed algorithm, it has been proven a lot, utilization of parking resources in the city, and traffic congestion can be improved. The proposed system and algorithm enables car drivers to find the most appropriate parking lot and redundant time and energy. Eventually, the redundant time and energy consumption caused by cruising for parking space in city can be improved with the help of the smart parking guidance system.

Patrick Zips, Martin Bock, Andreas kungi[2] By this paper a rapid optimization, direction, planning, algorithm for parking in a narrow environment is proposed. It's feasible for different scenarios without any further modification. Angle parking, garage parking, and parallel parking can be handled in a simple way. It takes a millisecond for a path planner to decide the path. This paper normally talks about the path planning and its algorithm.

Yanan Zhao, Emmanuel G. Collins Jr. [3] this paper produced and underwork a test in a narrow space around car parking algorithm. The algorithm is designed to detail and casual test result shows the efficiency and effectiveness of the sensors. This paper algorithm was also used for fine tuning logic controllers. The developed system not only exclude human's car parking designer from the timeconsuming process but also provide a medium to develop a system to the different vehicle platform.

K.Demirli, M.Khoshnejad[4] This paper provides a solution for an automatic backward parking of vehicle under the use of sensor proposed. The main focus of the paper is that the undertook the case where dimensions of the parking space can not find out by navigating the vehicle towards the start position. In this project, the control system combines the technology of fuzzy logic and sensor navigation to design a system to automatically calculate the reference path. The given sensor-based parking system for planning the motion is effective for automatic car parking in the case when the parking space dimension can not be found. This system would be feasible for approximation the reference path on the computer by processing the information given by sensor at each interval and by taking into consideration the non-holonomic constraints. The system is computationally efficient because the direction is generated by the online system based on sensor measurement and there is no use of any offline path planner.

Faheem, S.A Mahmud, G.M khan, M.Rahman and H.Zafar[5] In this paper, the system by which intelligent parking services provide is discussed and details. The system can face the parking problem caused by unavailability of reliable, more efficient and modern car park system. The use of a various modern technique such as wireless sensor expert board fuzzy logic GPS based and vision based can decrease the parking-related issues..

PROPOSED SYSTEM

In our proposed system we are developing automatic car Parking system in our system we are developing mobile that interfacing sensors and hardware's for efficient performance we are developing system some modules working through android application modules as follow

1. **User Registration**
2. **User Login**
3. **Slot Allocation.**
4. **Recommend Slot as Per ML(Algorithm).**
5. **Get Notification.**
6. **Slot Booking**
- 7 **Pay and park system available.**

SYSTEM ARCHITECTURE

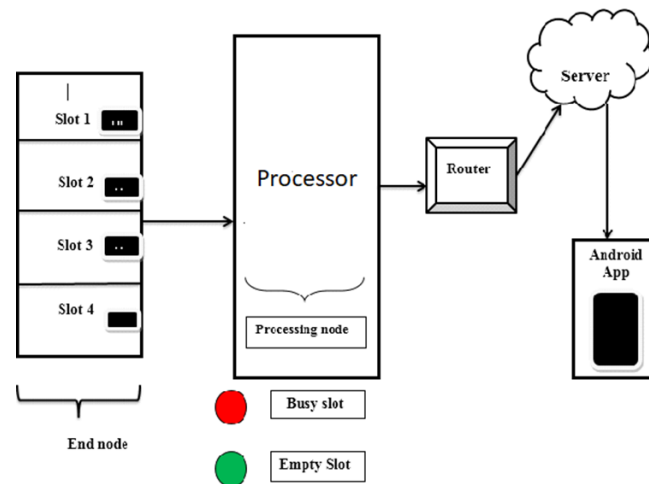


Fig -1: System Architecture Diagram

We are planning to achieve higher accuracy even in case of complex backgrounds by trying out various background algorithms. We are also thinking of improving the we propose remote parking monitoring and automated guidance which will help save a lot conduct of similar tasks by all participating institutions (i.e., DLT allows us to render the execution of duplicated tasks completely unnecessary, and this delivers far greater cost savings than would any effort to merely make these duplicated tasks more cost efficient). Specifically, DLT enables the creation of

The aim of implementing Parking Management System is to reduce time and increase efficiency of the current Parking Management System. In overpopulated cosmopolitan zones, parking strategies must be well implemented for management of vehicles. The system provides details of the vacant parking slots in the vicinity and reduces the traffic issues due to illegal parking in the vicinity. It is designed with an objective to meet the requirements of controlled parking that offers effortless parking tactics to the authorities. Our smart solution includes device installation, customized web system development, operations support and maintenance.

ADVANTAGES

- Easy to used system
- Avoid the internet
- This system is convenient, effective and easy there by improving the performance of Car parking.
- Decreased Management Costs: - More automation and less manual activity save on labor cost and resource exhaustion.

SYSTEM REQUIREMENTS

- **Software Used:**
 1. Operating System: Windows XP and later versions Front End: HTML,CSS
 2. Programming Language: Jsp and Servlet
 3. Tool: Netbeans IDE
 4. Domain: Secure Computing
 5. Algorithm: ML
- **Hardware Used:**
 1. Processor – i3 or above
 2. Hard Disk – 150 GB
 3. Memory – 4GB RAM

CONCLUSION

In this work, the implementation of an Automated Car Parking system commanded by Android Application is successfully discussed. The components used for the implementation of the system provide efficient output at various stages of implementation. The interfaces established between various components provide an effective communication across the overall working of the system. Thus, the system functioning is efficient and is recommended for commercial implementation. In future, certain changes can be incorporated as per the requirements of the organizations implementing the system. They are:- Search of free parking slots can be improved using Binary or Hash Search. System can be extended to multi-level and multiple parking areas by making potential changes in the hardware setup. SMS sent through Android Application can be made secure by applying encryption algorithms. Also, for security purpose, Login facility can be provided to the users

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