Design implementation of a parking system based on Web

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Abstract: With the rapid development of modern society, people's living standards increasing quickly, the number of vehicles increased rapidly, the living community, office space, shopping malls, scenic spots, such as local, parking problem is increasingly outstanding. In order to solve the problem of parking difficulty, combined with some parking mode and the status quo of the current developed this parking lot management system. Main functions include floor vehicle management and background database management, including internal vehicle management is divided into parking management module, data management module, system of parking charge management module, function module, user information management module, etc. This paper expounds the realization of the function of the system and the design management system software development process.

System uses the B/S architecture, Tomcat8.5 as to run the server, based on the J2EE standard.Eclipse4.6 development environment, using MySql database - 5.5.37. Development process using MVC development mode, distinct. The system is implemented. Trial operation results show that the system has good performance, high response speed and efficiency of the system in accordance with the actual car park management system, for parking management for a rapid, simple and standardized management platform. This is to improve the processing of data as well as reduce the man power cost as an important significance.

Keywords: J2EE; B / S structure; MySQL; MVC;

1. Introduction

1.1 Systematic Research background and significance

In recent years, with the rapid development of China's economy and the continuous improvement of people's living standards, profound changes have taken place in material needs and lifestyle. Vehicles, which used to be luxury goods, have gradually entered people's daily life. With the popularization of automobile consumption and the rapid popularization of various motor vehicles in a large range, vehicles put forward higher requirements for its supporting facilities, especially the parking lot. Parking is "zero speed traffic", and parking lots and ancillary facilities are an important part of static traffic. Parking fee management system is born with the new thing of public fee parking. At present, most of the parking lots have the following problems: management loopholes, system reliability, strong independence, cumbersome charging process, high labor intensity, low utilization rate of parking lots, easy loss of tickets and so on (Mäkinen et al., 2003). To solve these problems, the parking system is designed from the following aspects. This paper optimizes the management, uses the combination of card consumption and cash payment, and the system time billing. Using java advanced programming language and web related technology to develop and design management system software, realize network management operation. The optimized system is easy to use, efficient service, transparent charges, to prevent the loss of money, improve reliability, but also improve the efficiency of the operator.

1.2 Research status

Parking lot management is actually information management. In the parking information, including parking management, owner management and other information, information work is conducive to improve the efficiency of parking management, enhance the competitiveness of parking. In order to improve the competitiveness, we must first have a good hardware environment, but also have good customer service, and the way to achieve these is informatization. This topic, in view of some information in the process of parking lot management, carries on the informatization processing to it. In the process of parking lot management, it mainly involves fixed parking space information, temporary parking space information, parking information, owner information, etc. through the informatization of the above links, improve the standardized management of archives, and lay the foundation for future query and statistics. Intelligent management of parking lot is the general name of modern parking lot vehicle charging and automatic management of equipment. It is a high-tech mechatronic automation product based on computer processing. According to Luo Haijiang, product manager of Hengye International Holding Group Co., Ltd., it originated in 2001 and has been developing to perfection. Its functions are more and more oriented to domestic and international needs, and its system operation is more

humanized. Today's parking intelligent management has gone through the early stage of imitation and learning of foreign products, and now it has entered a stage of product innovation, keeping up with the pace of market demand. At present, there are more than 500 enterprises in China, of which domestic parking system products account for about 85% of the market, and foreign parking system products account for 20%., It is understood that in Europe and the United States, the development of parking industry in some European countries has a history of 50 years, and has reached a virtuous circle and orderly development. The parking industry has also become a big industry with an annual output value of one billion US dollars. The annual income of the parking industry in the United States has reached 26 billion US dollars, accounting for 3.25% of the GDP of the United States. In China, car license plate recognition firmly occupies the leading position. Card reader plays an important role in parking management system. Now it has developed from simple contact card (magnetic card / ID card, etc.) to inductive IC card, and then to RFID card. And RFID card is the frequently used.

The entrance of the traditional parking lot management system is mainly composed of vehicle detector, card reader, parking lot controller, automatic gate and vehicle detection coil. The card reader uses inductive IC card. Most of the traditional parking lots use the way of close reading card, so they have to stop and swipe the card. It is inconvenient to use, so they need to roll down the window and extend their hand to swipe the card. Sometimes you need to get out of the car and swipe your card. It's easy to get wet in rainy days, and it's easy to cause accidents such as collision and car sliding when parking up and down the ramp. It's also very terrible for new drivers to get up on the slope. The parking card has the disadvantage of slow traffic speed, especially in the rush hours. The whole process video monitoring and dynamic feedback information are used in the parking lot, which has a certain guarantee in terms of safety. Therefore, in terms of optimization, the system adopts the way of card ticket combination, and in terms of card reader, it adopts RFID card, which solves the problem of inductive close range IC card and greatly improves the efficiency. For vehicles entering, the license plate recognition function is added to recognize license plates and enter and leave the parking lot, which is aimed at users who have members in the parking lot. For temporary users, it has the function of reading tickets to dynamically reflect the current parking situation. Video monitoring is used in the whole process to ensure that there is no dead angle as far as possible.

The traditional parking management system can't deal with the real-time dynamic processing, the owner's information can't be well protected, and the authority of the manager can't be handled properly. The system information management function, parking information management function, IC card information management and other functions well solve this problem. The system information management function includes adding role information, managing role information, adding user information, managing user information, managing role information and managing user information. The module can add, delete and modify roles and users. Parking information management includes adding parking information and managing parking information. The parking information management module can add, delete and modify the parking information of car owners. IC card information management includes adding IC card types and managing IC card types. The management of IC card information can add, delete and modify the owner's IC card information. The charge can be divided into cash charge and card charge. Generally, VIP users charge by card, temporary users charge by cash, and software management is restricted by classification right. For the export duty officer, he can enter the charge management after logging in. During this period, all charges of the export will be automatically recorded in the name of the duty officer and stored in the computer database. Due to the limit of authority, the operator on duty cannot enter the higher software menu item in the system, so he can't interfere with the data recorded by the computer. The superior manager can query, check or print the work records of a duty section or any period of time or even the whole parking lot at any time. In this way, the loss of parking expenses and the error of financial statistics are fundamentally eliminated. At the same time, the system runs automatically, and the economic losses caused by human car and Overlord car are eliminated. Design a series of simple and not simple pages, relative to the function, improve the speed and accuracy of information processing, can accurately and efficiently query and modify the situation of the parking lot, so as to improve the efficiency.

1.3 Paper structure

The second chapter is to introduce the related technologies needed in the development of parking management system. According to Ullman (2011) the front-end uses JSP and CSS3, and uses jQuery to process data and interact dynamically; The background is written in Java, using B / S architecture, MVC mode, the overall architecture is clear, hierarchical, easy to operate, easy to change. It is system analysis. According to market research and consulting relevant information, we investigate the system from three levels of technology, economy and operation. We know that the parking lot management system needs to be improved and designed. According to the summary and planning, we can analyze the corresponding requirements and describe it with use case diagram.

Chapter three is the system design of parking management system, a user class is the core, running through the whole system; The database includes user class, IC card class, parking information class and fixed owner information class.

It is the function realization of parking management system. According to the research and the investigation of other parking management systems, the modules of login management, parking management and fixed owner are added. It is system design and maintenance. The test mainly includes entrance and exit settings and parking space information. It is system maintenance and evaluation. Any system needs to be maintained, in the process of running problems can be timely handled, more perfect.

2. Related Technologies and Methods

2.1 J2EE

As an enterprise level open application specification, J2EE provides a large number of development technical specifications and a multi-level distributed application model for companies and enterprises, with good compatibility, security and portability. Different developers follow the development standard of J2EE. Because of the compatibility of J2EE, data information has good compatibility, security and portability. It is applicable to all platforms. Now, it has been unanimously affirmed by everyone and applied by most enterprises to improve development efficiency. The parking lot management system uses this specification, its excellent portability and compatibility has been well applied, easy to operate and learn.

2.1.1 MVC Design pattern

MVC is the abbreviation of model view controller. It is used to design patterns for web programs. Model is the part of the program that handles the logic of the code. View (model) is the data processing part of the program. The controller is the part that processes data transmission and interacts with business logic. The parking management system adopts MVC design mode, which is convenient for developers to modify or debug the code and avoid code mixing. Unable to locate quickly when encountering problems. And MVC layering also simplifies the development. According to Grove and Ozkan (2011), different developers can develop these three logics at the same time, which improves the development efficiency and saves time for developers.

2.1.2 JSP introduce

JSP is actually a simple servlet design, an object-oriented dynamic web page technology standard. With Java as the script language, it can embed java code into JSP page, separate code and business logic, and realize dynamic interaction. Users submit data through forms or hyperlinks, and the data is transferred to the corresponding servlet, which is processed by java code to form dynamic interaction. Nowadays, JSP is applied by most enterprises, which is indispensable for J2EE. It simplifies web development, improves efficiency and reduces enterprise expenditure.

2.1.3 JQuery

Query is the meaning of query, more convenient and efficient query page control, simple syntax. JQuery is an excellent JavaScript framework after prototype, which is compatible with a variety of browser (IE6.0 +). It is not only convenient to operate documents and DOM, handle events, and achieve animation effects, but also convenient to realize Ajax interaction and CSS3 compatibility. JQuery also provides developers with the ability to create plug-ins on it, encapsulating JavaScript functions. The purpose of jQuery is to write less and do more.

2.2 Introduction to intelligent function
2.2.1 RFID card technology

RFID is radio frequency identification, is a wireless communication technology, it is through the radio signal into radio frequency electromagnetic field, the data attached to the tag on the article is transmitted out, with this to achieve automatic identification and tracking. It is different from bar code in that it does not need to be in the range of recognizer, but also can be added into the tracker. Nowadays, most industries use RFID technology. The data label is attached to a set of machines in production, which is convenient for manufacturers to track the production progress online. At present, it can also be applied in the library to facilitate the management and readers to find books and so on. It can also be used in the parking lot. The radio frequency transponder loaded on the car can facilitate the charging management in and out of the parking lot and avoid the unpredictable problems. Improve the efficiency of the parking lot.

2.2.2 Introduction of license plate recognition function

License plate recognition technology is a technology that monitors vehicles and automatically extracts license plate information for processing. License plate recognition plays an important role in the current traffic

system. It is based on graphic processing, pattern recognition and other technologies. It analyzes the image of the positioning vehicle to get the license plate number of each vehicle and complete the recognition process. And then through some means of processing, we can realize the parking fee management. Parking management system using this technology can be more convenient and efficient management of vehicles in and out of the park.

3. System Analysis

3.1 Feasibility analysis and Technical feasibility

In the design of parking management system, MVC (model view control) design pattern runs through the whole system, and the framework adopts spring MVC + jdbc composite structure.

- Model layer

The model layer is mainly logic processing. In this system, it provides data persistence and JavaBean encapsulates business logic service.

- View layer

JSP is used in parking management system to realize view layer.

- Control layer

Spring MVC technology is used to deal with the interaction between foreground request and business logic layer. The application of MVC design pattern in the design of parking management system is convenient for developers to design code. Because these three logics can be carried out at the same time, the efficiency is improved, the time is saved, and the code is isolated due to layering, which is convenient for developers to operate. And the parking lot management system adopts RFID card technology, which is convenient for vehicles to enter and exit, increase intelligence and facilitate management. From this point of view, it is feasible to develop intelligent parking lot.

3.2 Demand Analysis

System information management: including adding roles, managing roles, adding users, managing users, managing roles and managing users. The modules can add, delete and modify roles and users. IC card information management: add IC card type, manage IC card type. The management of IC card information can add, delete and modify the owner's IC card information. Parking information management: manage parking space and add parking space. The parking information management module can add, delete and modify the parking space information of car owners. Fixed owner parking management, entrance and exit settings, parking information management. The entrance and exit settings can set the user's entrance and exit, and there is a corresponding display in the parking information. Parking information management can query and delete the parking information of car owners. Temporary vehicle information management: information of the owner entering the site and setting of the owner's appearance.

Set up the entrance of the owner, and display it in the corresponding table. Charge the owner when he / she is on the scene. The temporary owner parking information management can delete and query the information of the temporary owner. Charge management: manage charge and add charge information. The management of charging information can charge the owner's fees, query and delete the charging information of the owner.

Print report: view the report information and print the related information of fixed and temporary car owners.

System function operation: modify password, exit system.

Use case diagram analysis: According to the function description of parking management system, the system authority is: administrator. The main functions of the administrator include parking information management, system information management, IC card management, owner management, fixed owner management and so on. The ellipse of the use case diagram represents the use case, and the line person represents the user. There is an association between the user and the function.

4. System Design

4.1 System Analysis

This chapter includes three parts namely, system class analysis, core business design and database design. System class analysis needs to give the system class diagram and class description. It should be noted that when giving the class diagram, only the core business class needs to be given, and auxiliary classes such as interface class and database connection class do not need to be given, If there are many classes involved

(including the contents of the classes), the relationship diagram between classes should be given first (the classes in the diagram only have names and no attributes and methods), and then the class diagram of the specific class should be given in a single class description, and the class diagram also needs to be drawn with word. The core business design mainly describes the message coordination between classes when a specific business is completed, which is expressed by the sequence diagram. The sequence diagram can be drawn by other tools, but cannot have other colors. Database design mainly describes the objects that need to be persistent in the system, and needs to give ER diagram. If the system involves more entities (or entity attributes), hierarchical drawing method is also used. The top-level diagram gives the relationship between entities, and the lower level diagram gives specific drawing for each entity.

4.1.2 User Class
The user class is used to record the user information of the system and complete the login and logout operations. Specific description is shown in Table 4-1.

Table 4-1 User function list

Class function description	Handle business operations related to users			
Package name	DAL			
Inheritance object	nothing			
Implementation object				
Class properties				
Protection attributes	type	name	describe	remarks
Public	String	ID	User ID	Length limit 20 bits
Public	String	Name	full name	Length limit 20 bits
public	String	Password	password	Length limit 20 bits
Main implementation methods				
Protection attributes	Method name	input parameter	Output parameters	Method function description
Public	login	string id, string pwd	String"	Log in to the system, the user enters ID and password to verify, and the user returns the user name and logs, and the verification fails to return the empty string.
public	logout	string id	Void	Log off the system, log off successfully, clean up the user's information and log in.

Journal class consists of five classes. They are fixed class, temp class, role class, card class and seat class. Fixed Class records the fixed owner information, as shown in table 4.2.

Table 4-2 Fixed function list

Class function description	Handle and fix the business operation of car owners

Package name	DAL			
Inheritance object	nothing			
Implementation object	Table 4-2 fixed function list			
Class properties				
Protection attributes	type	name	describe	remarks
Public	String	Fix_id	Record number	Length limit 20 bits
Public	String	Card_id	IC card number	Length limit 20 bits
Main implementation methods				
Protection attributes	Method name	input parameter	Output parameters	Method function description
Public	Update	string Fix_id, string pwd	int	Enter the fixed owner information and click Edit to modify the fixed owner Information
public	Delete	string Fix_id	Void	Enter the fixed owner information and click Delete to delete the fixed owner information

The temp class records the temporary owner information, as shown in table 4.3.

Table 4-3 Temp function list

Class function description	Handle the business operation of temporary car owners			
Package name	DAL			
Inheritance object	nothing			
Implementation object				
Class properties				
Protection attributes	type	name	describe	remarks
Public	String	Temp_id	Record number	Length limit 20 bits

Main implementation methods				
Protection attributes	Method name	input parameter	Output parameters	Method function description
Public	Update	string Temp_id	int	Enter the temporary owner information and click Edit to modify the fixed owner information
public	Delete	string Temp	Void	Enter the fixed owner information and click Delete to delete the fixed owner information

The role class manages role information, as shown in table 4-4.

Table 4-4 Role function list

Class function description	Role management			
Package name	DAL			
Inheritance object	nothing			
Implementation object				
Class properties				
Protection attributes	type	name	describe	remarks
Public	String	Role_id	Record number	Length limit 20 bits
Main implementation methods				
Protection attributes	Method name	input parameter	Output parameters	Output parameters
Public	Insert	string Role_id	int	Add role
public	Delete	string Role_id	Void	Delete role

Card records IC card information, as shown in table 4-5.

Table 4-5 Card type function table

Class function description	Processing IC card related business
Package name	DAL

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Inheritance object	nothing			
Implementation object				
Class properties				
Protection attributes	type	name	describe	remarks
Public	String	Card_id	Record number	Length limit 20 bits
Main implementation methods				
Protection attributes	Method name	input parameter	Output parameters	Method function description
Public	Update	string Card_id	int	Enter the IC card information and click Edit to modify the IC card information
public	Delete	string Card_id	Void	Enter the IC card information and click Delete to delete the IC card information

Seat class records parking space information, as shown in table 4-6.

Table 4-6 Seat class menu

Class function description	Deal with parking information related business			
Package name	DAL			
Inheritance object	nothing			
Implementation object				
Class properties				
Protection attributes	type	name	describe	remarks
Public	String	Seat_id	Record number	Length limit 20 bits
Main implementation methods				
Protection attributes	Method name	input parameter	Output parameters	Method function description
Public	Update	string Seat_id, string Seat_name	int	Enter the parking information and click Edit to modify the parking information

public	Delete	string Seat_id	Void	Enter the parking space information and click Delete to delete the parking space information

4.2 Key business design
4.2.1. System User Login
The administrator enters the user name and password through the UI interface, calls the USER class LOGIN method, calls the check login method of DATABASE in the LOGIN method, and finally returns to success.

4.3 Database Design
4.3.1. Data requirement analysis
The E-R diagram of the system shows the relationship between entities. According to the functional requirements of the system, the system has six entities: user, IC card, temporary owner, fixed owner, parking space and charging information. A fixed owner owns an IC card and a parking space, while a temporary owner owns a parking space and a temporary IC card. Fixed owners and temporary owners generate charging information. The entity relationship attribute diagram is shown in 4.3

According to the system requirements, the system has the following seven tables.

User table: stores user information.

Role table: stores role information.

Parking management table: manage parking information and parking status.

IC card management table: manage IC card information.

Temporary vehicle record form: records the information of temporary vehicles.

Fixed owner table: record fixed owner information and entry and exit information.

Toll meter: record the charging information of users.

The user table is used to record the user's attribute information such as number, name and telephone number, as shown in table 4-7.

Table 4-7 User list

Serial number	Listing	data type	length	Decimal place	identification	Primary key	Allow null	Foreign key	explain
1	user_id	Varchar2	50	0	yes	yes	no		
2	role_id	Varchar2	50	0			no	yes	
3	user_name	Varchar2	50	0			no		
4	real_name	Varchar2	50	0			no		
5	user_pwd	Varchar2	20	0			no		
6	user_phone	Varchar2	50	0			yes		

The role table stores the number, name and other information of roles, as shown in table 4-8

Table 4-8 Role table

Serial number	Listing	data type	length	Decimal place	identification	Primary key	Allow null	Foreign key	explain
1	role_id	Varchar2	50	0	yes	yes	no		
2	role_name	Varchar2	50	0			no		

The parking space management table records the number, ID, status and other attribute information of the parking space, as shown in table 4-9.

Table 4-9 Parking management table

Serial number	Listing	data type	length	Decimal place	identification	Primary key	Allow null	Foreign key	explain
1	seat_id	Varchar2	50	0	yes	yes	no		
2	seat_num	Varchar2	50	0			no		
3	seat_setion	Varchar2	50	0			no		
4	seat_state	int	11	0			no		
5	seat_tag	Varchar2	50	0			yes		

The IC card table records the ID, parking ID, name, license plate number and other attribute information of the IC card, as shown in table 4-10.

Table 4-10 IC card table

Serial number	Listing	data type	length	Decimal place	identification	Primary key	Allow null	Foreign key	explain
1	card_id	varchar2	50	0	yes	yes	no		
2	seat_id	Varchar2	50	0			no	yes	
3	user_name	Varchar2	50	0			no		
4	user_gender	Varchar2	1	0			no		
5	user_addr	Varchar2	50	0			no		
6	car_num	Varchar2	50	0			yes		

The temporary vehicle record table is used to record the number, license plate number, entry and exit time and other attribute information of the temporary vehicle owner, as shown in table 4-11.

Table 4-11 List of temporary vehicles

Serial number	Listing	data type	length	Decimal place	identification	Primary key	Allow null	Foreign key	explain
1	temp_id	Varchar2	50	0	yes	yes	no		
2	card_id	Varchar2	50	0			no		
3	car_num	Varchar2	50	0			no		
4	entry_date	date	0	0			no		
5	entry_time	time	0	0			no		
6	out_date	date	0	0			yes		
7	out_time	time	0	0			yes		
8	temp_money	float	0	4			yes		

The fixed owner table is used to record the fixed owner's number, IC card number, entry and exit time and other attribute information, as shown in table 4-12.

Table 4-12 List of fixed owners

Serial number	Listing	data type	length	Decimal place	identification	Primary key	Allow null	Foreign key	explain
1	fixed_id	Varchar2	50	0	yes	yes	no		
2	card_id	Varchar2	50	0			no	yes	
3	entry_date	date	0	0			no		
4	entery_time	time	0	0			no		
5	out_date	date	0	0			yes		
6	out_time	time	0	0			yes		

The toll meter is used to record the attribute information such as charge number, owner's name, license plate number and charge amount, as shown in table 4-13.

Table 4-13 Fee table

Serial number	Listing	data type	length	Decimal place	identification	Primary key	Allow null	Foreign key	explain
1	role_id	Varchar2	25	0	yes	yes	no		
2	role_name	Varchar2	255	0			yes		
3	role_type	Varchar2	255	0			yes		
4	car_num	Varchar2	25	0			yes		
5	car_money	Varchar2	255	0			yes		
6	car_time	Varchar2	255	0			yes		

6. System Test

After the design of parking lot management system, a series of tests need to be carried out. The changes of internal environment and external factors in the process of debugging will affect the operation and operation of the system. When the system adapts to these changes, it will gradually become perfect and achieve the desired results. This is the work of system testing from the beginning to the end.

According to the function of the system, black box test is the main method, and white box test is the auxiliary method. Black box testing: regarding the project as a black box, only knowing the function of the system without considering other situations of the project. Its task is to detect whether each function of the system can run normally and whether the operation result is correct. White box test: Contrary to the black box test, it regards the project as a transparent white box, requiring the operator to know the project process and project code, and check whether the function meets the requirements according to the specification, which has higher requirements for the operator.

System test overview and use cases

1) User login

Table 6-1 User login

functional testing	
summary	
Test number	ZL001
Function description	User login
Function URL	
Use case purpose	Test whether the user can log in successfully
prerequisite	Enter the user login interface

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Test operation					
number	Input / action	Expected output response	physical truth	correct	error
1	Enter a nonexistent user name without a password	The system prompts that the user name or password is wrong	The system prompts that the login name or password is wrong	correct	
2	Enter the correct user name and the wrong password	The system prompts that the user name or password is wrong	The system prompts that the login name or password is wrong	correct	
3	Enter the wrong user name, enter the correct password	The system prompts that the user name or password is wrong	The system prompts that the login name or password is wrong	correct	
4	Do not fill in the user name and password	The system prompts that the user name or password is wrong	The system prompts that the login name or password is wrong	correct	

2) Add temporary owner

Table 6-2 Temporary owner

functional testing					
summary					
Test number			ZL002		
Function description			Add temporary owner		
Function URL					
Use case purpose			Test the success of adding temporary owners		
prerequisite			Enter the add temporary owner interface		
Test operation					
number	Input / action	Expected output response	physical truth	correct	error
1	Do not input temporary IC card and license plate number	Temporary IC card number or license plate number cannot be empty	Temporary IC card number or license plate number cannot be empty	correct	
2	Do not enter temporary IC card number	Temporary IC card number or license plate number cannot be empty	Temporary IC card number or license plate number cannot be empty	correct	
3	Duplicate temporary card number entered	Duplicate primary key, failed to add data!	Duplicate primary key, failed to add data!	correct	

3) Add role information

Table 6-3 Role information addition

functional testing					
summary					
Test number			ZL003		
Function description			Add role information		
Function URL					
Use case purpose			Test add role information		
prerequisite			Enter the add role information interface		
Test operation					
number	Input / action	Expected output response	physical truth	correct	error
1	Do not enter role number	Please fill in this field.	Please fill in this field.	correct	
2	Do not enter a role name	Please fill in this field.	Please fill in this field.	correct	
3	Enter a duplicate role number	Duplicate primary key, failed to add data!	Duplicate primary key, failed to add data!	correct	

Summary

The article discusses an intelligent parking system that utilizes artificial intelligence (AI) and computer vision technology to make parking easier and more efficient for drivers. The system uses cameras and sensors to monitor the availability of parking spots and guide drivers to the nearest available spot. The AI algorithms can also predict future parking availability based on past data and make real-time adjustments to the system to optimize parking usage. The system also has a mobile app that allows drivers to reserve a parking spot in advance and receive real-time updates on parking availability and pricing.

The article highlights the benefits of this intelligent parking system, including reducing traffic congestion, improving air quality, and increasing revenue for parking lot owners. The system is already being implemented in several cities around the world, with plans for further expansion in the future. Overall, the article shows how AI and computer vision technology can be used to solve real-world problems and improve the lives of people.

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