



Smart Parking Solution Scheme

Shenzhen Yufei Intelligence Technology Co.,ltd

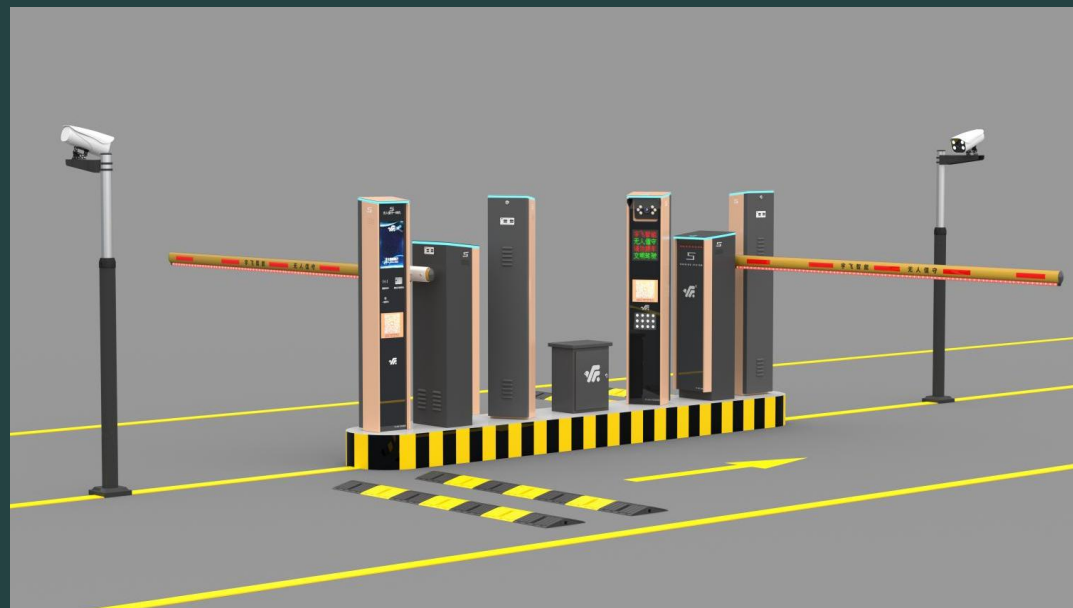
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Part One

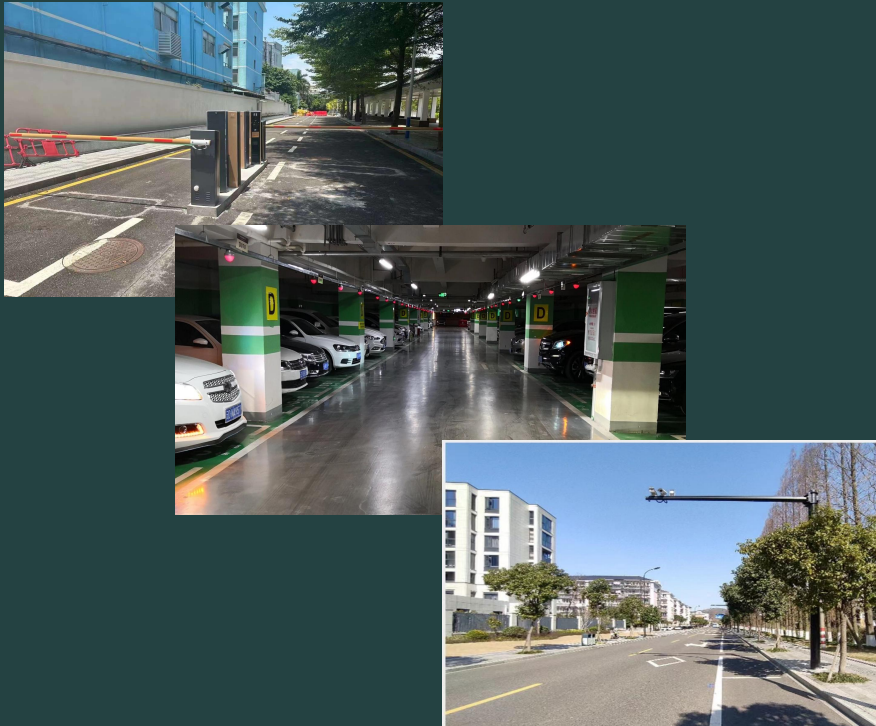
Company Profile of Shenzhen Yufei Intelligence Technology Co.,ltd



YUFEI INTELLIGENCE



1.1 Company Introduction



Shenzhen Yufei Intelligent Technology Co., Ltd. was established in 2015. Located at Room 1705-1706, Jinlong Building, No. 3007 Dongmen South Road, Luohu District, Shenzhen. It is a professional enterprise engaged in the research and development, sales, and service of smart parking operations and smart travel system platforms. The R&D team started designing a parking lot management system in 2010. After more than 10 years of accumulation, we are the first in China to use cloud computing concepts to design access management systems with new technological concepts. Completely breaking away from the architectural hierarchy of traditional systems, front-end devices are directly connected to the cloud, with no local computers, LAN, databases, or software. Successfully built a unified cloud computing platform capable of carrying over 2 million parking lots and pedestrian channel data concurrency, covering parking lot management systems, access control systems, parking space guidance systems, and more.

The cloud computing pedestrian and vehicle access management system designed by Yufei Smart Passage completely solves the huge problems caused by computers and local area networks, and minimizes after-sales service costs. At the same time, it also greatly reduces the construction and management costs of access management equipment.

Relying on the design architecture of cloud computing and the Internet of Things, Yufei Smart Passage has built a full scene management platform for pedestrian and vehicle access, including a parking lot license plate recognition management system, access control management system, pedestrian passage management system, and parking space management system. With the new concept of "centralized management and cloud application", we provide comprehensive urban level parking management and operation services for the big data era.

With the application of cloud computing in the entry and exit management industry by Yufei Smart Travel, it marks the end of the computer era for the vehicle access control system industry. Entering a more convenient, sustainable and service capable era of channel entry and exit mobile management.



1.2A Income certificate



Inspection Report of the
Ministry of Public Security



Inspection Report of the
Ministry of Public Security



Business License



Registered Trademark



Unattended Software
Copyright Certificate



Video Intercom Software
Copyright Certificate



Mobile Watch Software
Copyright Certificate



Cloud Computing Platform
Software Copyright Certificate



Urban Parking Software
Copyright Certificate



Parking Cloud Computing
Software Copyright Certificate



1.3 Smart Parking Solutions

Parking Access Management Solution



Parking Space Management Solution



On-Road Parking Solutions



Part Two

ANPR Car License Plate Recognition Management System (International Version)



2.1 Scheme introduction:

License plate recognition system: Install a license plate recognition integrated machine at the entrance and exit of the B1 vehicle lane, with one gate for each lane. Vehicles can enter and exit with license plate recognition without the need for card pickup and waiting. The monthly rental equipment will automatically enter and exit, park at the moment, automatically recognize and enter the site. After exiting, fees will be incurred and released after payment.



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2.2 Software Advantage

Support multiple language formats:

English

繁體中文

ภาษาไทย

简体中文

ViệtName

Español

한국어 공부 해 요.

日本語の表記

To Be Continued



2.2 Software Advantage



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Support Areas:
Chile
Taiwan
Indonesia
The Republic of Korea
Thailand
Malaysia
Israel
Singapore
Vietnam
Saudi Arabia
Japan
Australia
Turkey
Angola
Hong Kong, China
Macao China
Iran
Brazil
Iraq
Uzbekistan
European (EU)
Africa
United States
Canada
India
To be continued...

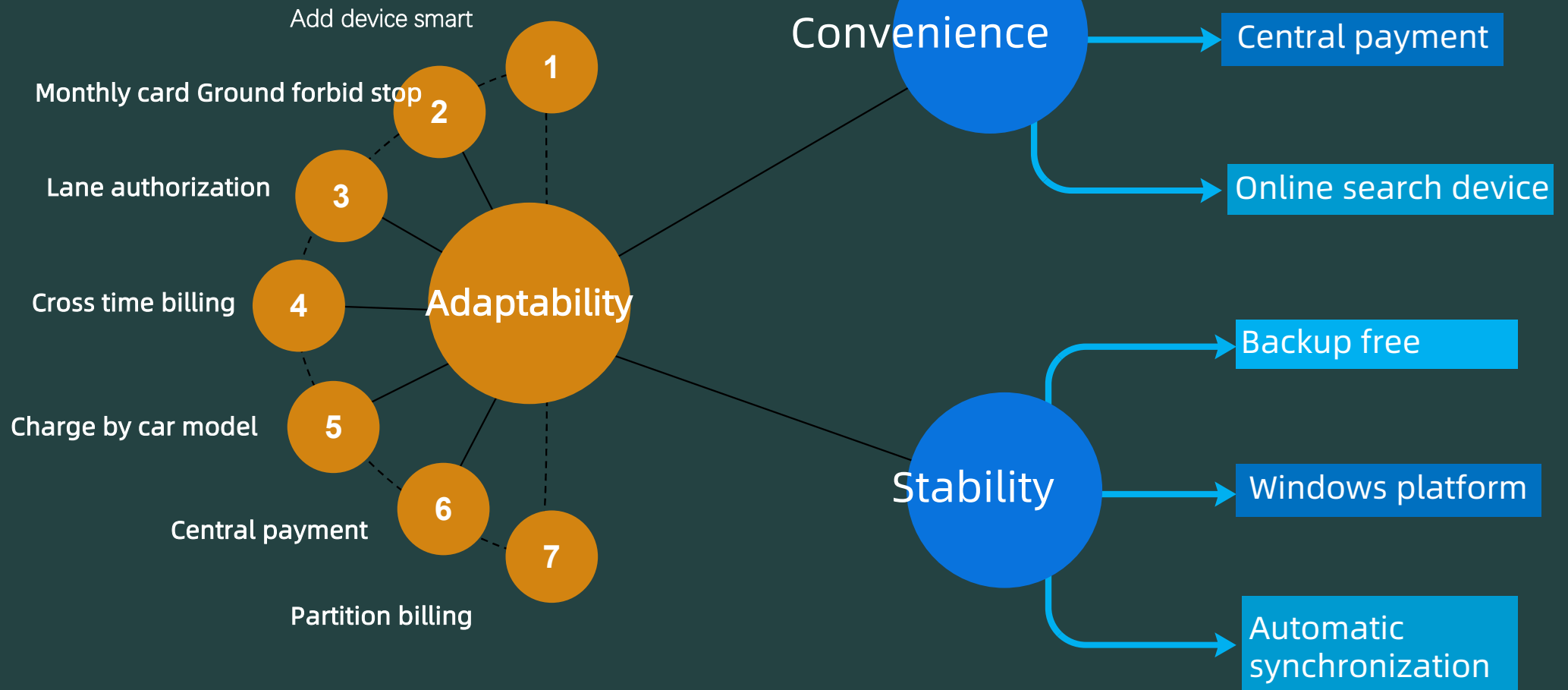




2.2 Software Advantage



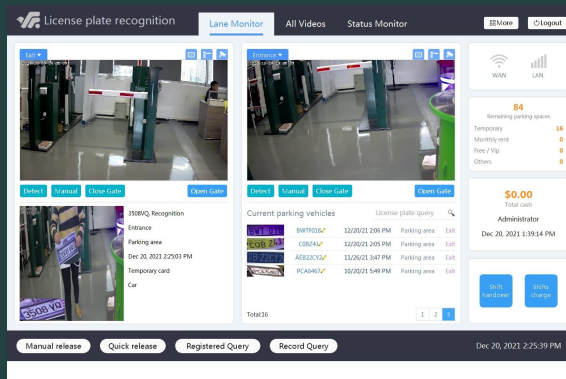
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The system adopts the way of license plate recognition to improve the traffic efficiency, and can realize two payment modes: exit payment mode and advance payment mode.

Advance payment before appearance is also known as central payment: the time of appearance is scheduled before appearance. After the system calculates the fee, the payment is made in advance through POS, cash, etc. without stopping for appearance. To avoid congestion caused by queuing at the exit.



Planned departure time	Mode of payment
2021-07-22 11:27:53	Cash
Plate number: ABC123	Charge amount: \$6.00
Entry time: Jul 22, 2021 11:25 AM	Discount amount: -\$0.00
Card type: Temporary card	Amount paid: -\$0.00
Vehicle type: Car	Payment amount: \$6.00
Charge duration: 2min	

CancelOK

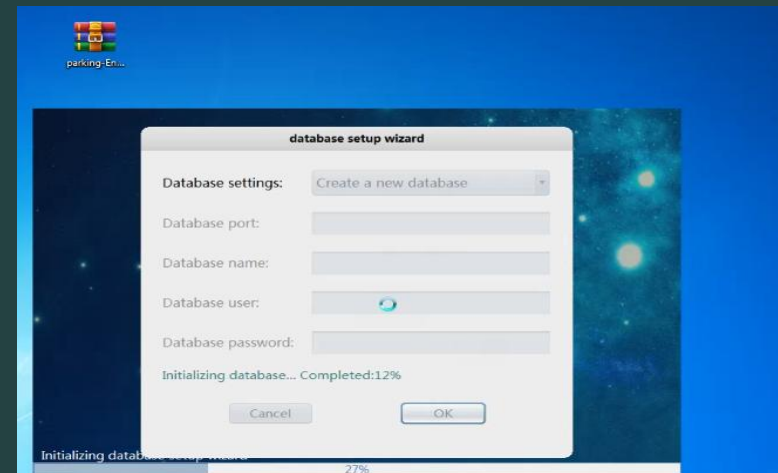
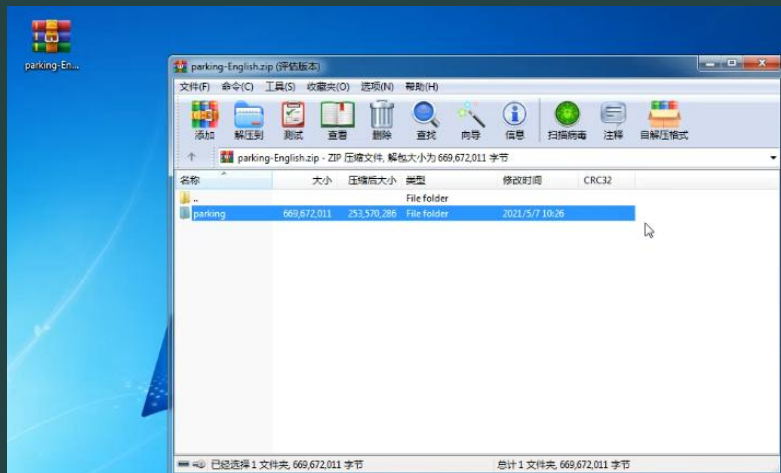


2.2 Software Advantage



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One click decompression and installation of green software, no fear of virus intrusion, software installation directory optional, do not need to be installed in C disk, if the client server system operating system needs to be re installed because of the computer system crash, does not affect the parking lot management system software, data will not be lost, ensure the continuity and stability of data.





2.2 Software Advantage

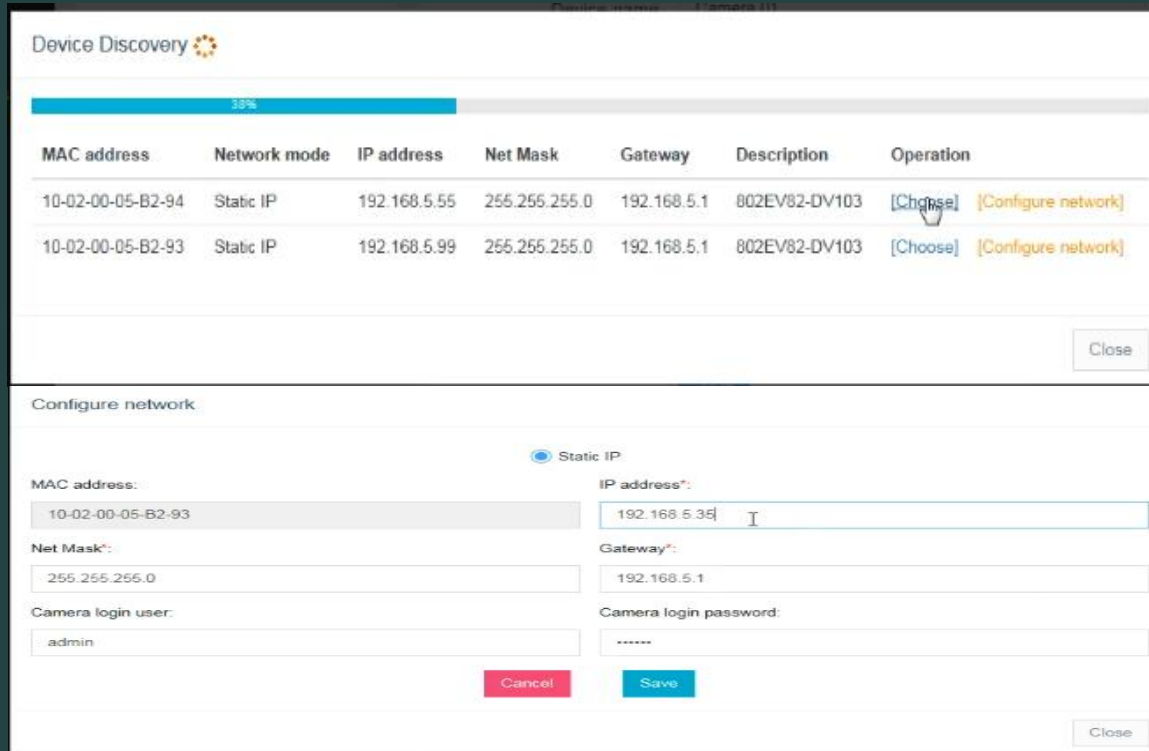
Channel authorization: through the function of channel authorization, it can realize the passage authority of vehicle type / card type at some time of the day, realize the separation of special vehicle lane and vehicle lane.

Authorization types	Please select		
Authorization lanes	No lanes to be authorized, need to be enabled in lane policy		
Permission:	Allow		
Authorization rules:	Every day		
	00:00	to	23:59
			Add
	Save		



2.2 Software Advantage

When the system is installed, it can automatically search the equipment and modify the equipment information, and the yard deployment can be realized without additional auxiliary software. Simple and intelligent.



The screenshot displays two windows from a software application. The top window, titled "Device Discovery", shows a progress bar at 33% and a table of discovered devices. The bottom window, titled "Configure network", shows the configuration options for a selected device, including MAC address, IP address, Net Mask, Gateway, and camera login credentials.

Device Discovery

MAC address	Network mode	IP address	Net Mask	Gateway	Description	Operation
10-02-00-05-B2-94	Static IP	192.168.5.55	255.255.255.0	192.168.5.1	802EV82-DV103	[Choose] [Configure network]
10-02-00-05-B2-93	Static IP	192.168.5.99	255.255.255.0	192.168.5.1	802EV82-DV103	[Choose] [Configure network]

Configure network

☒ Static IP

MAC address*: 10-02-00-05-B2-93

IP address*: 192.168.5.35

Net Mask*: 255.255.255.0

Gateway*: 192.168.5.1

Camera login user: admin

Camera login password: *****

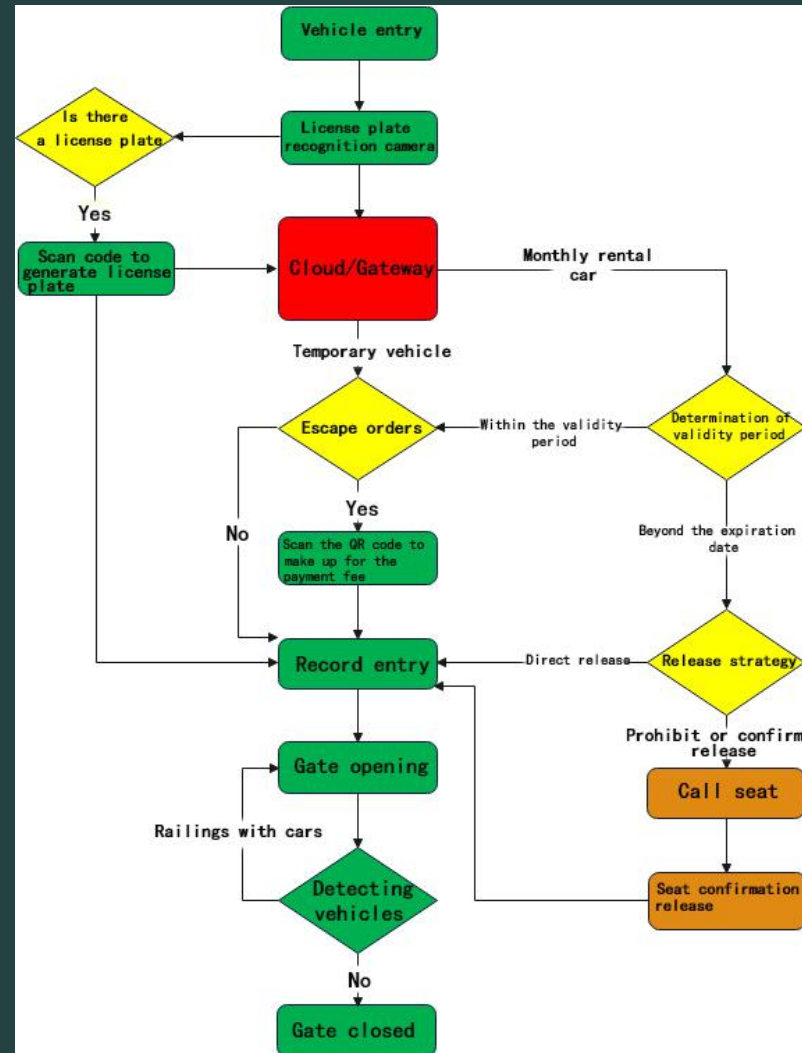
[Cancel] [Save]



2.3 System design scheme-Entry process diagram

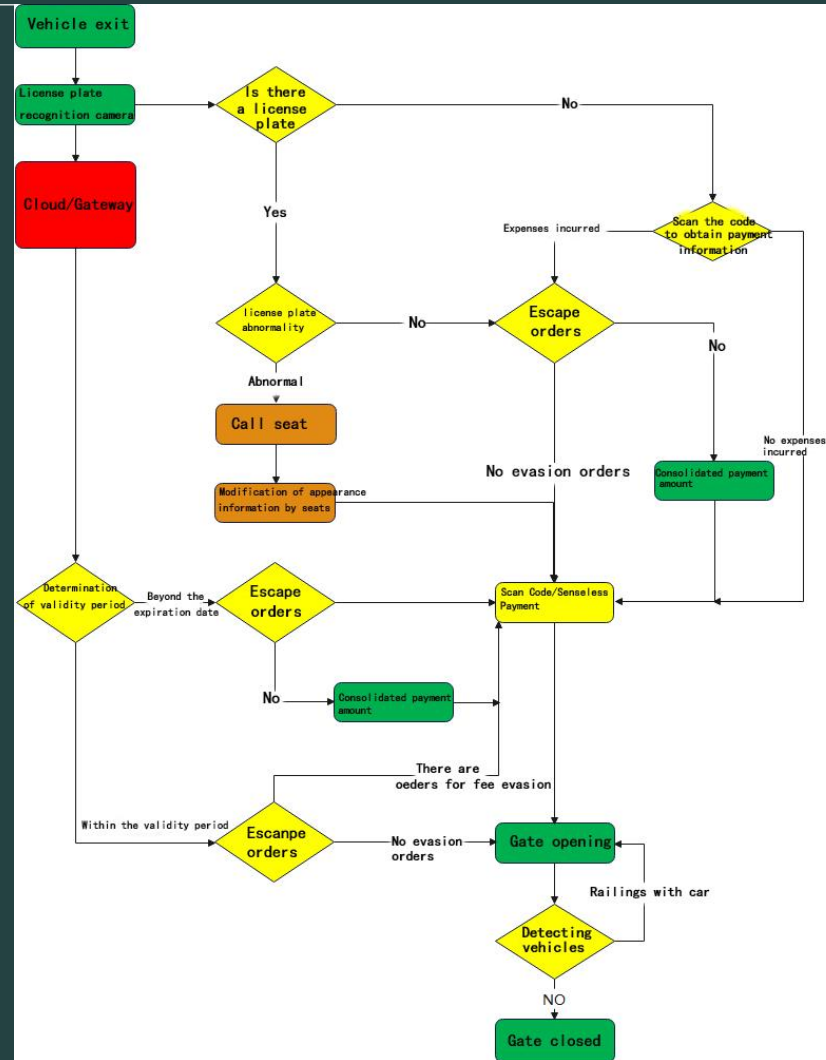


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2.3 System design scheme-Exit process diagram





2.4 Hardware Features

Device name: Digital barrier

Function: using the latest research and development of Brushless DC motor, stable operation, long service life. The landing speed is adjustable for 1.5-4 seconds. It can be interchanged between left and right. Curved arm four-bar movement structure, stable landing rod. Wireless remote control for pole lifting and pole dropping. Return in case of resistance (force adjustable). Delay rod drop function. It has the function of delay automatic closing.



ARC-D005

working temperature	-30°C~ 60°C
Voltage	DC24V
Traffic volume	Over 8000 times/24 hours
service life	4 million times
Rated power	120W
running speed	0.6S-1.5S



2.4 Hardware Features

Device: CarPlateLicenseRecognitionMachine

Function: support license plate types in more than 20 countries ;adjustable high or low voice, adjustable for male and female; automatic night light switching; display brightness self-adjusting; camera 135 degree adjustment



ARC-P005-2

License plate recognition rate	≥99%
License plate recognition area	More than 32 countries
Trigger mode	Coil trigger, video trigger (vehicle capture rate ≥ 99.5%)
display brightness	1000CD/M
Voice output	≥95Decibel
Supplementary illumination	2000lx



ARC-P005-1



2.4 Hardware Features

Device: On duty walkie talkie

Function: Placed on entry or exit site, when there are issues with vehicle entry and exit that require contacting the backend service center, use video intercom for assistance

Case size	250 * 180 * 1320mm
Sensor	100W pixel CMOS sensor
Video compression	H.264/30FPS
Audio output	built-in speaker 3W/4 Ω
Compression standards	G.711, G.713, GSM, DAC
Compression rate	64KBPS/8KBPS



ARC-W005



2.4 Hardware Features



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- **Equipped with high-precision license plate recognition algorithm, it supports license plate recognition in various harsh environments such as large angle, forward and backward light, the license plate is inconsistent with the front and rear of the vehicle, rain and snow weather, and is leading in the industry in recognition speed, recognition type and accuracy
- **support video unlicensed vehicle detection and non motor vehicle filtering
- **support unlicensed vehicle identification and feature code comparison
- **support 11 types of vehicle identification

License plate recognition rate	≥99%
License plate recognition type	Numbers +/- English letters
Trigger mode	Coil trigger, video trigger (vehicle capture rate ≥ 99.5%)
Image output	1080P(1920x1080), 960P(1280x960), 720P(1280x720), D1(704x576), CIF(352x288)
Picture output	3 megapixel JPEG
Video compression format	H.264 High Profile , Main Profile, Baseline , MJPEG



2.4 Hardware Features



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Men's and women's voices are adjustable
Mitsubishi Brand 12.1 inch LCD industrial 2K display
RK4 core A17 processor
High power fidelity horn
Display color full color adjustable
The broadcasting voice is adjustable in all languages

working temperature	-30°C~ 80°C
Voltage	AC90~264V
Display size	1280*800
CPU model	RK3288
Rated power	36W
Display brightness	10000cd/m2



2.4 Hardware Features



Device name: AI Eagle Eye Camera

Function: Real time intelligent perception of entrance and exit lanes, monitoring vehicle targets in video footage, perceiving vehicle detention events, alerting the platform immediately upon discovering vehicle detention events, and pushing relevant information to the platform for active intervention and processing, ensuring smooth lane access. Simultaneously capturing vehicle targets to retain records for traceability of events

Image sensor	1/2.7-inch star level CMOS
Image resolution	1920 (H) x 1080 (V)
Frame rate	1-25fps, default 25fps
Electronic shutter	1/25s~1/1000s
Minimum illumination	0.002Lux (Color), 0.0002Lux (Mono)
Waterproof grade	IP66



2.4 Hardware Features



Device name: Intercom host
Function: Placed in the backend management center, answering on-site video calls and releasing them

7-inch (800mm x 480mm) capacitive touch screen •
Camera adjustable position • Working temperature: 0-40
°C • Relative humidity: 10-65%
CPU Freescale Core Quad 1 GHz
SDRAM-1GB DDR3 1066 • Flash -4GB
Weight - Phone: 1.2Kg/Total: 1.8Kg

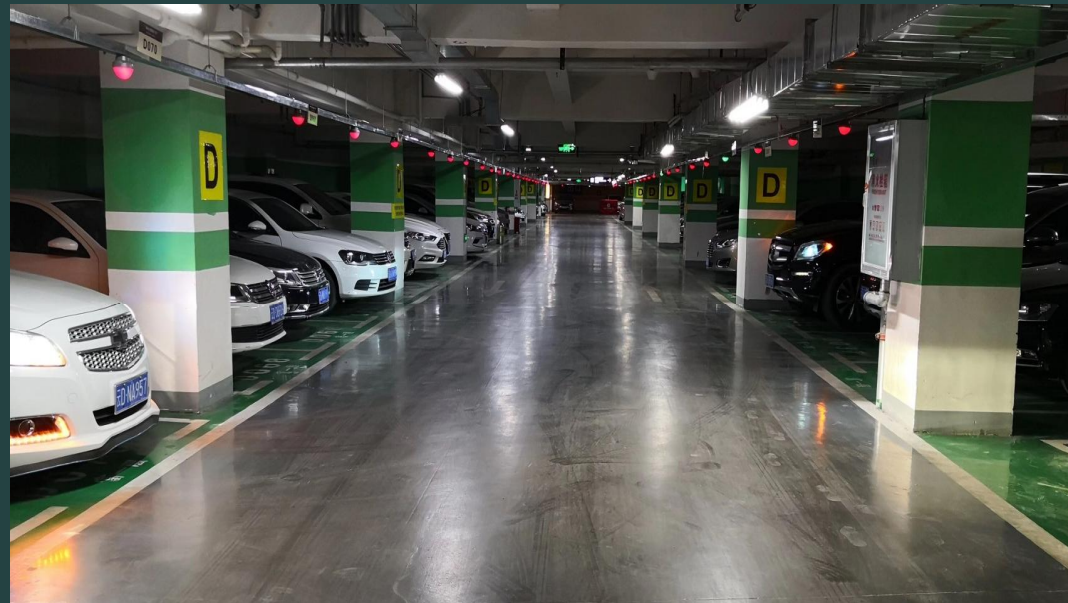
Part Three

Parking Guidance System



3.1 Scheme introduction:

Parking guidance system: All vehicles are equipped with parking cameras, and large screens are installed at the main entrance and exit to display the empty parking spaces of B1 and B2. After entering the parking lot, parking guidance screens are installed at each intersection to quickly find parking spaces. Install a car search machine at each elevator entrance, input the license plate number, and automatically guide the parking location of the vehicle.





3.2 Parking Guidance System Process



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ENTRANCE



Display of parking spaces above the entrance information guidance screen can show the current empty parking spaces on each floor of the parking lot.

DIVERSION



Above each fork in the road, there is an "information indicator screen" that displays the current number of empty vehicles in each direction that the fork in the road leads to.

FIND A PLACE



A "parking detector" is installed directly above each parking space to distinguish whether there are cars parked in the parking space.

EXIT



After leaving the venue, the outdoor and indoor information guidance screens will automatically deduct the number of empty parking spaces at the current location

FIND YOUR CAR



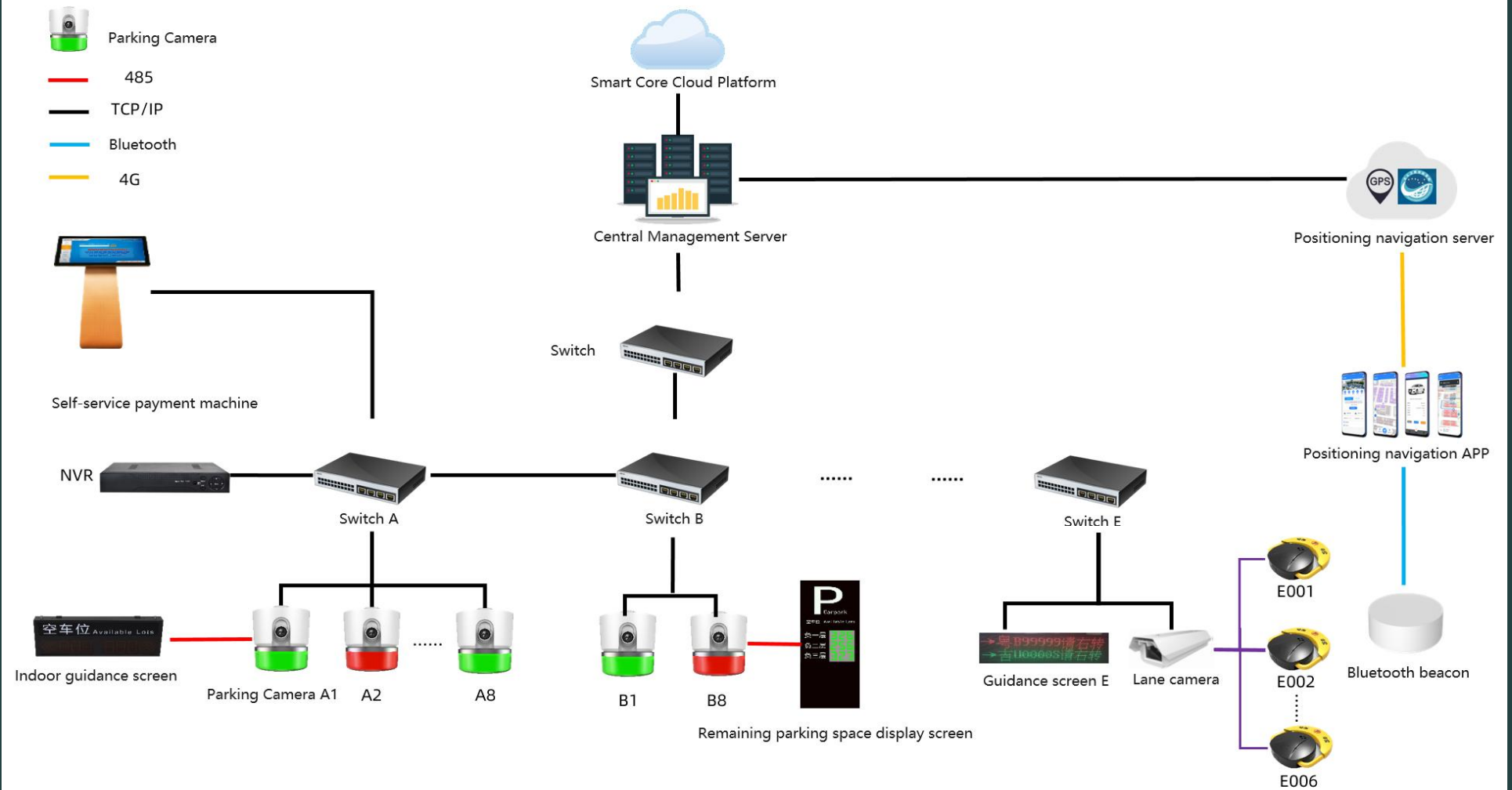
Query the parking location of vehicles through self-service terminals or mobile phones.



3.3 Topology Diagram

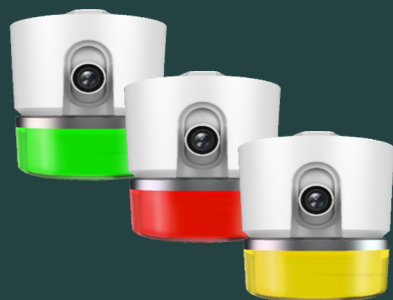


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3.4 Parking Camera



YF-PLA-CAM1

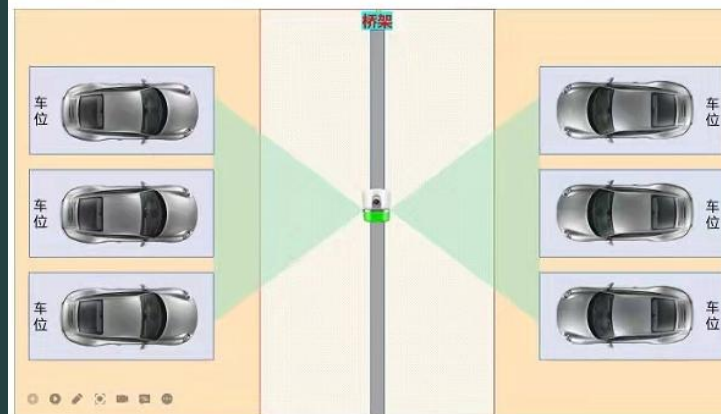
Integrating detection, indication of parking space status, recognition of license plates, and monitoring of vehicle status; It can detect 1-6 parking spaces and supports POE switches or external power supply hand in hand power supply networking, saving construction costs.

With or without vehicles, accuracy $\geq 99\%$
License plate recognition accuracy $\geq 99\%$

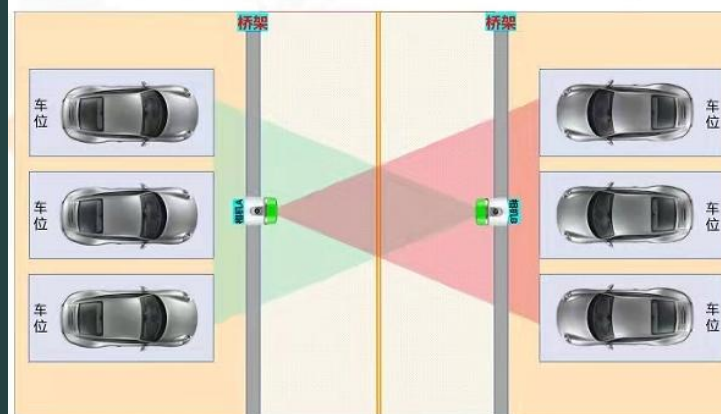


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A: Single bridge installation



B: Double Bridge installation





3.4 Parking Guidance Display Device



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YF-PLA-ZYW1

- Display empty parking spaces in the garage, including advertising spaces, without pillars
- P10 surface mount module, red and green dual color, outdoor highlight, tempered glass panel
- Highlighted LED display, far visible distance, IP65 protection level supports outdoor use 应用



YF-PLA-YWP1

- Display empty parking spaces in the garage, including advertising spaces, without pillars
- P10 surface mount module, red and green dual color, outdoor highlight, tempered glass panel
- Highlighted LED display, far visible distance, IP65 protection level supports indoor use 外应用



YF-PLA-CXM1

- Display information such as empty parking spaces in the garage, maps, payment QR codes, etc., including advertising spaces, without pillars
- P10 surface mount module, red and green dual color, outdoor highlight, tempered glass panel
- Highlighted LED display, far visible distance, IP65 protection level supports indoor use 室外应用



3.5 Parking guidance: Case 1



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B1: 9 cameras for Three parking spaces, 47 cameras for Two parking spaces

1 unidirectional screen and 3 bidirectional screens





3.5 Parking guidance: Case 2



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B1: 16 cameras for Three parking spaces, 15 cameras for Two parking spaces

One unidirectional screen and three bidirectional screens





Part Four



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On Road Parking System



4.1 Scheme introduction:



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On Road Parking System:
The urban roadside parking management system can carry out unified planning, optimization, and management of urban roads, traffic, and parking, fully tap into urban parking resources, scientifically and reasonably utilize roadside parking resources, and optimize resource allocation through the charging of roadside parking resources. It provides convenient and effective services for dynamic and static traffic, revitalizes the turnover rate of parking spaces, and improves traffic congestion and parking difficulties in the city





4.1 On Road Parking System Architecture

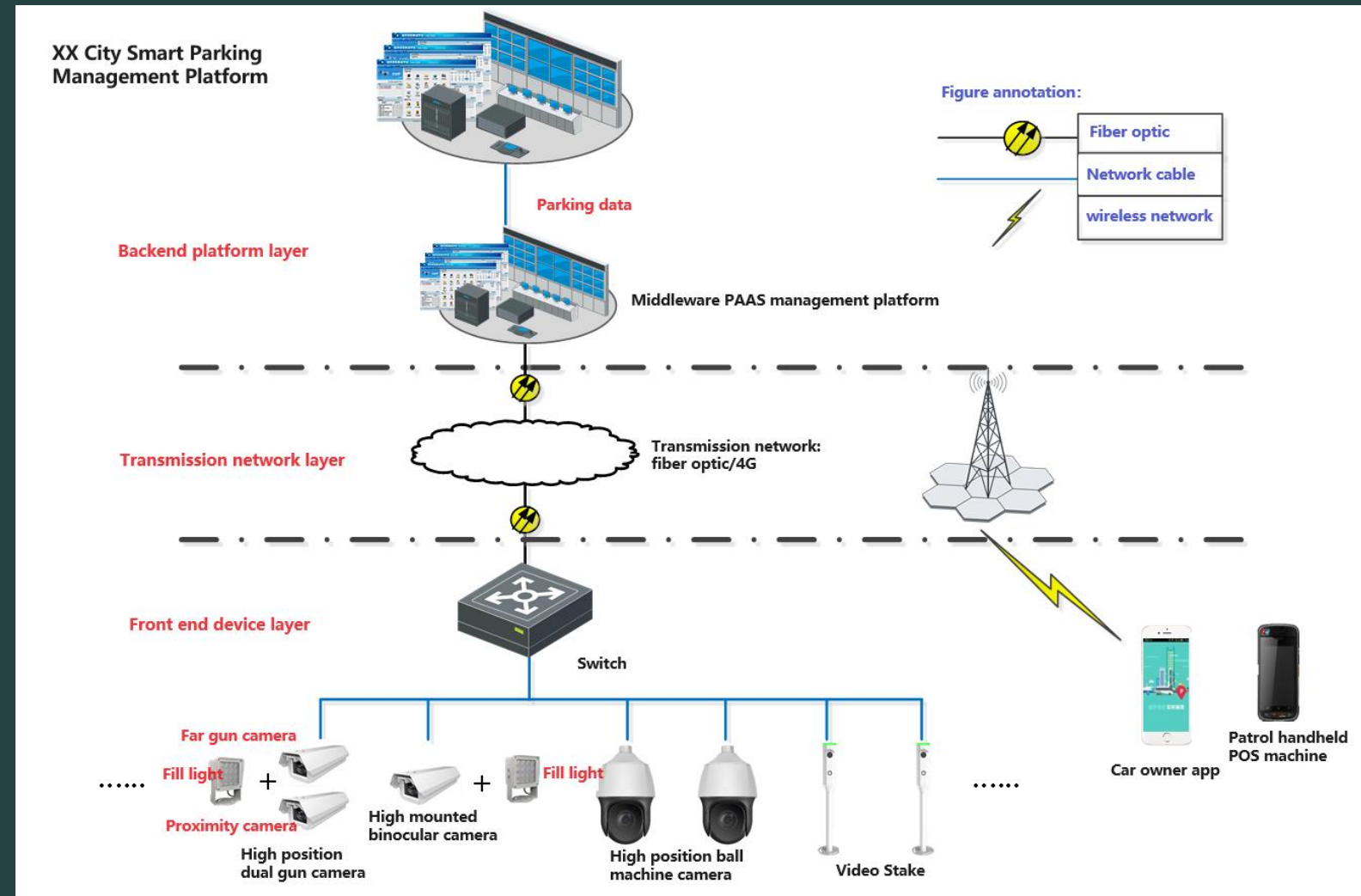


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- All in-road devices can be connected to the middleware platform

- Video Stake - HTTP Post Docking

- High position dual gun camera/binocular camera/ball machine camera - middleware docking





4.2On Road Parking Devices



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High position
dual gun camera



YF-ARC-ORC1

High position dual gun camera

8 million | Manage 8 parallel berths

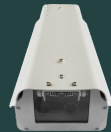


YF-ARC-ORC2

High position dual gun camera

5 million | Manage 6-7 parallel berths

High mounted
binocular camera



YF-ARC-ORDC1

High mounted binocular camera

Double 5 million |
Manage 6-7 parallel berths

High mounted
dual ball camera



YF-ARC-ORBC1

High mounted dual ball
camera

2 million star level |
Managing 14 vertical berths

Video Stake



YF-ARC-VS1A

Video Stake

2 million | Hand in hand networking
| 24V wide voltage



YF-ARC-VS1B

Video Stake

2 million | Hand in hand networking
| 48V wide voltage

Video Stake2.0



YF-ARC-VS2A

Video Stake 2.0

2 million | ETC deduction



YF-ARC-VS2B

Video Stake 2.0

2 million | Lithium battery powered
| Solar charging



4.2On Road Parking Devices



YF-ARC-ORC1

- ◆ Resolution: 8 million (3840 * 2160)
- ◆ Lens: 10~40mm manual zoom
- ◆ Applicable scenario: High level positive/high level oblique/medium level positive/medium level oblique
- ◆ Management berth: 8 parallel berths, recommended 7 berths (3+4), with a maximum of 3+3 oblique lighting
- ◆ Capture rate: $\geq 95\%$
- ◆ Recognition rate: $\geq 98\%$
- ◆ Multiple detection rate: $\leq 2\%$



4.2On Road Parking Devices

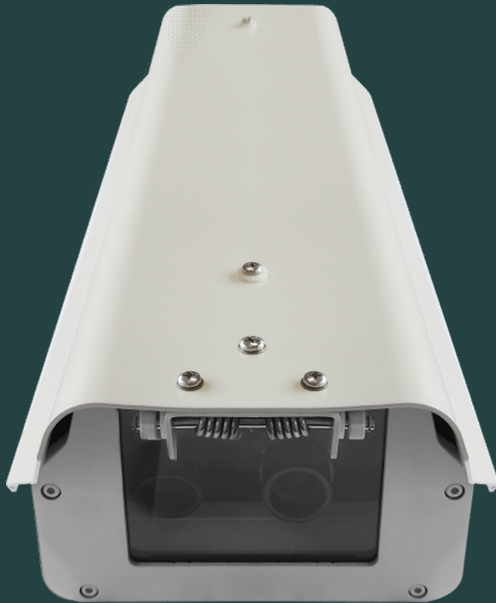


YF-ARC-ORC2

- ◆ Resolution: 5 million (2592 * 1920)
- ◆ Lens: 5-50mm manual zoom
- ◆ Applicable scenario: High level positive/high level oblique/medium level positive/medium level oblique
- ◆ Management berths: 7-8 parallel berths, recommended 6 berths (3+3), with up to 3+3 oblique lighting
- ◆ Capture rate: $\geq 95\%$
- ◆ Recognition rate: $\geq 98\%$
- ◆ Multiple detection rate: $\leq 2\%$



4.2On Road Parking Devices



YF-ARC-ORDC1

- ◆ Resolution: 5 million (2592 * 1920)
- ◆ Lens: 6-22mm, 12-40mm, manual zoom
- ◆ Applicable scenario: High level front view/medium level front view
- ◆ Management of berths: 7-8 parallel berths for direct lighting, 6 berths (3+3) recommended, not recommended for oblique lighting scenarios
- ◆ Capture rate: $\geq 95\%$
- ◆ Recognition rate: $\geq 98\%$
- ◆ Multiple detection rate: $\leq 2\%$



4.2On Road Parking Devices



YF-ARC-ORBC1

- ◆ Resolution: 2 million (1920 * 1080)
- ◆ Lens: 5.1-114.4mm electric zoom
- ◆ Applicable scenario: High level vertical/inclined berthing
- ◆ Management of berths: Supports up to 14 vertical berths, recommends<3 preset berths,<9 berths (3+3+3)
- ◆ Protection level: IP67
- ◆ Capture rate: $\geq 90\%$
- ◆ Recognition rate: $\geq 98\%$
- ◆ Multiple inspection rate: $\leq 10\%$



4.2On Road Parking Devices



YF-ARC-VS1A

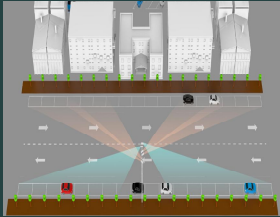
- ◆ Resolution: 2 million (1920 * 1080)
- ◆ Applicable scenario: Low parallel/vertical
- ◆ Manage Berths: Single Berth
- ◆ Power supply method: Wide voltage 8-26V, 24V/16.6A switch power supply, up to 20 video stations for power supply
- ◆ Networking method: Double port hand in hand networking, supporting Bypass
- ◆ Indicator light: 6-color indicator light
- ◆ Abnormal alarm: cross position, line pressing, non motorized vehicle occupancy, unlicensed vehicle occupancy, video obstruction, reverse parking
- ◆ Protection level: IP66
- ◆ Capture rate: 98%
- ◆ Recognition rate: 98%



4.3 Schematic diagram of usage scenarios

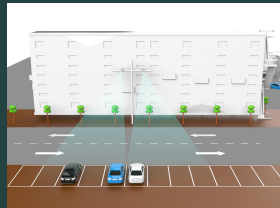
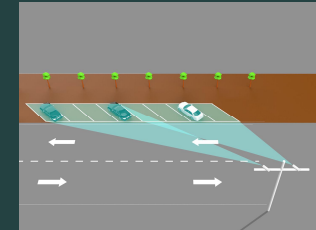


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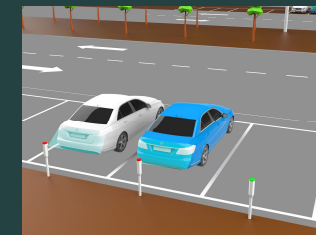
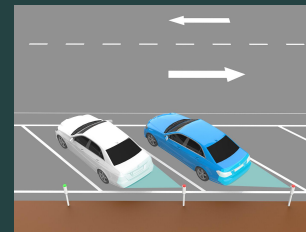
1. High/medium level illumination scene
Mainly 5 million yuan for high-altitude binocular cameras, paired with 5 million yuan for high-altitude dual gun cameras

2. High/medium oblique lighting scene
High position dual gun camera 5 million



3. High level vertical/oblique stop scene
High position ball machine (vertical) camera

4. Low parallel/vertical scenes
Video stake (wired)





4.4 Illegal Parking Alarm



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Non-motorized Vehicles
Occupy Parking Spaces



Straddle Parking



Parking in the Opposite
Direction



Pressure Lines





4.5 Evidence Chain



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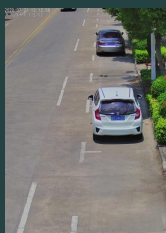
Evidence 1



License Plate
Number, Access Time
Parking Space
Number, Parking Space
Status



Evidence 2



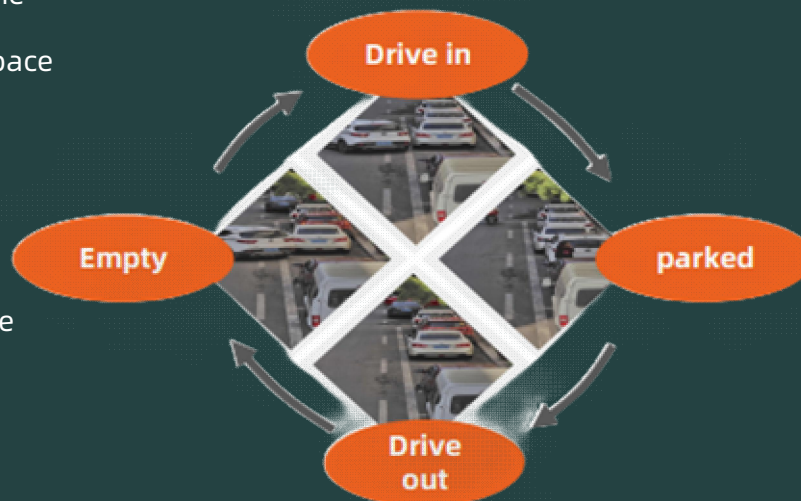
Scheduled Capture
(10 minutes)



Evidence 3



Video Recording Triggered
by Entry and Exit Behavior
(30-60S)



Drive-in Panorama



Drive-out Panorama



Panorama of Empty Space



THANK YOU



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