

# EZ License Plate Recognition

ioNetworks



# Overview

In the past, it was necessary to manually input records for each parking fees in parking lots. The recognition of license plates now helps to automatically control incoming and outgoing vehicles. It is often used in entry and exit management systems of parking lot or science park. Moreover, the license plate recognition can recognize specific vehicles from the screen, record and generate reports. It helps in stolen vehicle tracking, technology law enforcement, vehicle path analysis and so on.



# Advantages



## Precise recognition

Recognition rate is over 95% and objects can be recognized in 20-70 milliseconds. When the IP cam installs inside car, the recognition rate is higher than 90%.



## Applicable to multination

Accurately identifying multi-national license plate.



## IR image recognition at night

Improving the recognition rate in low illuminated condition through the labeling and training the IR images.



## Mas data and extensive experience

2 million vehicle-related data for training and high recognition rate.

# Functions and Features of EZ LPR

## Multi-object recognition

Recognizing all the license plates in the screen correctly in high accuracy and speed. Recognizing within 0.2 seconds, over 95% accuracy during the daytime and over 85% at night.

## Various camera options

Detecting from videos updated, RTSP streaming or any types and brands of ONVIF-compliant cameras.

## Friendly interface

Setting the detection area according to the recognition items and field environment. The records including time zone, license plate, location, screenshot, and make real-time notification.

## Object tracking algorithm

Adapting of Centroid Tracking algorithm to compare two pictures and calculate the Euclidean distance of the object, assigning the same ID to the similar objects, and continuously updating the coordinate of the same ID to achieve the object tracking.

## Multi-language support

Traditional Chinese, Simplified Chinese, English version for Asia, America, Europe and other countries.

## Integration

Providing Open API to integrate with third-party equipment and other systems.

# Hardware Specifications

IP Camera



AI Server



Video Management  
System(option)



Recognizing and computing

Monitoring, recording and alerting

Channel	Server	System	Channel
For Parking Lot	INTEL core i7 Embedded	Edge	4 ch
For Traffic	INTEL XEON Rackmount	Local Server	< 32 ch

The specification of equipment used in large-scale projects can be discussed.

# Functions and Features

## Channel display

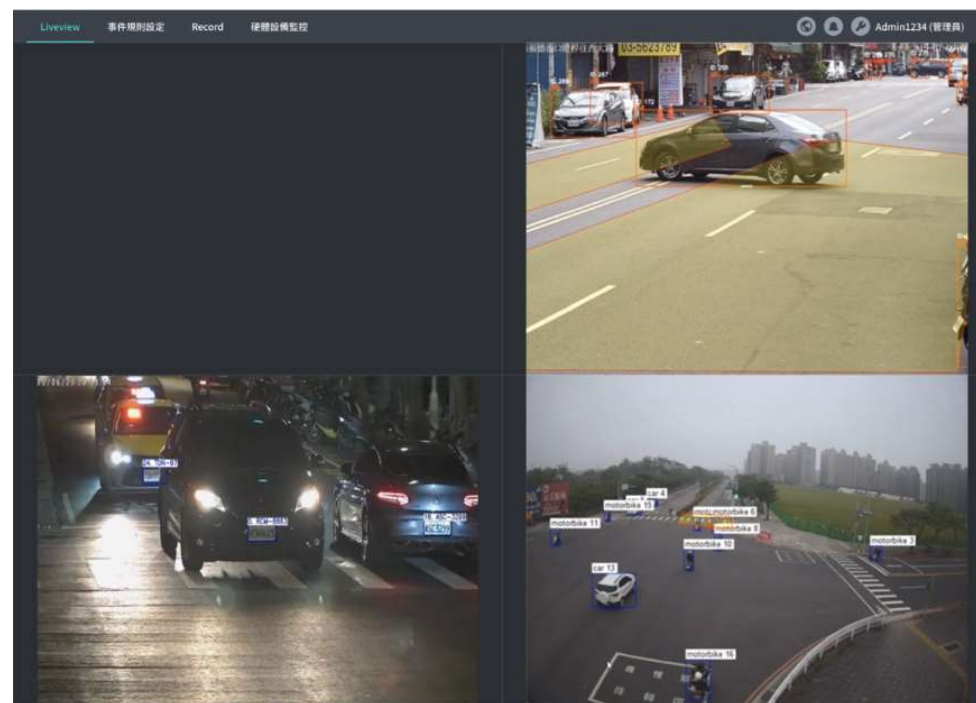
Displaying 4 Channels at the same screen and showing the bounding box to ensure the operation status.

## RTSP and videos support

Detecting from videos updated, RTSP streaming or any types and brands of cameras.

## ROI and event setting

Setting the detection area elastically according to the recognition items and field environment.





# Functions and Features

## Record management

Recording : records of location, time, license plate, vehicle and license plate screenshots, etc.

Searching : Search based on keywords such as location, time, license plate, etc.

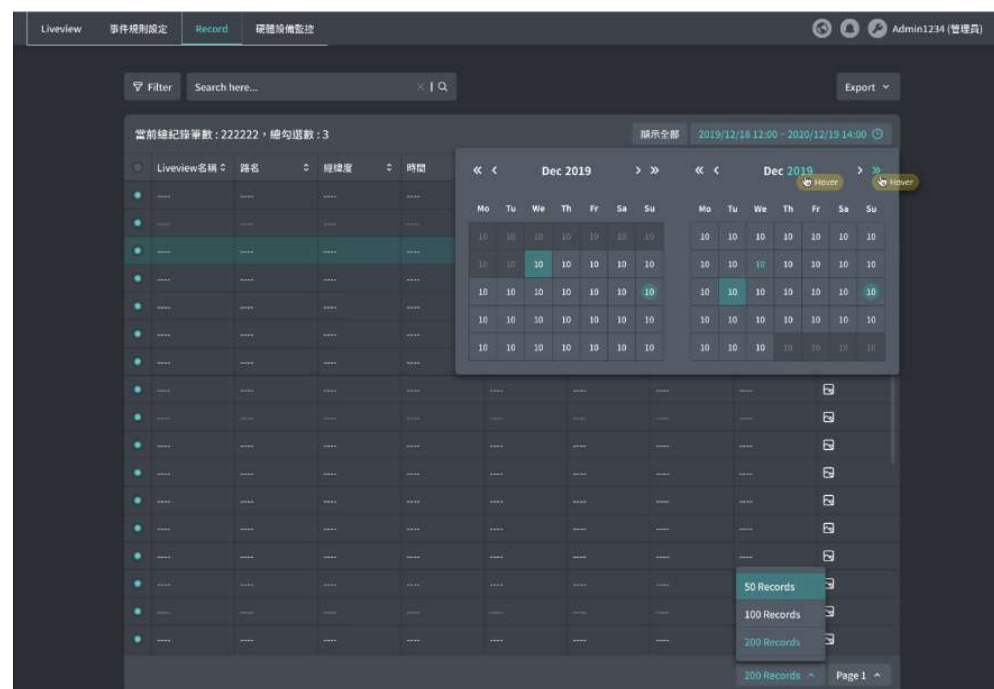
Report : Exporting records for batch.

## Member management

Restricting users' access based on different roles and allowing multi-person to manage.

## Hardware monitor

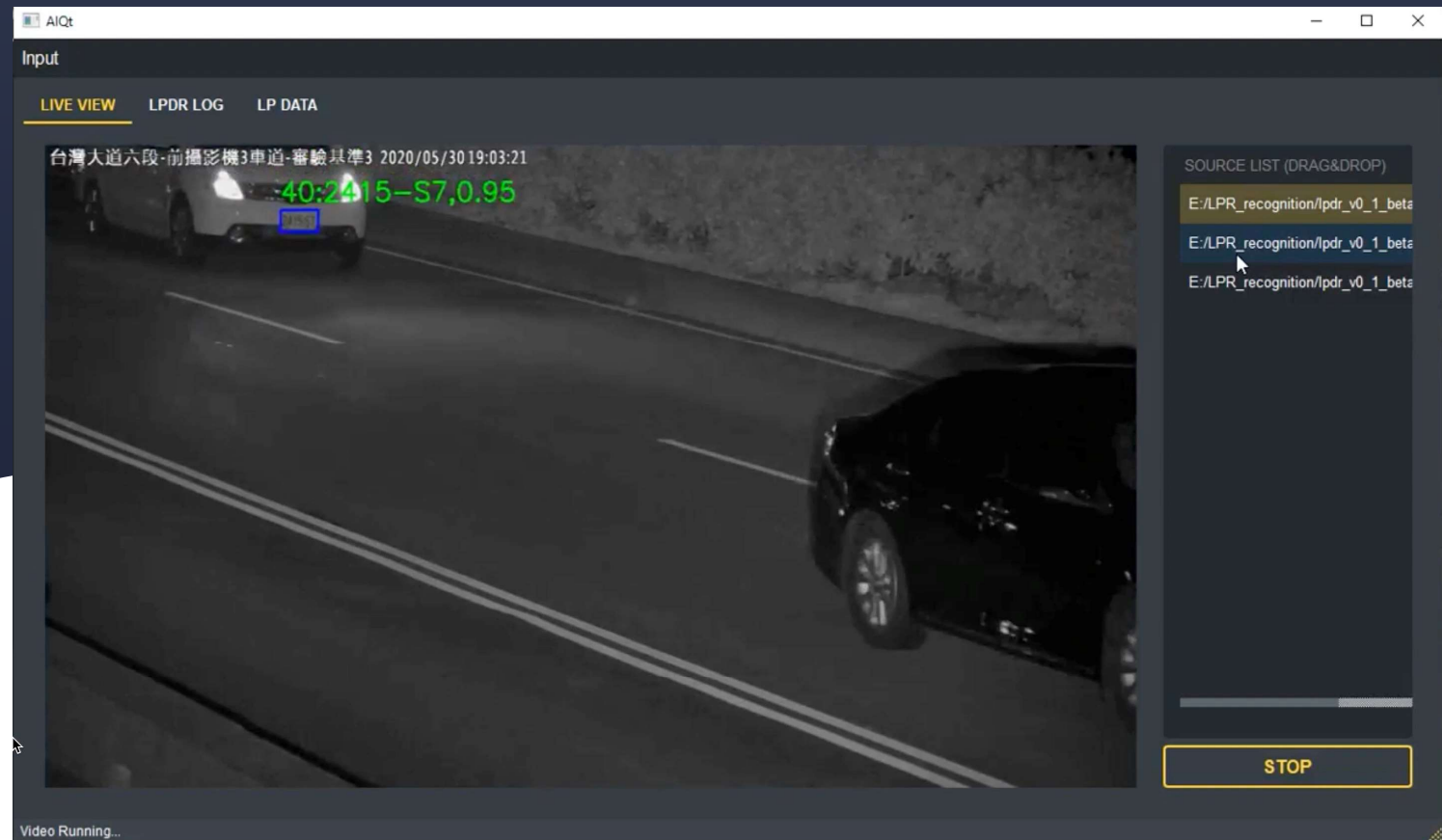
Monitoring CPU, GPU, memory and HDD usage, effectively controlling their status.



# Demo

## Red Light Running Detection

1. Choosing videos or RTSP
2. Detecting the license plates





# Demo

From Dubai Police Department

1. Detecting the license plate
2. Detecting the number of license plate



車牌辨識功能取決於攝影機視角

# Field Environment

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720p *or above*

Image resolution

Higher resolution can get more feature in image to get better accuracy.



300 *pixel*

Image size

The minimum recognition size would be 300pixels at the specified angle.

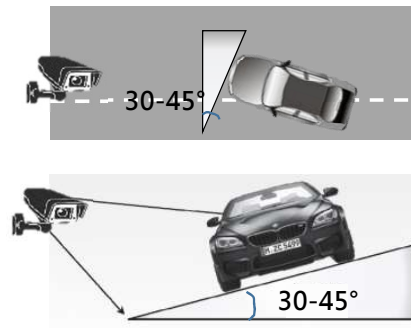


Width pixel : 100 pixels

30-45°

Image angle

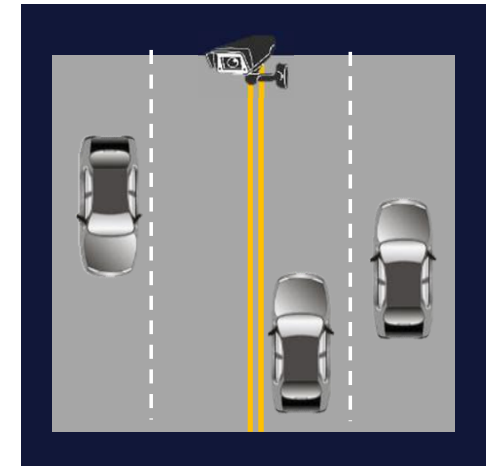
AI deep learning based, big angle license plate can also be recognized.



4 *lanes*

Cover range

Up to four lanes can be identified under the requirements of the image.



# Installation

## Image standard

- Using full-color camera when the light is sufficient.
- Using highlight compensation, fill light or cameras for low illumination level when the light is insufficient or at night.



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## Notice

1. Preventing the camera lens from direct sunlight or any strong light.
2. The height of the camera should be 4 to 5 meters.
3. Shooting from the back of the vehicle to record the license plate.
4. The inclination angle of roads and vehicles and vehicles and cameras does not exceed 45 degrees.
5. Any scene should be retrained and fine-tuned to achieve a good recognition effect.



# Limitations

- License plate width > 100 pixel
- Vehicle speed < 200km/hr
- License plate obscuration < 30%



# Software Specifications Usage Scenario

## 1. Function - Multi-object recognition

Detecting and recognizing the license plates at the same time

## 2. Function - Data analysis

Sorting and analyzing data by time/ cameras/ ROI

## 3. Function - Multi-events zone setting

Setting the ROI zone and detecting 4 zones in one channel



# Progress

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# Black and white list

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Setting



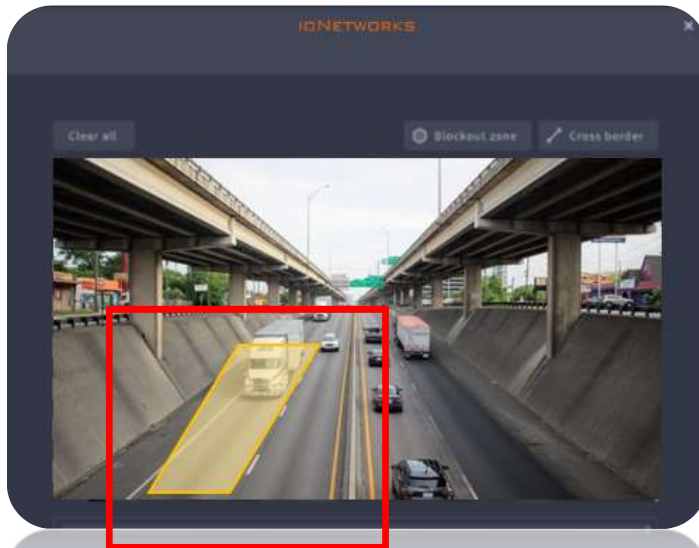
Detect and record



Black list alarm



Search and view



Drawing detection areas and creating a blacklist of license plates



Real-time recording and detecting

# Black and white list detection

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Setting



Detect and record



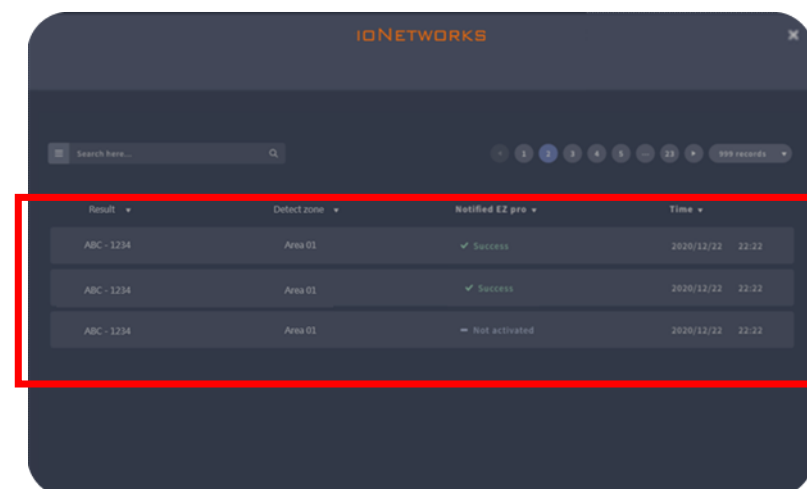
Black list alarm



Search and view



Immediately reporting alarms on the sidebar and the images can be played back after clicking.



Searching for recognition results or specific license plate information