

# TT SMART VISION

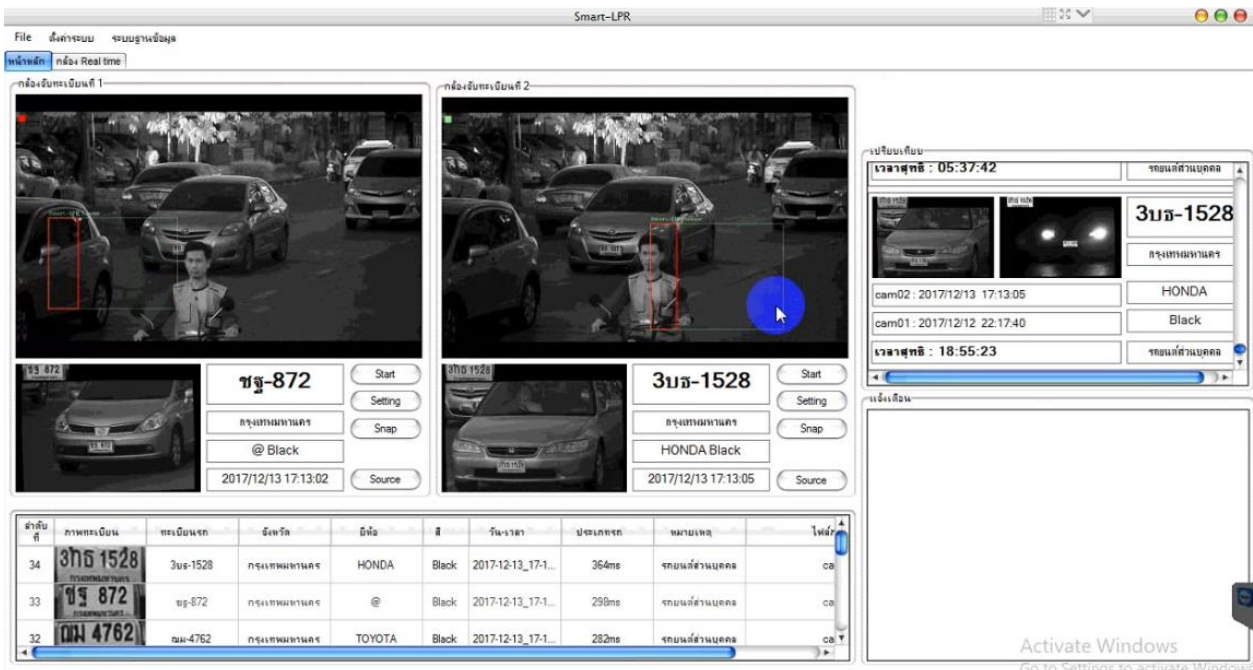
## Red License Plate Recognition



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Red License Plate Recognition is a system that records images of registered vehicles with red signs that carry traffic rules. By registering the red label more than the time required by law 30 days Or driving a red sign at night The system will work with high quality IP Camera to capture real time images. The camera will capture vehicles that are wrong to see the characteristics of the car. And clear license plate.

Which the information obtained Can be used as evidence To report the offense to motorists who violate traffic rules.



### System features (Software)

- The system can detect traffic violators.
- The system can detect traffic violators about the restrictions on the use of red cars.

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- Three-car system can detect red-registered vehicles
- There is a data management system such as searching for notes, editing
- There is a system to send image data via File transfer protocol
- Support database SQL, MySQL, Oracle, Postgres
- The system can be used in conjunction with Software and other systems such as sheets, reports
- The system can record the motion of the car, breaking the traffic rules.
- There is an image data management system as evidence. And can issue orders legally

**There are 2 types of camera used.**

- Camera for holding license plates Is a camera designed specifically for LPR systems  
(\*\* The amount used depends on the number of lanes that you want to detect)
- The camera for analyzing traffic signals (Overview) with a resolution of no less than 3MP is a Low Light camera (\*\* The amount used depends on the job page)

**Features of the camera**

- High resolution image (Network Camera) in case of camera overview. Resolution is not less than 3MP or better.
- In the case of a LPR license plate camera, the distance of the lens can be adjusted. To get the desired image distance The size of the lens is about 12-40mm or 8-50mm.
- Low-pass filter technology for cutting bright light (Car headlight light) for clear images
- There is an infrared set For shining images at night
- The camera supports standard IP66 applications in case of external installation.

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### Installation equipment

- Camera for analyzing the traffic light (Overview) and Housing
- In the case of LPR license plate camera, can adjust the range of lenses and housing
- Infrared set (in the case of low light and want to see the night image)
- Comprehensive computer set introducing Corei7 Gen6 Speed 2.6GHz, 8GB RAM, 1 TB HDD Windows 7 professional or better or Windows 10 professional or better
- Uninterruptible power supplies for system equipment
- Network Switch device
- Webserver device set (in case of need to manage the central system)
- ADSL Router device (in case of need to link and view data from the center)

### Installation characteristics

- The pillars for installing the LPR license plate camera and the camera overview are 5-6 meters in height for detecting objects in the range of 12-15 meters.
- The camera angle for detecting approximate characteristics, press down to see the license plate.
- In the corner for holding the license plate, there must be no obscured objects. In order to obtain accurate information
- Set the camera to capture the license plate image as Night Mode so that it can detect red-label registration both day and night (\*\* because at night there will be problems reading the red license plate In case of setting the camera to detect as normal mode)

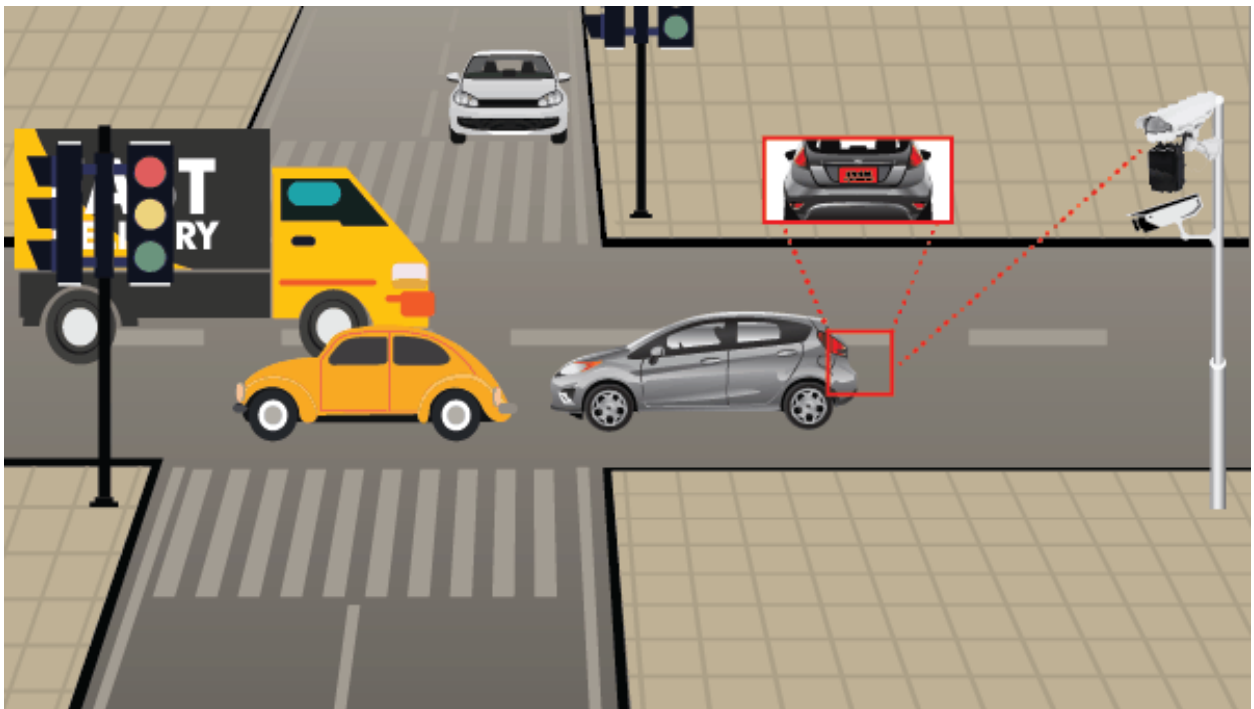
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### System structure



### System installation restrictions

- Network Camera used to be a high resolution camera
- The camera for capturing license plate images should select a Network Camera type that is specifically designed for use with license plate capture, which will help make the system work more accurate and accurate
- Select the software system that has been tested, installed and used And have clear reference information

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- Should check the equipment that is used to support the software system used or not. Prevent problems with compatibility of devices.
- View and position in the camera installation Must be tested before actual installation. For the most accurate and accurate results
- The grip area of the camera must not shake. Because it can cause data errors
- The license plate that the camera can capture should be sharp from 150-300 pixel. It will help make the information more accurate and accurate.
- In case of needing to capture a red license plate And license plates that are graphical signs Set the camera to capture the image in Night Mode so that the image can be captured.
- In the area of installing cameras, license plates, and cameras, the overview must not be obscured. Because it will affect the accuracy and accuracy of the system
- Traffic lights at the installation point Must be able to use And work correctly as usual Because it will affect the operation of the system
- License plates that are damaged, unclear or modified Apart from the Department of Land Transport May result in reduced data accuracy

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Example of system operation

The screenshot shows the Smart-LPR software interface with two camera feeds. The left feed shows a white car with license plate 1กฉ-3575 and a black car with license plate ตย-7863. The right feed shows the same two cars from a different angle. Below each feed are control buttons: Start, Setting, Snap, and Source. A yellow mouse cursor is pointing at a button in the center.

| # | ภาพรถ | ทะเบียน  | จังหวัด       |
|---|-------|----------|---------------|
| 1 |       | ตย-7863  | กรุงเทพมหานคร |
| 2 |       | กฉ-2874  | กรุงเทพมหานคร |
| 3 |       | ฉฉ-969   | กรุงเทพมหานคร |
| 4 |       | 65-4146  | ชลบุรี        |
| 5 |       | 1กฟ-4187 | กรุงเทพมหานคร |

The screenshot shows the Smart-LPR software interface with two camera feeds showing a queue of cars. The left feed shows a car with license plate ขธ-327 and another with 5กธ-9400. The right feed shows the same cars from a different angle. Below each feed are control buttons: Start, Setting, Snap, and Source. A table at the bottom left shows a list of detected vehicles.

| ลำดับที่ | ภาพรถ | ทะเบียน  | จังหวัด       | ชนิด | สี    | รับเวลา            | ประมวลผล | หมายเหตุ       | ไฟ |
|----------|-------|----------|---------------|------|-------|--------------------|----------|----------------|----|
| 38       |       | 5กธ-9400 | กรุงเทพมหานคร | @    | Black | 2017-12-13_17-1... | 384ms    | ตรวจจับส่วนเบด | ce |
| 37       |       | ขธ-327   | กรุงเทพมหานคร | @    | Black | 2017-12-13_17-1... | 299ms    | ตรวจจับส่วนเบด | ce |
| 36       |       | กฉ-9779  | ฉะเชิงเทรา    | @    | Black | 2017-12-13_17-1... | 333ms    | ตรวจจับส่วนเบด | ce |

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### Highlights of the Red License Plate Recognition

- The program has been developed with a team of Thai people so can customize the program to suit the needs of customers.
- Can be used with all brands of CCTV cameras via the ONVIF or RTSP standard.
- Can notify various events to the Video Management Software program that customers want Currently supports VMS, NxWitness, VIVOTEK VAST, 3T SMART and others.
- Can be added to use with Speed Radar system to show the speed of the car that Speed Radar can detect

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