

Automatic Vehicle Number Plate Recognition System



ANPR/LPR Number Plate Recognition

Automatic number plate recognition is a mass surveillance method that performs optical character recognition (OCR) on images to read the license plate on vehicles. It means Automatic License Plate Recognition system replaces, converts the task of manually typing the plate number of the bypassing vehicle into the computer system. ANPR can be used with either existing closed-circuit television or road-rule, enforcement cameras or ones specifically designed for the task and it is the "heart" of any ITS system.

Sky Eye is an ANPR solution built by Sensor Line Trading to accomplish the client needs. Using the Sky Eye the following Tasks can be achieved.

- Speed Enforcement / Instant Speed
- Speed Enforcement/ Average Speed
- Vehicle Counting
- Vehicle Theft Protection System
- Red Light Enforcement System
- Paid Parking Systems
- Road Congestion Management System
- Traffic Light Prioritization for Ambulances/Special Vehicles

There are a lot of challenges specially, capturing of fast moving vehicles needs special technique to avoid motion blur which can decrease the recognition accuracy dramatically. To ensure the right image quality short shutter time need to be used with the combination of high-power illumination.

The best illumination is the IR, because the retro-reflective plates reflect this kind of light very well and it is undetectable for the human eye. This combination works fine during day and night and provides constant good image quality.

Only dedicated ANPR cameras meet these requirements, like AHRs ANPR cameras, which provide flexible shutter control with built-in IR flash and able to catch the vehicles up to 250 km/h which is suitable for all kind of license plate reading applications.

Components and Application of Automatic Number Plate Recognition (ANPR) System

ANPR System Components

ANPR System Hardware

Camera - Digital cameras are used in the image acquisition Stage. They are primarily used in obtaining images or video footage of vehicles.

Infra-Red - Light source at night maybe provided by Infra-red in order to provide illumination for the camera.

Frame Grabber - This is a hardware interface between the digital camera and the computer. The Frame Grabber is tasked with getting the digital image from the camera storing it temporarily and then submits it to the computer for processing.

Relay Card (to open a barrier).

Computer - This is the central processing unit in ANPR systems. The computer has the ALPR application.

Boom Barrier - Prevents the entry of unauthorized vehicles.

ANPR System Software - This software has the OCR capabilities, which results in the extraction of the number plate from the digital image.

Database - This provides storage for the data (number plates that have been read by the ANPR).

Back End Software - The back end software is located on a server and provides many functions such as:

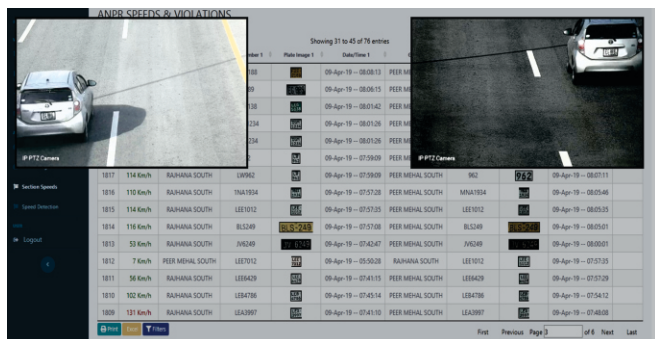
- Data collection from cameras.
- Data mining of previously collected data for investigations and pattern analysis.

ANPR System Features

- Speed Calculation
- Lane Detection
- Direction Flow Detection
- Vehicle Type Classification
- Work with All IP Cameras & Video Sources
- Lost/Stolen Vehicle Detection by Black List
- To be able to read up to 25 plates in 1 second
- Successful Reading up to 180km/h Speed
- Real-Time Detection & Reporting
- 7/24 Working
- Flexible and Modular Infrastructure

ANPR System Benefits

- Faster Traffic Management
- Faster Electronic Toll Collection
- Deny unauthorized access
- Ability to capture information regardless of the speed of light
- High-definition images for accurate identification
- View events from specific time-frame
- Better security and prevention of vehicle theft
- Business premises access management
- Allowing more effective law enforcement



The screenshot displays the ANPR system's data processing interface. It features a table with columns for vehicle ID, speed, location, and timestamp. The table lists various vehicles and their recorded speeds and locations. For example, vehicle 1877 is recorded at 114 km/h at RAHANA SOUTH on 09-Apr-19 at 08:08:13. The interface also includes a sidebar with navigation options like 'Surveillance', 'Speed Detection', and 'Logout'.

Vehicle ID	Speed (km/h)	Location	Timestamp
1877	114	RAHANA SOUTH	09-Apr-19 - 08:08:13
1816	110	RAHANA SOUTH	09-Apr-19 - 08:06:15
1815	114	RAHANA SOUTH	09-Apr-19 - 08:07:42
1814	116	RAHANA SOUTH	09-Apr-19 - 08:01:26
1813	53	RAHANA SOUTH	09-Apr-19 - 07:59:09
1812	7	PEER MEHAL SOUTH	09-Apr-19 - 07:57:28
1811	56	RAHANA SOUTH	09-Apr-19 - 07:57:25
1810	102	RAHANA SOUTH	09-Apr-19 - 07:45:14
1809	121	RAHANA SOUTH	09-Apr-19 - 07:41:10

