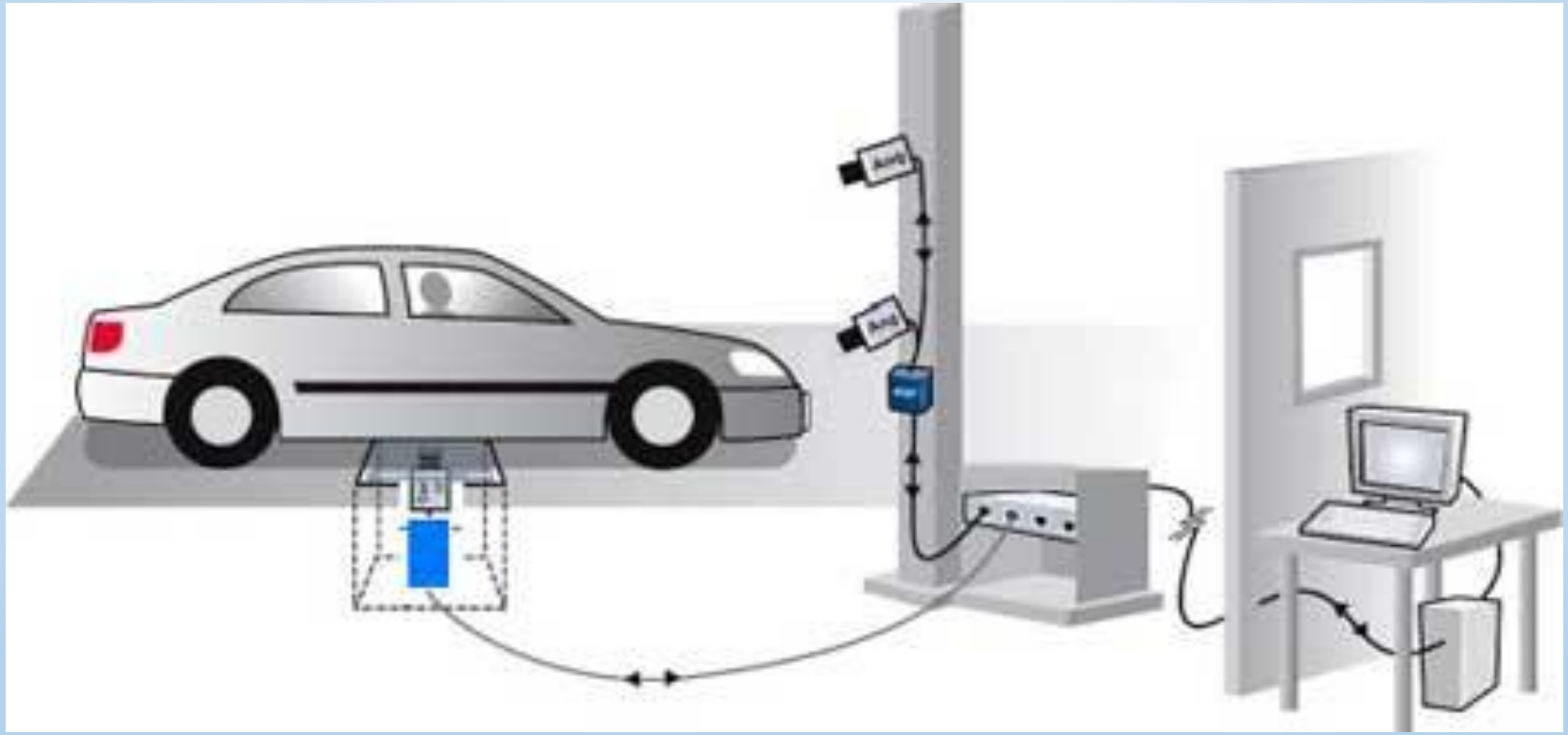
LICENSE PLATE RECOGNITION SYSTEM



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KEY CONCEPTS

- Introduction
- Technology
- Elements
- Working
- Output
- Advantages
- Disadvantages
- Applications
- Conclusion

INTRODUCTION

- A vehicle registration plate is a metal or a plastic plate attached to a motor vehicle for official identification purposes.

- The license plates are placed on the front and back of the vehicle.

AUTOMATIC NUMBER PLATE RECOGNITION (ANPR)

- ANPR is an image –processing technology which is used to identify vehicles by their number plates using Optical Character Recognition.
- This technology is used in various security and traffic applications such as access-control system.
- Various names of this technology are:

  - License Plate Recognition(LPR)
  - Car Registration System(CRS)
  - Intelligent Transport System(ITS)

SEVEN ELEMENTS IN ANPR

- Camera
- Illumination
- Frame grabber
- Computer
- Software
- Hardware
- Database

- **Camera** - that take the images of the car (front or rear side).
- **Illumination** - a controlled light that can bright up the plate, and allow day and night operation. In most cases the illumination is Infra-Red (IR) which is invisible to the driver.
- **Frame grabber** - an interface board between the camera and the PC, allows the software to read the image information.

- **Computer** - normally a PC running Windows or Linux. It runs the LPR application which controls the system, reads the images, analyzes and identifies the plate, and interfaces with other applications and systems.
- **Software** - the application and the recognition package. Usually the recognition package is supplied as a DLL.
- **Hardware** - various input/output boards used to interface the external world (such as control boards and networking boards).
- **Database** - the events are recorded on a local database or transmitted over the network. The data includes the recognition results and (optionally) the vehicle or driver-face

Working

The ANPR process is divided into three steps:

- Detection of vehicle.
- Capture of images.
- Process of recognition.

DETECTION OF VEHICLES

- The vehicle approaches the secured area and the process starts when the vehicle steps over a magnetic loop detector.

- The loop detector senses the car and it’s presence is signal.

CAPTURE OF IMAGES

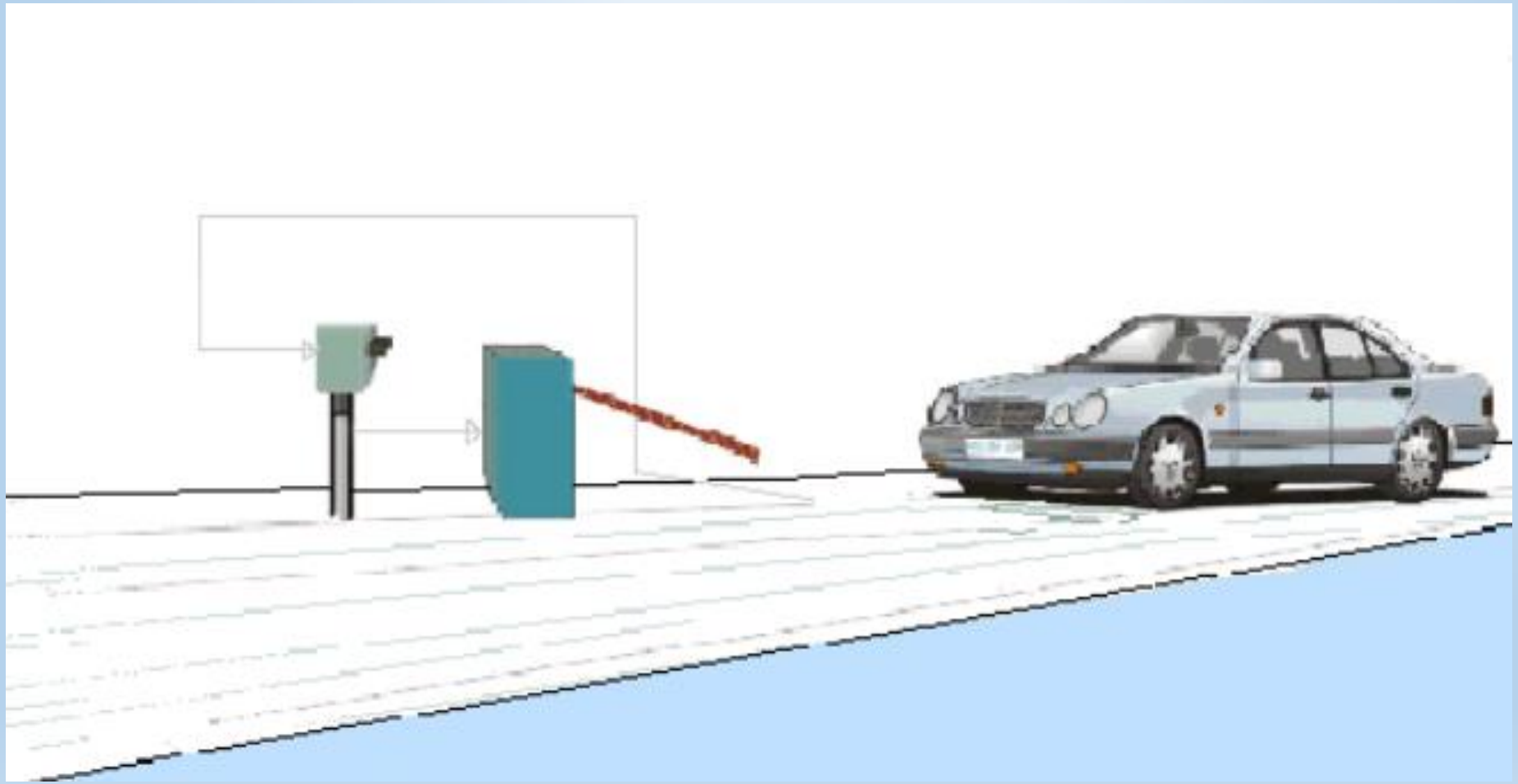
- The ANPR unit activates the illumination and takes pictures of the front and rear plates using ANPR camera.

- The images of the vehicle is read by the ANPR unit’s image processing hardware or the frame grabber.

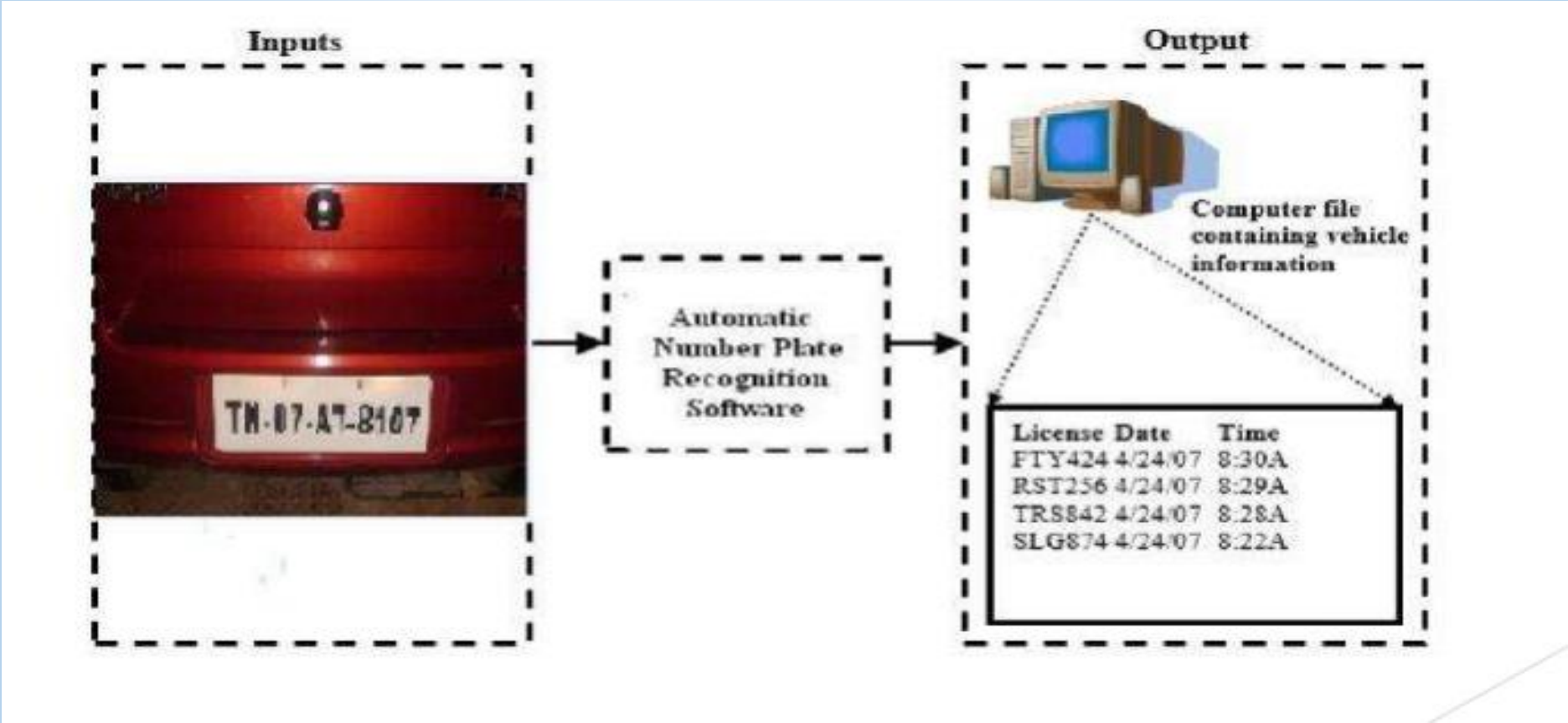
PROCESS OF RECOGNITION

- The ANPR unit analyzes the image with different image processing software.
- The ANPR unit checks if the vehicle appears on a predefined list of authorized cars and if found it signals to open the gate by activating it’s relay.
- The authorized vehicle enters the secured area and after passing the gate it’s detector closes the gate. The system waits for the next vehicle to approach the secured area.

FINAL OUTPUT



ANPR UNIT


Inputs
TN-07-AT-8107
Automatic Number Plate Recognition Software
Output
Computer file containing vehicle information
License Date Time
FTY424 4/24/07 8:30A
RST256 4/24/07 8:29A
TRS842 4/24/07 8:28A
SLG874 4/24/07 8:22A

ADVANTAGES

- improving road safety.
- reduces crime.
- gives officers better information to work with.
- deterring terrorism.
- giving a greater police presence.
- increasing the percentage of stop/searches that lead to an arrest.
- pre-paid parking members can be easily differentiated from non-members.

DISADVANTAGES

- Firstly, the images of the number plate or of any object which is taken by using the optical character reader technology may get blurred mainly due to the reason of motion blurring for which the picture seems to be hazy when uploaded in the database.

- Secondly, the technology often uses low-resolution images for which the images are not actually visible properly in every case.

APPLICATIONS

- Parking
- Access-control
- Tolling
- Border control
- Stolen cars
- Traffic control

PARKING

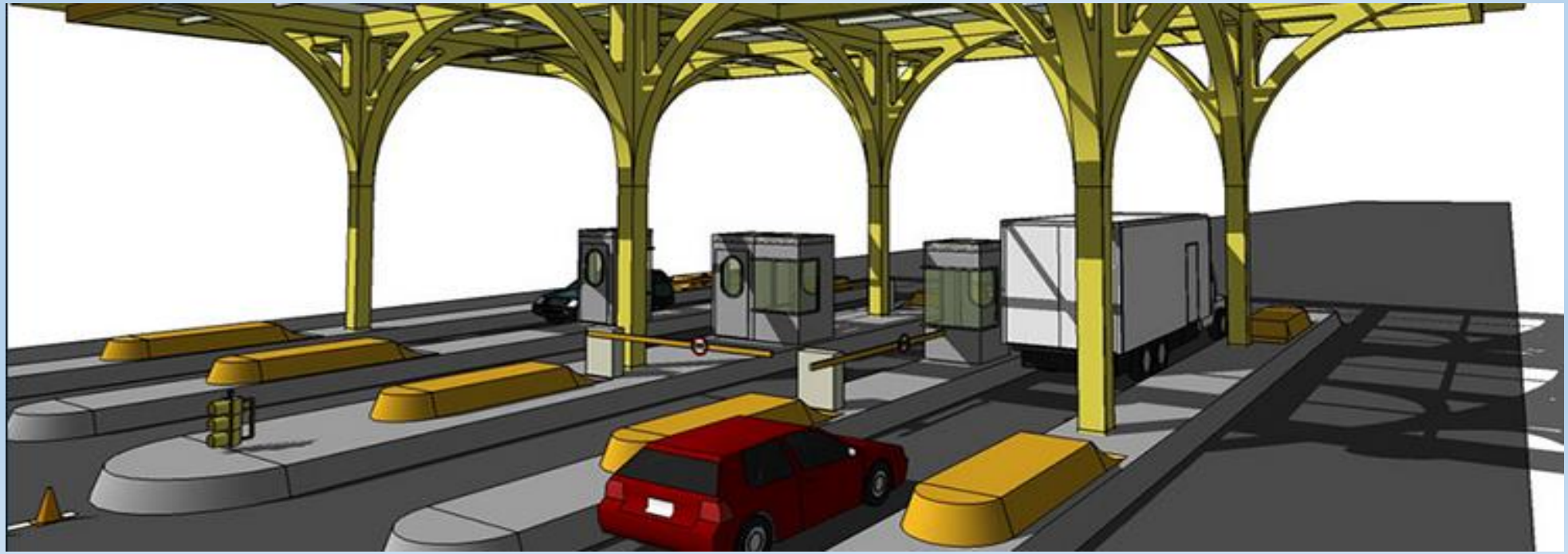
- The plate number is used to automatically enter pre-paid members and calculate parking fee for non-members (by comparing the exit and entry times).

ACCESS-CONTROL

- A gate automatically opens for authorized members in a secured area, thus replacing or assisting the security guard. The events are logged on a database and could be used to search the history of events.

TOLLING

- The car number is used to calculate the travel fee in a toll road, or used to double-check the ticket.



BORDER CONTROL

- This installation covers the borders of the entire Country.

- Each vehicle is registered into a central database and linked to additional information such as the passport data. This is used to track all border crossings.

CONCLUSION

- There is an immediate need of such kind of Automatic Number Plate Recognition system in India as there are problems of traffic, stealing cars etc.
- Government should take some interest in developing this system as this system is very economical and eco-friendly, if applied effectively .
- This change will help in the progress of the nation.


Thank
you