ACADEMY OF APPLIED STUDIES OF KOSOVO AND METOHIJA
DEPARTMENT UROSEVAC
LEPOSAVIC

Master study programme

INFORMATION AND COMMUNICATION TECHNOLOGIES IN ROAD TRAFFIC

COURSE OBJECTIVE

Course objective:

- The objective of the course is to master the skills of applying information and communication technologies in traffic and transportation, with an emphasis on efficient road traffic management. Students will explore the future of traffic development, including electric mobility and its impact on life and technology, through various teaching methods..

COURSE OUTCOMES

Course outcomes:

- The necessity of acquiring knowledge in the field of the most modern information and communication technologies guarantees a good foundation for successful work in these fields of activity. Students will acquire the necessary knowledge for engineering jobs and be ready to adopt new technologies in the field of computer techniques.

USE OF TRAFFIC CAMERAS

Video cameras today play a key role in automation, especially in traffic control. Traffic jams and congestion are becoming a major problem, and infrastructure changes are expensive and impractical. Therefore, systems are being implemented that automatically measure traffic parameters and enable efficient control using video surveillance..

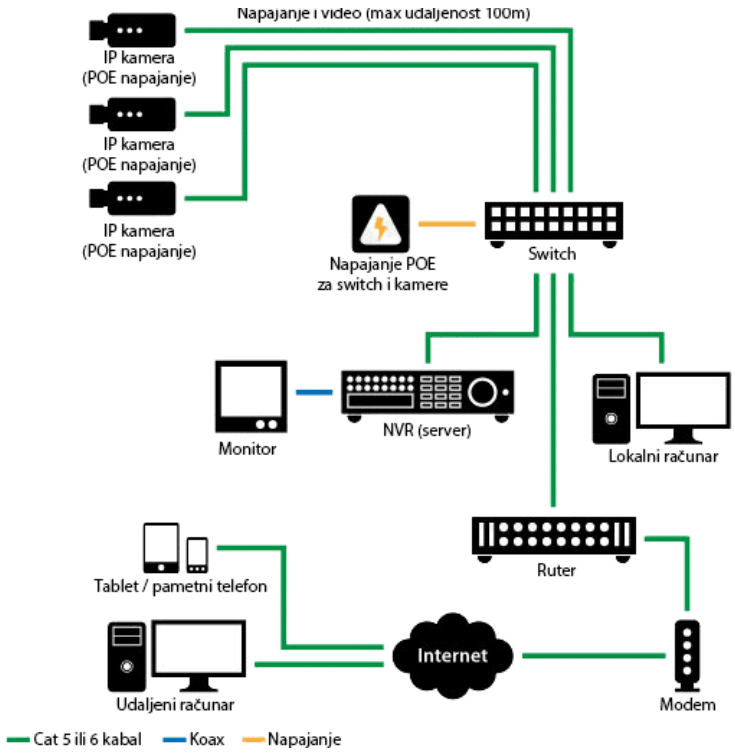
USE OF TRAFFIC CAMERAS

Video signal processing

Video signal processing devices combine software and hardware for vehicle detection, their passage and speed, and vehicle classification. The shortcomings of these systems, such as unwanted signals from shadows or weather conditions, can be overcome by selecting appropriate cameras and applying software algorithms. Techniques such as OpenCV are used for real-time video signal processing, which allows for detection, tracking, and determination of vehicle speed..

USE OF TRAFFIC CAMERAS

Video signal processing



Analog video surveillance system diagram

AUTOMATIC RECOGNITION OF REGISTRATION PLATES

Automatic recognition of registration plates (ARRP)

The video surveillance system automatically recognizes license plates and detects traffic violations, collecting data and photos that are sent to the user center for verification. The system consists of a local, central and control subsystem, with the local subsystem including a computer, ARRP camera, ambient camera and other traffic monitoring devices.

AUTOMATIC RECOGNITION OF REGISTRATION PLATES

Automatic recognition of registration plates (ARRP)

License plate recognition technology uses an OCR system that, with the help of artificial intelligence, recognizes marks from photographs. In the Republic of Serbia, the Innovis OCR engine for automatic license plate recognition, known as the ANPR or ALPR system, has been implemented. The ANPR engine uses mathematical principles and artificial intelligence for fast and accurate license plate recognition.

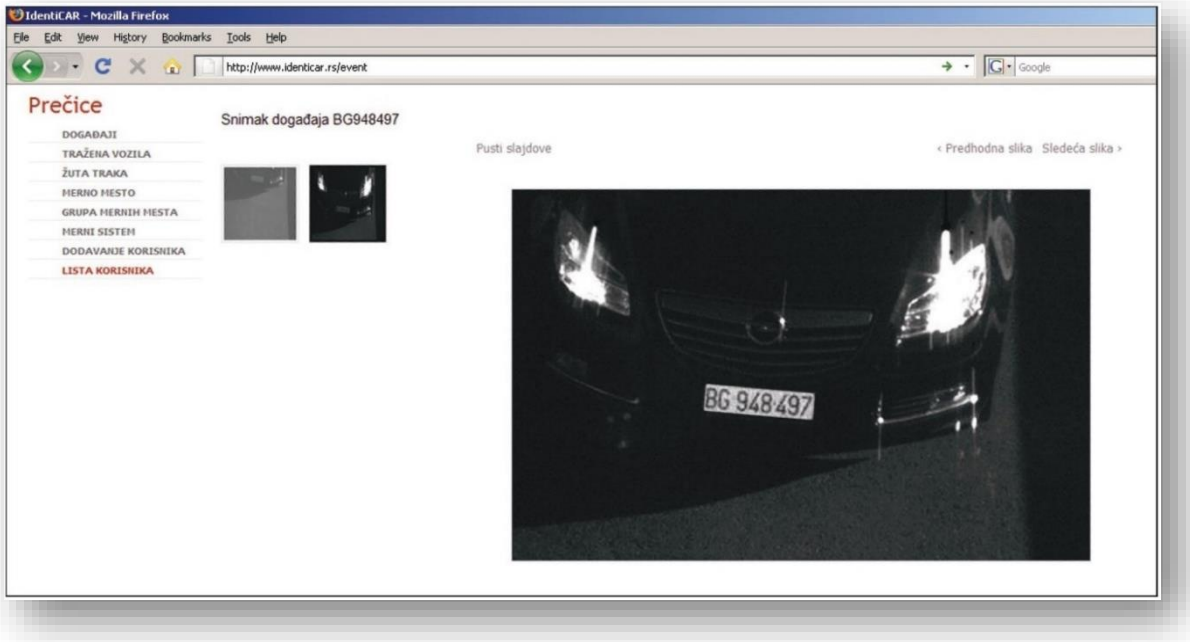
AUTOMATIC RECOGNITION OF REGISTRATION PLATES

Cameras for automatic detection and registration of traffic violations

One example of this implementation is the use of so-called "smart" cameras with a built-in processor and license plate recognition software, which was implemented by a team from the Mihajlo Pupin Institute under the name "Identi CAR", and later the newer version "Identiti CAR Plus". This solution is used for automatic recording of vehicle traffic violations, vehicle tracking, as well as recording vehicle access to zones of interest.

AUTOMATIC RECOGNITION OF REGISTRATION PLATES

Automatic recognition of registration plates (ARRP)



"IdentiCAR" software interface

System operation overview

Hardware solution for the system that performsautomatic license plate detection

AUTOMATIC RECOGNITION OF REGISTRATION PLATES

LPR-Licence Plate Recognition

DVC LPR (License Plate Recognition) cameras are part of the DVC Special IP series and automatically recognize license plates. For an LPR camera to work properly, professional installation and precise placement are essential, as the quality of license plate recognition depends on the location and position of the camera, along with the appropriate software.

AUTOMATIC RECOGNITION OF REGISTRATION PLATES

(LPR) Pay Parking System

Automated parking system

INTELLIGENT TRAFFIC CONTROL SYSTEMS

Application of Cloud video surveillance in traffic

Cloud computing enables the delivery of computing resources on demand over the Internet, including software, hardware, and data processing. Video Surveillance as a Service (VSaaS) provides access to shared multimedia data without the need to interact with a service provider. The process of video surveillance in the Cloud involves recording and sending the material to the Cloud, where it is delivered to the end user via Video Management Software (VMS).

Questions???

THANK YOU FOR YOUR ATTENTION