

IdentiCAR Plus

Traffic Control and Automatic
License Plate Recognition

Introduction

IdentiCARPlus is a modern, flexible and comprehensive solution for automatic detection of traffic violation, vehicle tracking and also for recording vehicle access to the zones of interest. This product, based on the computer license plate recognition technology (LPR), is applied in the Traffic Control, in the yellow shoulder lane, for vehicles tracked by police, for recording of the vehicles passed through the red light or violated the speed limit, and for recording of the vehicles for the purposes of charging.

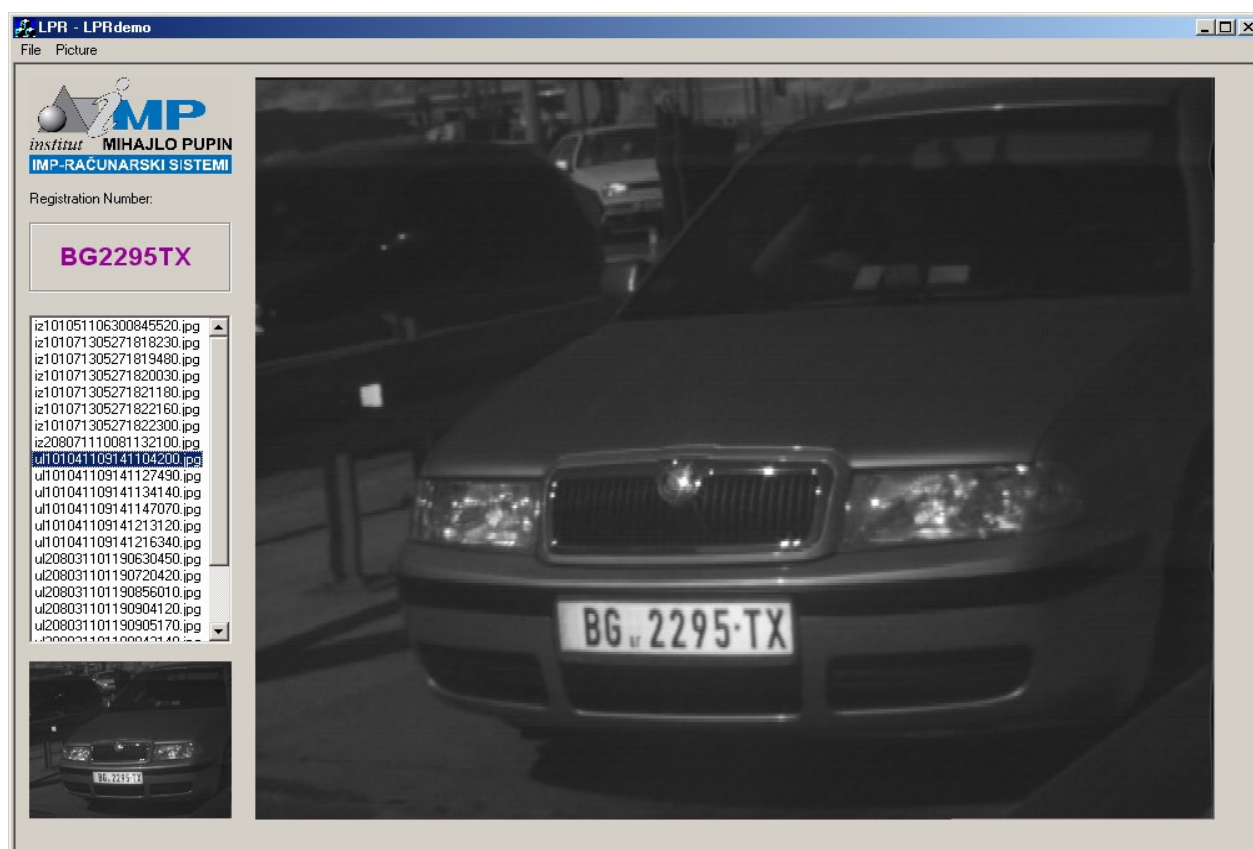
Description of the System

IdentiCARPlus is a distributive system for data procession and it consists of the local subsystems and central information subsystem. Depending on the desired function, the local subsystem consists of the Smart IP cameras, standard IP cameras and industry computer for the outside use, whereas, depending on the function of each camera, the appropriate type is chosen: color cameras, LPR cameras, high resolution cameras.

Pictures from the panoramic and LPR cameras are used for software detection of movement, license plate recognition, using recordings as documents of the traffic violation. The local computer checks if detected license plates are on the list of the tracked vehicles or vehicles allowed to use yellow lane. If needed, violation record is entered into the data base and contains a picture of a vehicle, time, date and place of violation and license plate number.

Synchronization of the central data base with data bases of the local subsystems is done periodically when technical conditions are fulfilled. During the synchronization, records about the traffic violations committed since last synchronization are transferred from the local databases to the central database, whereas, new system functions, information about tracked vehicles, vehicles allowed to use yellow lane and other important parameters are transferred from the central database to the local databases.

Using a specialized web application all traffic violation data from the central database, including photo documentation, are available to the internet/intranet users. Using the same application, authorized users can change functions of the local subsystems (yellow lane/tracked vehicles) or perform other changes in the system configuration.



Software modules

IdentiCARPlus consists of the set of software modules and technologies which, if integrated, makes the system functional and flexible for different implementation conditions:

- CameraCollector
- IdentiCAR
- Database
- IdentiCARBaseSync
- IdentiCARWeb

Software module CameraCollector performs numerous functions: collects pictures from IP camera and/or data and pictures from Smart camera, analyses pictures and detects movements in the marked zone, forwards pictures to the IdentiCAR module, checks the conditions, forms records about every violation and enters them in the local database. IdentiCAR is a software module for the automatic license plate recognition. It is designed based on years of experience in application of modern mathematical methods in picture processing. Module IdentiCAR is successfully used in toll collection systems in Serbia.

Local database and central database are relational databases (MySQL). Local subsystems have all the information in their databases which are necessary for autonomous functioning in the case if the communication with the central database is interrupted.

Program module IdentiCARBaseSync performs synchronization of local and central databases assuring data preservation and preventing double entries. Dynamics of the synchronization is configurable depending on user needs and available communication resources. Fast data synchronization is particularly important for the fast detection of the tracked vehicles in the supervised system.

Administration of the whole system and monitoring of events detected by cameras integrated into the system, is done using web application IdentiCARWeb. Events are filtered and shown in different ways, so that the requested vehicle can easily be found or the recorded event can be segregated by the specific camera or a group of cameras.

The screenshot shows the IdentiCAR web application interface in a Mozilla Firefox browser. The page title is "Prečice" (Tolls). On the left, there is a navigation menu with options: DOGAĐAJI, TRAŽENA VOZILA, ŽUTA TRAKA, MERNO MESTO, GRUPA MERNIH MESTA, MERNI SISTEM, DODAVANJE KORISNIKA, and LISTA KORISNIKA. The main content area features a search form titled "Forma za pretraživanje" with fields for "Datum od" (23/07/2010), "Datum do" (23/07/2010), "Funkcija", "Grupa mernih mesta", "Merno mesto", and "Merni sistem". A "Pronađi" button is located below the form. Below the search form is a table displaying a list of detected events. The table has columns for "Broj tablice", "Modifikovan broj tablice", "Adresa", "Vreme događaja", "Funkcija", and "Pogledaj". The table contains 8 rows of data, each with a unique license plate number, address, time, and function type.

Broj tablice	Modifikovan broj tablice	Adresa	Vreme događaja	Funkcija	Pogledaj
BG652144		Despota Stefana 39	2010-07-23 12:01:24	LPR	Pogledaj Video
BG652141		Kneza Milosa 1	2010-07-23 11:39:52	Sector speed	Pogledaj Video
HN145415		Radnicka 22	2010-07-23 11:39:43	Yellow lane	Pogledaj Video
PG145441		Despota Stefana 39	2010-07-23 11:14:21	LPR	Pogledaj Video
BG67254		Kneza Milosa 1	2010-07-23 10:53:24	Sector speed	Pogledaj Video
BG671888		Kneza Milosa 1	2010-07-23 10:53:14	LPR	Pogledaj Video
186K127		Despota Stefana 39	2010-07-23 10:53:00	LPR	Pogledaj Video
BG674254		Radnicka 22	2010-07-23 10:13:58	Red light	Pogledaj Video

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