NMS ANPR

NOVUS brand software for number plates recognition

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Analog video signals and digital video streams in closed-circuit television systems are increasingly not only archived, but also used for advanced analysis, which is very often carried out using additional modules and external software. In the latter case, video surveillance system is only supplying original data stream. Analysis results are often used not only by security department of particular organizational entity, but also by marketing department. It is possible to count clients present in designated zones, determine waiting for service time, identify areas mostly visited by clients etc. In this article, I would like to interest readers in NMS ANPR software, designed for automatic recognition of signs on car number plates, compatible with NMS application

Because of the diversity of signs appearing on license plates, application was created in two versions, one for European Union countries (Latin alphabet) and one for Eastern Europe countries (Cyrillic). Depending on the kind of USB license key connected to the computer, NMS ANPR software may serve one or two video channels. This limitation is also an effect of high hardware requirements for PC stations, on which application shall be installed. Searching for the number plates in analyzed video stream, and subsequent recognition of signs, requires high computing power. For this reason, computer units with Intel Core i7 processor and 4GB RAM are recommended for two-channel applications. We must be aware, that license plate is being searched repeatedly in following video stream frames, and only result of the analyzed frame with the best quality is added to the database. The larger the recognition area, the more loaded is computer. Therefore, it is recommended to select only this part of image, where number plates will actually appear.
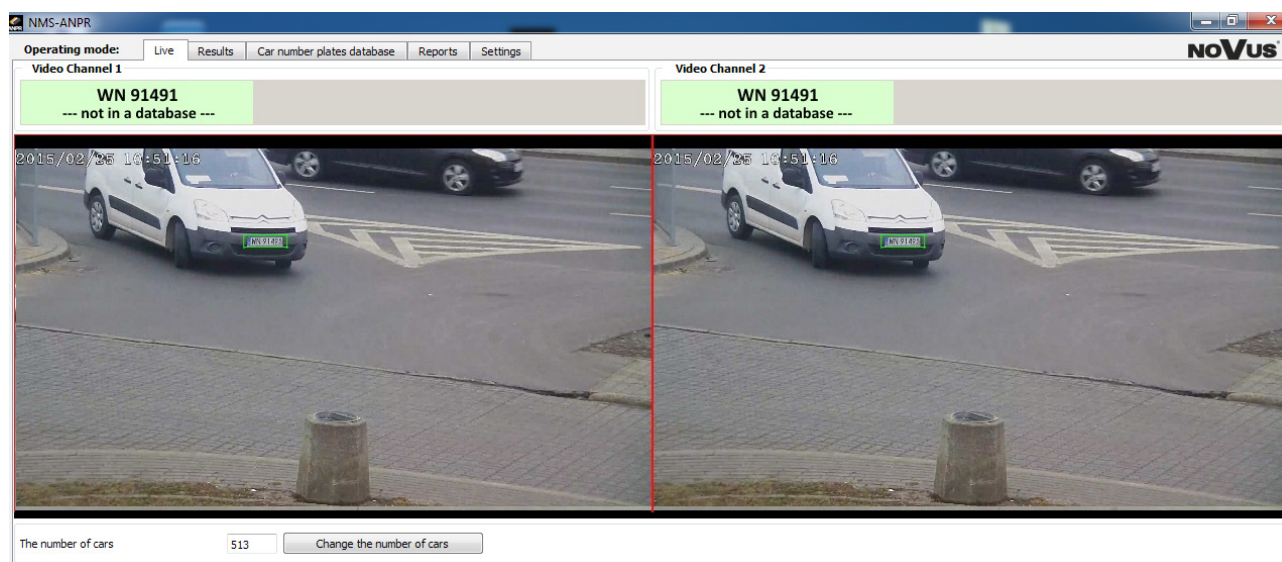
Fig. 1. Graphic interface of application, „Live" tab

In order to maximize probability of correct signs on license plate recognition, proper vehicle watching conditions should be ensured – the number plates width, as visible on the image, should be 130 pixels or more, observation angle should not be greater than 30 degrees and vehicle speed should not exceed 40 km/h. The latter value might be higher, but it requires special camera configuration (frames per second) and good lighting conditions. Generally, the following rule applies: if license plate is legible for human eye, signs will also be recognized by the software.

Record related to the recognized plate includes, but is not limited to, following components: date and time of the recognition, number of zone, in which plate was found (in video stream it is possible to define up to four detection zones), image of the identified plate, movement direction of the vehicle (entrance, exit), duration of the car's stay in the territory, information about the permit or prohibition to pass through the protected area for particular vehicle and probability of cor-

rect recognition of signs on the plate. Every recognized license plate, together with special description, may be added to the database. Moreover, system administrator can manually add plates to the database, correct read signs, give suitable attributes related to each pass and search or alternatively delete selected number plates from the database.

In „Reports" tab, according to selected filters, administrator can generate reports. Filters allow to select, for example, time period, movement direction, passage type, duration of the stay on the territory. Beside demanded results, summary information is displayed, based on the analysis of vehicle counters, using filter settings - for example actual number of vehicles on the territory.

The software also allows managing of barrier and defining of temporary or permanent permit to car entry. Barrier management is carried out with alarm input/output block NV, integrated with the application via TCP/IP protocol.
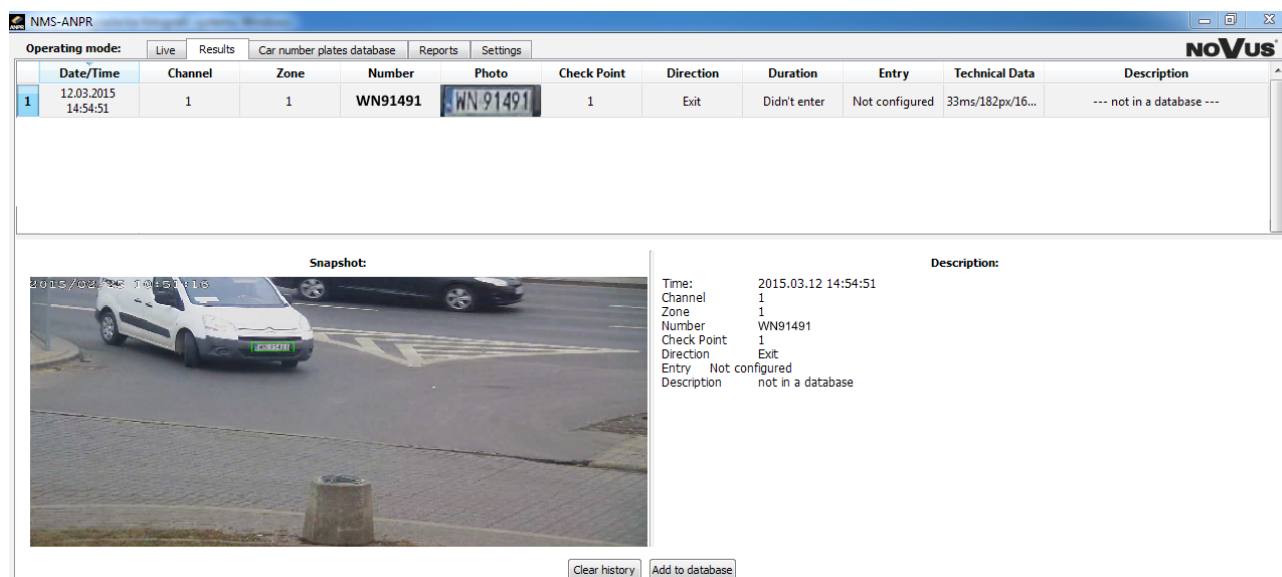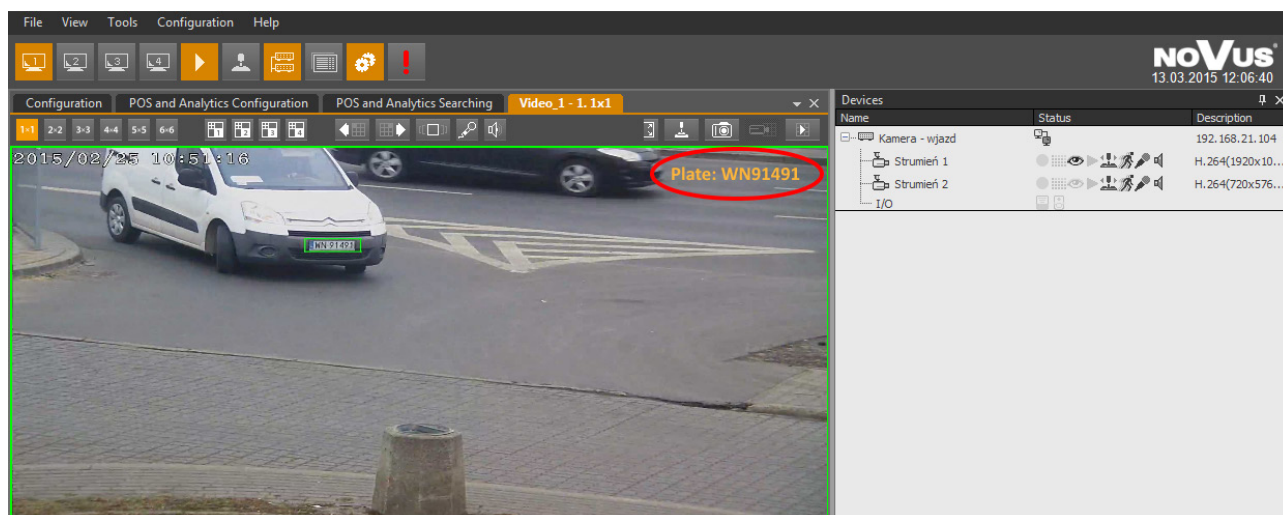

Fig. 2. Number plates database

Fig. 3. „Settings" tab in NMS ANPR application

NMS ANPR is able to integrate with NMS (Novus Management System) software, in which user may, for example, record video, which is analyzed to identify signs on number plates. Recognized license plates are added to the NMS database, which can browsed, analyzed and edited by the user. After searching for specific number plate or group of plates, we can directly proceed to playback of video part, related to the found plate.

Architecture of above described system, designed for recognition of vehicle number plates, consist of one station, client/server type. Therefore, system may be applied only for facilities with single or double entrance. Currently, further

works are conducted to create central vehicle database, built with many server units. It would allow using the application in extensive facilities, as well as in distributed locations with central operating station.
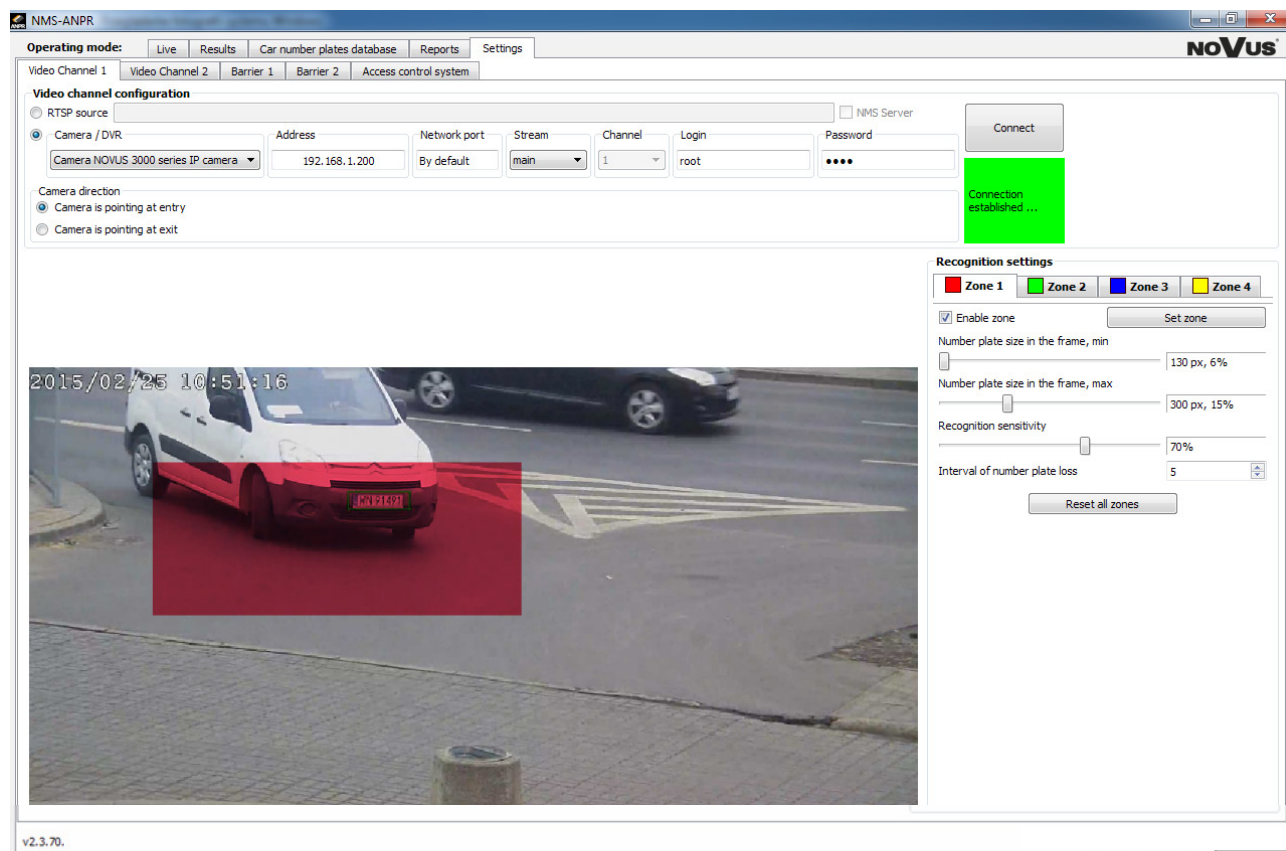
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Fig. 4. Integration with NMS