

ABSTRACT

Master's dissertation: 103 pages, 55 img., 28 tables., 7 additions, 44 sources.

Target setting. Automatic recognition of car number plates is a popular topic of research through a large number of applications: automatic toll collection, road police, access control to private sectors, traffic monitoring. Vehicle number recognition can be divided into the following three steps: detection of the car number; segmentation of symbols; recognition. The detection step should be the most reliable and almost absolutely accurate, since in the case of errors at this stage, the following actions will not be needed any more. There are a number of methods that start the detection with search of the car itself, and then the car number plate. All this is done with the purpose of taking time to process the image and eliminate the probability of false positives.

Connection of work with scientific programs, plans, themes. The work was carried out at the Department of Automated Systems for Information Processing and Management of the National Technical University of Ukraine "Kyiv Polytechnic Institute. Igor Sikorsky "within the framework of the theme" Methods of Visual Programming of Petri-Object Models "(No. DR 0117U000918).

The research purpose is to increase the effectiveness of the algorithm for recognition of automobile numbers by video stream.

To achieve the goal following tasks are needed to be accomplished:

- to analyze the latest research in the field of recognition of automobile numbers;
- to develop a combination of methods necessary for recognition of automobile numbers on microcomputers;
- develop an algorithm based on a combination of the approaches considered;
- develop software implementation of the developed algorithm;
- to analyze the results obtained.

The object of research is the process of recognition of automobile numbers.

Subject of research - methods of recognition of automobile numbers by video information.

The research methods used in this paper are based on methods of machine learning and expert assessment.

Scientific novelty. For the first time the information technology of recognition of automobile numbers on the devices with limited resources - microcomputers, was developed. Improved Yolo algorithm by using pre-processing of video frame using bilateral smoothing.

Publications.

Stetsenko I., Sukhaniuk M., Shyshkin V. Architecture of the Information System of Machine Recognition from the Video Information Flow // VI All-Ukrainian Scientific and Practical Conference "Scientific Ukraine: Problems of the Present and Future of the Future", December 26-27, 2017. - pp. 97-101

Stetsenko I., Sukhaniuk M., Shyshkin V. Elements of the model of a smart DVR // Materials of the scientific conference of students, graduate students and postgraduates "Informatics and Computer Science" - IOT-2018 (April 23-24, 2018). - pp. 173-177

Stetsenko I., Sukhaniuk M., Shyshkin V. Software-hardware complex of smart DVR // Technical sciences and technologies - № 4, 2018 - [Accepted for publication].

Stetsenko I., Sukhaniuk M. Recognition of automobile numbers in real time on the basis of YOLO-detection /I. Stetsenko, M. Sukhaniuk // National Scientific Conference of Young Scientists and Students "Information Systems and Technology Management" (ISTU 2018) - Kyiv .: NTUU " Igor Sikorsky KPI", December 29-30, 2018 - [Accepted for publication].

RECOGNITION OF UKRAINIAN AUTOMOBILE NUMBERS, ALGORITHM TRAINING, YOGO ALGORITHM, TESSERACT, FRAME OPENCV