## ABSTRACT

Master's dissertation: 93 pages, 42 img., 28 tables., 7 addition, 37 sources.

**Target setting**. To succeed in the project, the client and his basic requirements have to understood. The general problem of police patrols in the city is that the data coming from the vehicle is nowhere to be stored and analyzed, that is, no analysis of the vehicles that they see during patrolling is being performed. This work discusses technologies, that aim to normalize the load with a large number of incoming messages to the system.

**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 purpose of the research is to increase the efficiency of processing data from devices of smart DVR in the conditions of high loading on the cluster.

To achieve the goal you need to accomplish the following tasks:

– to analyze recent research in the field of smart devices and parallel data processing;

– to test different methods of serialization and deserialization of data;

– to develop software implementation of a smart DVR;

– to build a system model based on the Petri-object approach;

– to determine model the parameters of the information system with the help of the Petri-object ;

– to develop the hardware part of a smart DVR;

– to carry out an analysis of data transmission parameters in the software and hardware complex of a smart DVR.

The object of research - the process of data transfer in the smart DVR software and hardware complex.

Subject of research - methods and models of distributed data transmission.

**Scientific novelty of the research** For the first time the software-hardware complex of the smart DVR was developed. Data transfer process under heavy load conditions on cluster due to use of message broker was improved. For the first time, a customer-server application model was constructed using the Petri-object approach, which provided the ability to determine software parameters.

**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., Shyshkin V. Analysis of the message broker to solve the problems of a smart DVR // 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].

SMART DEVICES, RASPBERRY PI, NMEA, GPSD, JSON, LIBRARIES FOR DATA CONVERSION, JACKSON, PROTOBUF, SERIALIZATION DATA, KAFKA, CLUSTER SERVERS, JMS