

## ABSTRACT

Master's thesis: 98 pages, 21 figures, 25 tables, 1 appendix, 38 sources.

**Relevance of the research topic.** In today's world, given the rise of unmanned aerial technology, virtual reality technology and augmented reality, the question arises about determining the state of things in space, namely about determining the position of the human body. The ability to determine the position of a person in an image or video in these areas plays a key role.

Significant advances in this area have been made through the use of Convolutional neural networks (CNN). However, the task remains unresolved for non-stage scenes: it is difficult to determine the exact position of a person in an image or video in real time.

**The purpose of the study** is to improve the detection and understanding of human behavior by on-board computers by improving the method of recognizing human poses in real time. To achieve this goal, we must perform the following tasks:

- analyze the existing algorithms and software analogues in the subject area;
- implement the algorithm of preliminary processing of input data for submission to the neural network;
- develop a system of recognition of human postures in the video stream in real time;
- research of efficiency of the developed algorithms and compare with existing analogues on the selected data set.

The object of study is the process of recognizing human postures in real time from streaming video.

**The subject of the study** - methods for recognizing human postures using convolutional neural networks.

**Scientific novelty of the obtained results.** The method of recognizing human posture has been improved by forming part intensity maps (to detect the exact location of joints) and part intensity fields (to form associations between found parts) to improve the accuracy and speed of video stream recognition in real time.

**Publications.** The materials are published in the All-Ukrainian Scientific and Practical Conference of Young Scientists and Students “Information Systems and Management Technologies”(ISTU-2019) “Analysis of Methods of Automatic Text Referencing Using Neural Networks” and in the Third All-Ukrainian Scientific and Practical Conference of Young Scientists and Students control systems and technologies ”(ISTU-2019) “Real-time recognition of human postures”.

COMPUTER VISION, HUMAN POSE ESTIMATION, CONVOLUTIONAL NEURAL NETWORK, PART INTENSITY MAPS, PART ASSOCIATION FIELDS