

## ABSTRACT

Topic: “Method of improving the quality of recognition of images based on convolutional neural networks”.

Thesis contains 99 pages, 14 drawings, 12 tables, 2 applications. Was used 66 sources.

COMPUTER COMMUNICATIONS, COMPUTER SECURITY AND RELIABILITY, OPERATING SYSTEMS, INFORMATION SYSTEMS, ARTIFICIAL NEURAL NETWORK, ARTIFICIAL INTELLIGENCE, BACKPROPAGATION, BINDING IMMUNITY, RESTORING IMAGES, IMAGE DENOISING, DEEP CONVOLUTIONAL NEURAL NETWORKS, REDUCED CODING.

In this paper, the current problems and issues in the field of improving the resolution of images are considered. High quality images are a necessary factor in ensuring the stable operation of recorders, as well as the appropriate frame rate for dynamic scenes.

The purpose of this work is to investigate existing approaches to improving the resolution of images, improve them, develop our own, which will be better at solving the problem and reach a compromise between the productivity and speed of the software.

The object of research is a test set of low resolution image data.

Methods of research - deep convolutional neural network, super resolution method, method of reverse error propagation (backpropagation).

The software product is implemented using the Python programming language. After studying the method, a comparative analysis was conducted between our and other approaches that were used to solve the problem.

In the work we have developed a method for improving the resolution of images based on deep convolutional neural networks using the super resolution method. A method is proposed that provides greater speed when used in practice and gives the contemporary quality of the result.

Field of application: The work can be used to increase the resolution of images, especially in areas such as video surveillance, medical diagnostics and remote sensing applications.