

## ABSTRACT

Graduate work Thesis: 106 p., 9 tabl, 34 fig, 2 app, 15 sources.

IMAGE, METHOD, RECOGNITION, LEARNING, NEURAL NETWORK, LOADING, FICTION, PARAMETER, ANALYSIS, THRESHOLD, COEFFICIENT, RECURRENT NETWORKS.

Object of research: definition of the category of downloaded image using the proposed analysis methods of uploaded images based on convolutional neural network.

Subject of research: methods of analysis of convolutional neural networks.

Purpose: To determine the best method for recognizing the category of downloaded image based on the training of the neural network.

Urgency: can be used as a basis for building an airport security system, where the system recognizes in photographs suspicious objects that may endanger the safety of the passengers or rolling stock.

Results of the work: an analysis of the methods of research of images for the subject of their automatic categorization, in particular by means of convolutional neural networks. A method is defined which, with a certain approximation, can categorize the uploaded image.

Novelty of the work:

- Comparative given methods of image analysis and proposed method that can determine the category of image with given accuracy.

- The proposed method based on the convolutional neural network can recognize images with definite accuracy.

Ways of improvement: add more intermediate iteration of the network learning to recognize images with a precision, improve the method for recognizing

the presence of certain elements in the image to implement the method as the basis of the security system.