ABSTRACT

Structure and scope of master's thesis:

The work consists of an introduction and four chapters. Total volume of work: sheets of the main text, 20 illustrations, 23 tables. Literature from various sources was used during the preparation.

Relevance of work.

As the present shows, the question of identifying military equipment on satellite images is becoming more and more urgent. If it becomes possible to quickly identify equipment on satellite images, it will speed up the work of our military experts and our Victory.

Satellite images have become an integral part of modern conflicts. Therefore, I wanted to explore the possibility of using deep learning models to accurately identify military equipment and classify it in order to facilitate the work of our military and increase its response speed and improve intelligence.

Purpose of work.

The purpose of the master's thesis is to develop the identification of military equipment and its types based on a satellite image.

To achieve the goal of the research, the following tasks were set and solved:

- overview of existing solutions in biometric identification and computer vision;
- selection and development of an identification method: definition of requirements, finding a dataset, description of software tools, functions and used models;
- system development and testing: neural network training, system testing, analytical data collection, test-based analytics.

Object of research: The process of identification of military equipment, its classification based on satellite images.

Subject of research: Methods of identification of military equipment based on data from the dataset using the technology of convolutional neural networks, multilayer perceptron, and modified convolutional network.

Research methods: To perform the assigned tasks, the following technologies were used: convolutional neural networks, multilayer perceptron from machine learning. These methods were used to analyze and compare forecasting results, to further create a modified forecasting algorithm.

Scientific novelty: The obtained method of identification of military equipment based on a dataset is a scientific novelty. Analysis and identification of the most optimal method for the classification of military equipment.