

ABSTRACT

Explanatory note size – 108 pages, contains 17 illustrations, 25 tables, 3 applications, 28 references.

Topicality. Examines the problem of analyzing satellite images to determine damage, shows the main features of research on this problem and existing solutions, their advantages and disadvantages. The need to improve the method of determining destruction on satellite images and to develop a distributed software architecture for analyzing a large number of satellite images is identified.

The aim of the study. The main target is to improve the processes and methods of creating software for analyzing satellite images to automatically detect destruction.

The object of research: approaches and processes for creating software for analyzing satellite images.

The subject of research: methods, software architecture, tools for creating software for analyzing satellite images to detect destruction.

To achieve this goal, the **following tasks** were formulated:

- analyze existing methods and technologies for automatic fracture detection;
- develop a software architecture that can effectively use these methods;
- develop a user interface for visualizing the results of the analysis;
- to investigate the effectiveness of the software on real data.

The scientific novelty of the results of the master's dissertation is that for the first time, the use of a distributed architecture for analyzing satellite images to detect damage was proposed, and the method of machine learning neural network models for damage detection was further developed by refusing to detect damage from images of the area with different chronology in favor of determining damage from a single image.

The practical value of the obtained results is the development of software that can be used to support decision-making in disaster relief, evacuation of civilians, and directing aid to the regions most affected by destruction.

Relationship with working with scientific programs, plans, topics. The work was performed at the Department of Informatics and Software Engineering of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute" in

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Publications. The scientific provisions of the dissertation were published in:

- 1) O. V. Rumyantsev Methods for determining and visualizing destruction on satellite images / O. V. Rumyantsev, Y. O. Oliynyk // Materials of the V All-Ukrainian Scientific and Practical Conference of Young Scientists and Students "Software Engineering and Advanced Information Technologies" (SoftTech-2022 winter) - Kyiv. Kyiv: NTUU "KPI", November 19-20, 2023.

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