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## Neural Network-Based Method of Detecting Surface Objects from Satellite and Aerial Images

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**Abstract.** Nowadays the tasks of surface object detection have become more and more relevant. The task of object detection is finding the location of objects in the image. One of the possible solutions is neural networks capable of removing noises and detecting objects. The publicly available papers rely on the use of a single neural network. Hence, the proposed methods have a relatively large margin of an error. In this regard, a method for detecting surface objects based on an ensemble of neural networks is proposed. The method proposes an algorithm that includes the steps of pre-processing images and detecting the corresponding objects on satellite images. The method can be applied in control systems of various water areas as an auxiliary one. Moreover, it can detect surface objects for further processing and obtaining the necessary information. The paper discusses the preprocessing of images and detection of surface objects. It also provides the accuracy for training and validation sets, as well as the results obtained during the software implementation of the method, the structure of the neural network used and the ensemble developed.

**Keywords:** detection of surface objects, convolutional neural networks, ensembles of neural networks

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