

## USING OF DEEP LEARNING NEURAL NETWORKS FOR BIOPSY IMAGES CLASSIFICATION

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Cancer is the second leading cause of death around the world. Among all cancer types, lung cancer is the leading cause of death and the second commonly diagnosed type of this disease. In Ukraine in 2020 number of recorded death cases from lung cancer was 12 946, which is more than 15% of the total number [1].

The conducted research is devoted to the problem of automatization of medical images analysis. Preliminary research regarding modern directions of using advanced information systems for the classification of the various medical images, such as mammograms, biopsy images, tomography scans, MRI, etc. For the research biopsy images, that are being used for performing the histopathological analysis, was chosen. There are different tasks for automatization connected with this type of medical image: classification [2, 3], detection [4], segmentation [5].

In the research Lung and Colon Cancer Histopathological Dataset [6] was used. The LC25000 dataset consists of HIPAA compliant and validated 750 total RGB- color images of lung tissue and 500 total images of colon tissue. For classification of the lung biopsy images from the LC25000 dataset two different architectures of Convolutional Neural Networks were created. The main differences between these architectures are the number of convolutional, max-pooling layers and a number of feature maps in convolutional layers varies. Dropout and Early Stopping callback were implemented to prevent overfitting. The accuracy was chosen as a control measure because the dataset is balanced and each class is represented by a high number of images.

The results of the experiment were compared with other researches on the LC25000 dataset. The future direction of the research was defined.

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