Cells Recognition of the Sensomotor Cortex on Histological Images

E. Arrokho Ernandes[1], Dmitriy V. Divakov[1], and Inna A. Kolesnikova[2,3]

[1] *Peoples' Friendship University of Russia (RUDN), Moscow, Russia*

[2] *Laboratory of Radiation Biology, JINR, Dubna, Russia*

[3] *Dubna State University, Dubna, Russia*

The Sector of Radiation Physiology of LRB JINR studies the radiobiological effects of ionizing radiation on the central nervous system (CNS) of small laboratory animals [1], [3]. One of the methods for assessing the severity of CNS lesions is the morphological analysis of brain cells. On the photographic images of histological samples, all objects of nervous tissue are manually marked and classified by an expert. Achievements in the application of machine learning and neural network models will make the analysis process easier and faster.

The paper describes approaches to solving the problem from the stage of data annotation to the final results, that demonstrate the prospects for using machine learning models. Thereby we can increase the speed of obtaining results and reduce the subjectivity of the approach to the processing of experimental data.

Acknowledgement. This work was supported by RUDN University Strategic Academic Leadership Program, project No. 021934-0-000. Data annotation and algorithm development were carried out based on the ML/DL/HCP ecosystem of the HybriLIT Heterogeneous Platform (MLIT JINR).

References

[1] A. Stadnik, et al., *9th International Conference "Distributed Computing and Grid Technologies in Science and Education"* (2021) 316–320.

[2] I. A. Kolesnikova, N. N. Budennaya, Yu. S. Severyukhin, and M. G. Lalkovicova, *Proceedings of the Workshop on Information Systems for the Radiation Biology Tasks*, Dubna, (2020) 7–16.