

PROBLEMS OF AUTOMATION OF COMPLEX SYSTEMS IN THE FIELD OF BIOINFORMATICS

Pelikh D.A., Kovalenko S.V.

National Technical University «Kharkiv Polytechnic Institute», Kharkiv

Significant increase in the technical level of development of modern non-invasive diagnostic systems due to the improvement of hardware implementation and production technologies makes diagnostic imaging systems indispensable in everyday clinical practice. Along with the progress of tools, a very significant role is now beginning to play computer methods of graphic information processing [1]. Modern methods of computer processing of biomedical images provide improved images for their best visual perception by the diagnostician, effective image compression for reliable storage and processing by machine learning methods.

The introduction of neural network diagnostic models into clinical practice can provide effective assistance in making medical decisions, help improve the quality and accuracy of diagnosis, reduce the time for patient examination. It should be noted that artificial neural networks can be used as models of the subject area. By changing the input parameters of the neural network model and then observing the behaviour of the output signals, you can study the subject area, identify and study the medical patterns, which extracted the artificial neural network during training. The obtained information will expand theoretical knowledge in various fields of medicine.

At the same time, in the process of image recognition when making decisions, medical professionals face a number of problems: incomplete and inaccurate source information; high variability of attributes and small sample sizes; limited decision-making time for conclusions [2]. These factors often lead to errors in diagnosis. In order to improve the efficiency and quality of experimental information processing, it is necessary to improve and modify the methods of visual data analysis, both to improve the quality of medical images and to improve the accuracy of object recognition.

To solve the problems of image processing, a classification of contrast enhancement techniques has been provided. Among the software implementation, the method using image entropy, the method using the mean deviation of the brightness of the neighbourhood elements and the method of nonlinear stretching of local contrasts, the method using moments of histogram intensities of image elements, the method using standard deviation of local neighbourhoods.

References:

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