

## **THE USE OF NEURAL NETWORKS IN THE TASKS OF A TEXT MESSAGE SENTIMENT ANALYSIS**

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Linguistic processing of natural language texts is one of the central problems of information technology intellectualization. A large number of research programs are aimed at the development of linguistic information systems. The chosen topic is relevant because in connection with the continuous increase in the amount of information available on the global Internet, they need to solve the problem of sentiment analysis of information. Tonality is the emotional attitude of the author of the statement to an object, expressed in the text. Text tone analysis is a field of computational linguistics that studies thoughts and emotions in text documents. This analysis allows to characterize the emotional color of the text – positive, negative or neutral, to identify the subject and object of this text. Sentiment analysis finds practical application in various fields of knowledge. There are quite a number of methods by which it is possible to make automatic classification of texts. Of course, developers make trade-offs, each method can have its advantages and disadvantages, which affect the suitability of the method in its application. Existing classification systems, checking for keyword matching, do not always meet the needs of users. This paper considers one of the methods of determining the emotional component in the text. Due to the significant development of the technological and information base, we are considering solving the problem of recognizing text images and conducting sentiment analysis of texts using a neural network. Currently, many studies on the classification of texts and different content converge on the leadership of technologies based on neural network technology. During analysis of the most popular neural networks for working with text (Hopfield network, recurrent neural network (RNN)), convolutional neural network (CNN), we found out a few important distinctive features. The RNN has proven itself in sequence processing problems where the length is not fixed. But during the study, the new input that the network has to process begins to affect the network's memory: the information in the memory is mixed with the new information and after a few iterations is completely overwritten. This is especially important on the example of text analysis problems. Thus we stopped our choice on CNN which is one of the best algorithms for image recognition and classification. The only significant disadvantage of convolutional networks, compared to RNN is that they can only work with a fixed size input (because the size of the matrices in the network can not change during operation). Python is not publicly accepted by one of the leaders in both due to its prevalence, fame and a huge number of libraries that have a set of built-in mathematical functions for solving problems within a neural network and conducting researches connected with text data such as sentiment analysis. To build our neural network, we will use two libraries in Python 3: Keras and TensorFlow. Keras supports network construction. TensorFlow is the main engine doing all of the computing.