

Abstract

Nowadays, the use of the Deep Learning method can be one method that is often used in research. One of them is the classification using the Convolutional Neural Network method. Much research has been done on the field of image processing combined with various classification and segmentation techniques to obtain alternative results in classification. This study applies the CNN method for the classification of white blood cells. Determination of the number and classification of white blood cells is very important in the detection of a disease in a person's body, which can lead to complications in an immune system that leads to various types of diseases. Classification of white blood cells by applying the CNN method is used to distinguish 4 types of white blood cells, including Neutrophils, Eosinophils, Monocytes, and Lymphocytes. To find out the most optimal classification performance with the fastest execution time, this study compares the performance of the classification process using CPU and GPU. The results obtained in this classification process are the use of GPU is superior with Speedup values up to 29 times and accuracy values up to 99.93%.

Keywords: Convolutional neural network, CPU, deep learning, GPU, white blood cell.