Application Development of Platelet Abnormality Classification System on Peripheral Blood Smear Image Using CNN

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ABSTRACT

Essential Thrombocythemia is a type of human blood disorder that is part of the Myeloproliferative Neoplasms group. The criteria for ET disease is if the number of platelets in the blood exceeds the normal limit of more than 450,000 µL in the blood and there are giant platelets with a number that is quite often found in one field of view of the peripheral blood smear image. This study aims to develop an application of platelet abnormality classification system in peripheral blood smear image using CNN. The system performs the classification process using the Convolutional Neural Network (CNN) method with 3 classification classes namely normal platelets, giant platelets and leukocytes. In general, the parameters for the classification process through the recognition of color, shape, size and texture of the peripheral blood smear image. In this study the model was trained using the DenseNet-169 architecture with the best model results at a learning rate of 0.0001, The results obtained from system testing show that the system is able to classify platelet abnormalities with the best accuracy value of 98% of 130 test data..

Keyword : abnormalitas, trombosit, essential thrombocythemia, sel darah, image processing, densenet, CNN.