ABSTRACT

White blood cells or leukocytes are one of the cells that make up blood components that function to help the body fight various diseases and as part of the immune system. Currently, the white blood cell classification system performed by medical personnel still uses manual vision with the help of a microscope. In this study, designed a white blood cell classification system with digital image processing and K-NN.

The digital image processing process begins with preprocessing using the second order feature extraction method and GLCM using 4 statistical features (contrast, correlation, energy, homogeneity), the distance used (d) = 1 and 2 and the orientation angle (θ) = 0 °, 45 °, 90 °, 135 °. The results of feature extraction were classified using the K-NN method using k values = 1,3,5,7 and 4 distance equations (Euclidean, Minkowski, Cityblock, Chebychev).

From the results of system testing, it was obtained the results of the classification of white blood cells through digital image processing and the K-NN method with the best accuracy rate of 76% on the feature extraction parameter (GLCM) at a distance of 1 and an angle of 0 °, and the classification of Euclidean and Minkowski distances at the k value K-NN is equal to 1 and 3.

Keyword: *White Blood Cells, Digital Image Processing, K-Nearest Neighbour.*