**ABSTRACT**

White blood cells study is generally done for diagnosis of different diseases. One of those diseases is Acute lymphoblastic leukemia (ALL). ALL is detected by observing morphological changes in white blood cells. Morphological study along with categorization and segmentation techniques helps to identify leukemia at early stage and perfect detection. There are number of categorization techniques which can be used to classify WBC into different classes as per their respective features. Segmentation techniques segments nucleus and cytoplasm from each WBC and feature mining process extract features from nucleus and cytoplasm for accurate result. In this paper we suggest a system to locate white blood cells within microscopic blood smear images, segment them into nucleus and cytoplasm regions, remove suitable features and finally, classify them into five types: basophil, eosinophil, neutrophil, lymphocyte and monocyte.