Identification and Counting of Blood Cells Using Machine Learning and Image Processing

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Abstract Doctors view the total number of leukocytes in a person's blood as a crucial sign of that individual's general health. Historically, blood cell counting was performed manually using a hemocytometer and a few more lab equipment and chemicals. The process is slow and laborious. Red blood cells (RBC), white blood cells (WBC), and platelets are the three kinds of blood cells that can be detected and counted automatically using picture segmentation and S-CNN (Suit-Convolutional Neural Network) machine learning algorithms, as demonstrated in this body of work. Red blood cells, white blood cells, and platelets may be located and counted automatically using an open-source database of blood smear pictures. When the trained model was evaluated using smear images from a distinct dataset, it was observed that the learned models were relatively simplistic. The computer-aided tracking and identification technique allows us to count blood cells in less than one second from photographs of character assassination. It is helpful for real-world applications and has an approximate 92% degree of accuracy.

1 Introduction

A complete blood count (CBC) is a necessary test that doctors regularly order to evaluate a patient's health [1]. Red blood cells (RBCs), white blood cells (WBCs), and platelets are the three primary types of cells found in the blood. RBCs, also known as erythrocytes, are the most well-known blood cells, accounting for 40–45% of all blood cells [2]. Platelets, also known as thrombocytes, are abundant in the blood. WBCs, known as leukocytes, make up only 1% of all blood cells. The quantity of RBCs determines the amount of oxygen given to our tissues. WBCs help prevents the spread of infectious diseases, and platelets help blood coagulation [3]. Because there

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