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Blood smear counter for malaria parasite diagnosis

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Abstract

Malaria is a serious and sometimes fatal disease caused by a parasite that commonly infects a certain type of mosquito which feeds on human blood. People who get malaria are typically very sick with high fevers, shaking chills, and flu-like illness. Although malaria can be a deadly disease, illness and death from malaria can usually be prevented through early diagnosis and treatment. Although manual counting is relatively inexpensive to implement, it is tedious and time-consuming. Its adequate sensitivity requires proper training and supervision of technicians. Hence, a blood smear parasite detection system using image processing is used to classify the presence of the malaria parasite in a micrograph of a blood smear image. In this study, we improved parasite mask processing and circle detection by using two different candidate masks, one more selective than the other, to detect the sharp points in an outline formed when two circles overlap. MATLAB has been used in every procedure. The three main steps – pre-processing, individual candidate parasite detection, and cell detection - were taken using image processing techniques such as edge and corner detection, thresholding and segmentation. We aim to obtain more accurate and robust results by implementing this project in the screening of malaria infections in microscope images of thin blood film smears.

Keywords: Segmentation; Thresholding; Blood smear; Malaria parasite

Biography

Amanze Nkemjika Ikwu is currently working in the University Hospitals Plymouth NHS Trust in the department of cardiology

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