

Malaria Parasite Detection Using Deep Learning Methods

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Abstract : Malaria is a serious disease which affects hundreds of millions of people around the world, each year. If not treated in time, it can be fatal. Despite recent developments in malaria diagnostics, the microscopy method to detect malaria remains the most common. Unfortunately, the accuracy of microscopic diagnostics is dependent on the skill of the microscopist and limits the throughput of malaria diagnosis. With the development of Artificial Intelligence tools and Deep Learning techniques in particular, it is possible to lower the cost, while achieving an overall higher accuracy. In this paper, we present a VGG-based model and compare it with previously developed models for identifying infected cells. Our model surpasses most previously developed models in a range of the accuracy metrics. The model has an advantage of being constructed from a relatively small number of layers. This reduces the computer resources and computational time. Moreover, we test our model on two types of datasets and argue that the currently developed deep-learning-based methods cannot efficiently distinguish between infected and contaminated cells. A more precise study of suspicious regions is required.

Keywords : convolution neural network, deep learning, malaria, thin blood smears

Conference Title : ICMLMCV 2020 : International Conference on Machine Learning Methods for Computer Vision

Conference Location : New York, United States

Conference Dates : December 10-11, 2020