**Abstract**

Malaria detection is a stressful job for most doctors and it requires experience and expertise. The machine learning (ML) method can be used to relieve this issue. This paper tries to find a suitable model to help detect malaria with accuracy. The used dataset was released by National Institute of Health in the USA and contained a total number of 27,560 red blood cell (RBC) images with equivalent instances of parasitized and uninfected RBCs images. A single hidden layer feedforward neural networks methodology namely Extreme Learning Machine (ELM) model was applied to classify and predict whether a patient has been affected by malaria or not. ELM has been compared with other machine learning techniques like SVM, KNN, CART, RF, CNN, VGG16, RESNET, and DENSENET, and it has outperformed all the other with 99% of accuracy, 28seconds cost time, 0.0095 Misclassification Error, and 98% precision which showed the effectiveness of ELM in the application of malaria cell detection scenario and it can also be referred by other researchers in the related field.

Problem Statement

Malaria is one of the most dangerous diseases and cause a number of deaths all around the world.

Malaria must be first recognized in order to treat the patient in time and to prevent further spread of

infection by the mosquito. Malaria should be considered a medical emergency and should be treated as

fast as possible. Malaria can be suspected based on the patient’s travelling, symptoms, and the physical

findings in examination. However to get confirmed laboratory tests must be performed. Malaria

parasites can be identified by examining under the microscope a drop of the patient’s blood, spread out

as a “blood smear” on a microscope slide. Prior to examination, the specimen is stained (most often

with the Giemsa stain) to give the parasites a distinctive appearance. This technique remains the gold

standard for laboratory confirmation of malaria. The first step in treating Malaria is to first detect if the

person has malaria which is a very difficult task. Detecting Malaria requires a lot number of resources.

