



INFORMATICS INSTITUTE OF TECHNOLOGY

In Collaboration with

UNIVERSITY OF WESTMINSTER (UOW)

Intelligent System to Detect Malaria Infected Blood Cells & Predict Malaria

A Dissertation By

Ms. K.A.A Nethma - 2018285

Supervised By

Mr. Cassim Farook

Submitted in partial fulfillment of the requirements for the

M.Sc. in Advanced Software Engineering

Department of Computing

August 2020

©The copyright for this project and all its associated products resides with

Informatics Institute of Technology

Abstract

Malaria is a life threatening disease caused by parasites that can transmitted to people through the bites of infected mosquitoes. In addition to biomedical research, modern information technology is also playing a major role in many attempts at curing the disease. To improve diagnosis, image analysis software and machine learning methods have been used to quantify parasites in microscopic blood slides. This research gives an overview of these techniques and discusses the current developments in image analysis and machine learning for malaria detection.

The main aim of this project is to detect malaria and identify the malaria infected blood cells. A literature review and an online survey of knowledge recourses were conducted to gather the requirements to design a solution.

Malaria detection system consists of different modules which performs different tasks to analyse images. By using the infected and uninfected blood cell image data set detection can be scaled. By using deep neural networks build a model which can classify images and predict. Convolutional layers were added to build the model by using keras and tensorflow API's. The system will show the prediction state by images feed analysis results. The implemented system was tested under different conditions and was evaluated by evaluators. The test results of the malaria detection system verify that the system was completed in an effective and efficient manner.

Key Words:

Malaria, Deep neural networks, Convolutional Neural Network, Classification