

Informatics Institute of Technology

In collaboration with

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**Machine learning model for aiding detection
of Malaria infected human blood cells**

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Abstract

Malaria is a life-threatening infectious disease caused by a single-celled parasite of plasmodium group. The condition is commonly transmitted by an infected female Anopheles mosquito. With the recent increase of malaria eradication efforts worldwide. The need for early detection methods has prevailed. One of the key areas which have gained traction is in the field of computer-aided detection. The current research is aimed to provide a machine learning-based solution which would aid in re-validating microscopy-based images to determine the probability of infection or uninfected status.

During the past few years, deep convolutional networks have led to remarkable breakthroughs for image classification. The proposed implementation is a supervised machine learning-based approach. The research was carried out to determine if it was possible to use a low number of pre-labelled data with existing pre-trained models which were trained on the ImageNet database in the form of transfer learning, without compromising the accuracy and performance of the machine learning model. The resulting research outcome was a deep learning-based model which is used as a core for a classification system, in which medical professionals have the capability to re-validate microscopy test imagery of suspected malaria-infected patients. An overall accuracy of 96% was achieved during the testing phase of the created model.

Keywords: Transfer learning, Deep learning models, supervised learning