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Survey on an Automated Malaria Prediction Using AI

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ABSTRACT: Intestinal sickness discovery is an upsetting position for most specialists and it requires encounters and skill. The machine learning (ML) technique can be utilized to release this issue. This paper attempt to find reasonable model to assist with distinguishing jungle fever with precision. The utilized dataset was delivered by National Institute of Health in USA furthermore contained an absolute number of 27,560 red platelet (RBC) pictures with identical cases of parasitized and uninfected RBCs pictures. A solitary secret layer feedforward neural organizations philosophy to be specific Extreme Learning Machine (ELM) model was applied to group and foresee whether a patient has been impacted by jungle fever or not. In this paper we are proposing the convolutional neural network and support vector machine based malaria detection.

KEYWORDS: Malaria Detection, Convolutional Neural Network, Neural Network, Deep Learning, SVM.

I. INTRODUCTION

Automated diagnosis of malaria has received attention in recent trends. In the medical field especially through microscopic images the diagnosis of malaria is cost-effective and robust which quantify and classify the infected parasite more accurately. Malaria is a life threatening disease which leads to increase in death rate. It is an infectious disease caused by Plasmodium parasites which are transmitted to human through infected female mosquitoes known as the vectors (carriers). The plasmodium species which cause malaria include falciparum, vivax, malariae, ovale. The diagnosis of malaria requires expensive techniques which are unavailable in the rural areas where the disease is prevalent. Microscopic evaluation of Giemsa stained blood smears is commonly used for determining the developmental stages of malaria parasites and its growth in human. The human eyebrain co-ordination system is the widely followed technique for detection of infected cells and parasites in microscopic images and the final diagnosis is done. But because of more number of samples to be analysed and time complexity, there can be error in detection and the accuracy will be lowered. So, automated system for detection of parasites will be of great need.

1.1 Objective and Scope

1. Main goal is to build up a framework that helps the clinical specialists to cross confirm their analyzed results of predicted malaria.
2. As the existing diagnosis process is time consuming, laborious and costly, by and large this deep learning based tool can identify the malaria.
3. Since this is automated tool based on image processing and AI, it minimizes human effort in predicting the presence of malaria cells from image.

1.2 Need

To develop a system that detects malaria with maximum precision and with minimum processing timeto help in the medical field.

II. LITERATURE SURVEY

G. Karthik S. Muttan M. P. Saravanan R. Seetharaman et al. [1] stated that, this paper quantifies and classifies the red blood cells infected by Plasmodium falciparum, Plasmodium vivax, Plasmodium ovale and Plasmodium malariae in thin blood smears. The experimentation was conducted in MATLAB in which image acquisition, pre-processing including segmentation, classification and a combination of other image processing techniques were performed.

T. A. Aris, S. A. Nasir [2] proposed that proposed fast kmeans clustering is used because of its advantage which is no need to retrain cluster center that causes time taken to train the image cluster centers is reduce. Meanwhile, different



color models have been utilized in order to identify the most relevant color model that obviously highlight the parasites. Hussin K. Ragb, Ian T. Dover[3] proposed that The NIH Malaria Dataset from the National Institute of Health, a dataset of 27,558 images formed from microscopic patches of red blood smears, is used in these experiments. The dataset is segmented into 80% training set, 10% validation set, and 10% test set. The validation set is used as the decision metric for choosing ensemble network architectures and the test set is used as the evaluation metric for each model.

Mohammed Osman, Hassan Salih, Osama Salih and Nazar[4] stated that in this paper, The readings are divided into two parts: negative readings were thirty four and positive readings are 6 Readings. The scattering angle depends on the absorption of the malaria parasite. The detection accuracy of our system is determined to be 95%, these are Male results but unfortunately all reading for females is zero.

III. PROPOSED METHOD AND ALGORITHM

A. Proposed Methodology:

In a proposed system, we are proposing experiment on malariadisease with limited set of supervised data as shown in figure1.

We are proposing a Convolutional neural network for feature extraction and classification by using support vector machine based model for disease risk prediction model for disease with higher accuracy. We are going to solve accuracy issue in diagnosis of disease with accurate stage predictions.

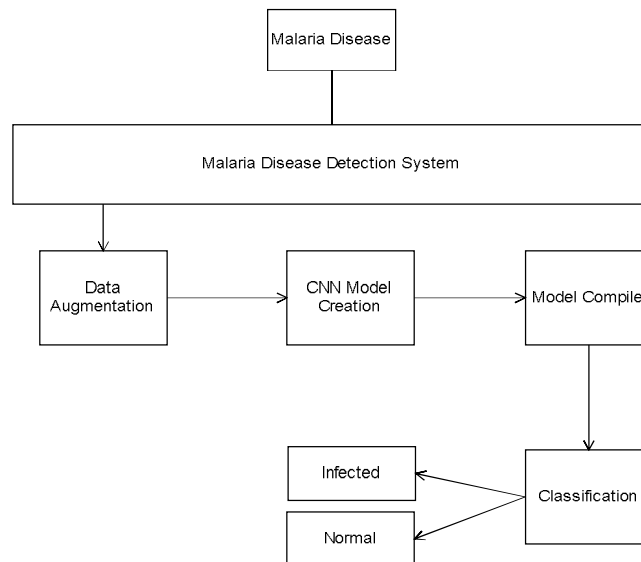


Fig1. Proposed Architecture

B. Algorithms

1. Convolutional Neural Networks (CNN)

Convolutional Neural Networks (which are additionally called CNN/ConvNets) are a kind of Artificial Neural Networks that are known to be tremendously strong in the field of distinguishing proof just as picture order.

Four main operations in the Convolutional Neural Networks are convolutional layer, max pooling layer, relu and fully connected layer.

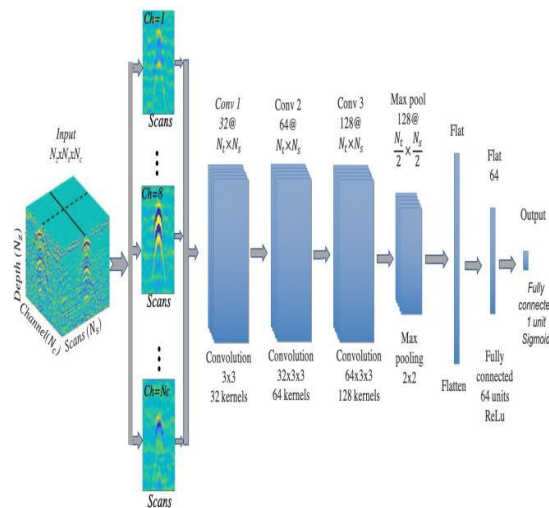


Fig2. CNN Architecture

2. Support Vector Machine

Generally the use of machine learning algorithm is used for the recommendation. In this paper, the support vector machine will suggest the diet. SVM is a supervised machine learning algorithm which works based on the concept of decision planes that defines decision boundaries. A decision boundary separates the objects of one class from the object of another class. Support vectors are the data points which are nearest to the hyper-plane. Kernel function is used to separate non-linear data by transforming input to a higher dimensional space. Gaussian radial basis function kernel is used in our proposed method.

IV. CONCLUSION

We are going to invent malaria disease detection system over machine learning and CNN techniques which solves existing accuracy problem as well as reduce death rates by disease like malaria. After detection of disease inform to users that how to prevent from a disease. For future work, we can implement this technique on some more diseases with rich dataset. Increasing the number of diseases and dataset used for the process can improve the accuracy.

REFERENCES

- 1] G. Karthik1 S. Muttan1 M. P. Saravanan2 R. Seetharaman “AUTOMATED MALARIA DIAGNOSIS USING MICROSCOPIC IMAGES” International Conference on Inventive Systems and Control (ICISC 2019).
- 2] T. A. Aris, A., S. A. Nasi “Fast k-Means Clustering Algorithm for Malaria Detection in Thick Blood Smear” 2020 IEEE 10th International Conference on System Engineering and Technology (ICSET), 9 November 2020, Shah Alam, Malaysia.
- 3] Mohammed Osman, Hassan Salih, Osama Salih and Nazar “Design and Implementation of Non-Invasive Malaria Detection System” 2018 International Conference on Computer, Control, Electrical, and Electronics Engineering (ICCCEEE).
- 4] Hussin K. Ragb, Ian T. Dover “Deep Convolutional Neural Network Ensemble for Improved Malaria Parasite Detection” 2020 IEEE Applied Imagery Pattern Recognition Workshop (AIPR).
- 5] Octave Iradukunda1 ,HaiyingChe “Malaria Disease Prediction Based on Machine Learning” In 2016 IEEE International Conference on Current Trends in Advanced Computing (ICCTAC). 2019 IEEE.



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