



MALARIA CELL IDENTIFICATION USING DEEP LEARNING AND CNN

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ABSTRACT

Malaria is a serious, lethal disease which is caused due to the bite of female anopheles mosquito. The most common method for malaria diagnostics is the microscopy method. This diagnostics process is dependent on the skill of the microscopist and well knowledgeable person for examination. In our project we are developing desktop application for malaria cell identification using deep learning. A main aim of this project is to develop a high accuracy based deep learning model to predict malaria disease using a deep learning approach.

Keywords: *Convolutional Neural Network (CNN), image processing, machine learning techniques,*

I. INTRODUCTION

- Malaria is a life-threatening disease caused by the bite of Anopheles mosquitoes. It spreads plasmodium parasites in the human liver, affects red blood cells and develops into life-threatening symptoms.
- In this project, we use deep learning as a method and propose a convolutional neural network (CNN) approach to detect malaria from microscopic cell images using image classification.

Early detection of malaria is essential to ensure an appropriate diagnostic process and increase the patient's chances of recovery. Given the severity of malaria in relation to the number of deaths caused by the disease, the acceptance of possible negligible errors introduced by the automated method is justifiable. Deep learning techniques have advanced over the years and have proven to be much better than traditional methods as they facilitate the feature extraction process. Therefore, in this paper, we further use deep learning as a method and propose a convolutional neural network (CNN) approach to detect malaria from microscopic cell images using image classification. In this article, we examine two training approaches and compare both based on performance and choose the better approach.

2. LITERATURE SURVEY

[1] Paper name: Deep Learning Based Approach For Malaria Detection in Blood Cell Images

Author Name: Amogh Manoj Joshi¹, Ananta Kumar Das², Subhasish Dhal³

Abstract: Malaria, a life-threatening disease, develops due to the bite of female Anopheles mosquito. It spreads the plasmodium parasites in human blood, killing hundreds of millions of people every year. Modern scientific advancements play a pivotal role to combat the disease, along with biomedical research by the medical experts to possibly eradicate this disease from all parts of the world.

[2] Paper name: Malaria Cell Identification from Microscopic Blood Smear Images

Author Name: Uzair Adamjee, Sayeed Ghani

Abstract: This paper is about classifying blood smear images into malaria cell and uninfected cell.

In this research, we have used two datasets which contain microscopic blood smear images and through deep

learning techniques such as CNN, LeNet, ResNet we have created a model that can classify these images. We have applied these techniques individually on both datasets and on the combined data as well and have shown that when we gave different type of blood smear images to the deep learning model even in that scenario, model is able to identify patterns and learn features with an accuracy up to 94%

3. PROPOSED SYSTEM

Convolutional Neural Networks, a part of deep learning have proved to be of immense use in image recognition, identification and categorization. CNNs outperform traditional deep learning methods in terms of accuracy and efficiency in disease recognition studies.

We use three main types of layers to build CNN architectures:

- 1) Convolution Layer
- 2) Pooling Layer
- 3) Fully Connected Layer

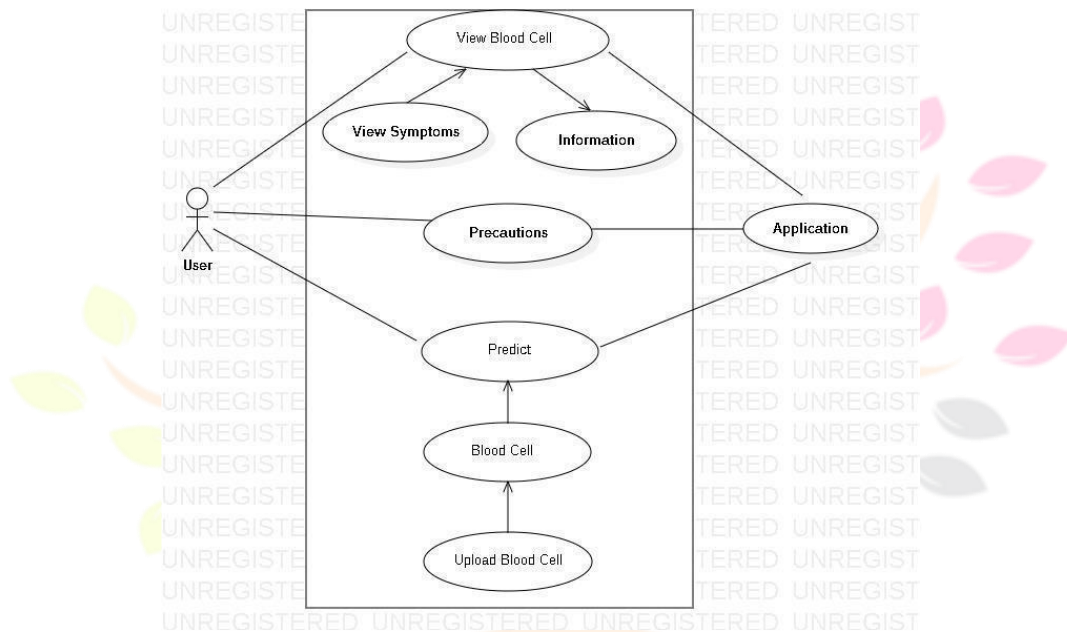


Fig. Use case diagram

4 . SYSTEM ARCHITECTURE

An architectural diagram is a visual representation that maps out the physical implementation for components of a software system.

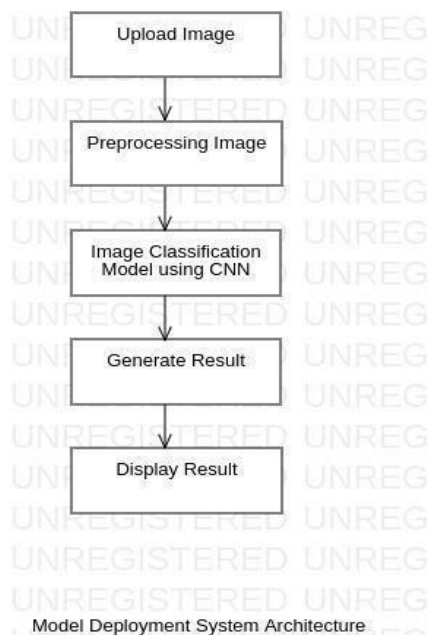


Fig. System Architecture

4. SYSTEM REQUIREMENTS

1) Registration

In this Module user first fill registration form using information like name, address, email, phone no etc.user create password and conform password and then register successfully

2) Login Module

Then, patient can login using username and password.

3) Prediction

Here add all detail and upload red blood cell image for prediction.

4) Report Generation

In this module report is generated and report is generate in pdf format. If red blood cell identify abnormal then generated report is +ve otherwise report is normal or -ve.

Hardware Requirement :

For the building ML/deep learning model:

- 1GB Graphics card
- 16 GB RAM
- i5 processor

For Running application:

- i3 4 GB RAM

Software Requirement :

- Programming language:Python
- Packages:

Tensor Flow, Pandas ,Numpy,Scipy,Scikitlearn

- IDE:

VS-code, Jupyter-lab

6. ACKNOWLEDGMENT

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7. CONCLUSION

Build a predictive model first upload the blood cell image on software it will predict parasite if it is positive then generate the report "cell is abnormal " otherwise "cell is normal" using patient data like age, gender and blood etc and generate thereport .

8. REFERENCES

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