

AI- Based COVID-19 Microscopic Blood Identification

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Abstract : The impact of COVID-19 is all over the world, research teams and doctors are working day and night to defeat it. This paper discusses the method of identifying corona using blood images taken from electron microscope and neural network with the help of this application, many viruses can be detected. This technique extracts the features of the image and traces its pattern, so that it can predict which virus is in the blood.

Index Terms - Corona Detection, Virus, Electron Microscope, CNN.

I. INTRODUCTION

In this paper, the identification of corona using AI based corona microscopic blood has been discussed. The whole world is in trouble with Corona for two years. Staying in line for a long time after doing corona test etc. Many diseases and viruses can be detected by using this technique. It can be used in many hospitals with which we can detect many viruses.

II. RESEARCH PROBLEM

At this time the whole world is fighting a dreadful virus like covid-19 and with it many new diseases are also joining. Detecting those new viruses is becoming a problem for technology experts and for doctors. There are many problems to develop such technology. This can lead to problems in the following ways:-

1. Microscopic Database Collection,
2. Database labeling, Checking the train database accuracy,
3. Finally create model and tool.

III. LITERATURE SURVEY

[1]The paper of “AI-enabled microscopic blood analysis for microfluidic COVID- 19 haematology” Discuss about the CBC detection method using deep neural networks and The approach applied in the work is based on YOLOv3 algorithms. [2] The article “ Modern Uses of Electron Microscopy for Detection of Virus” the discuss about the Electron Microscopy(EM) and its technique. [3]The covid-19 Virus is grows very fast and electron microscopy found size of different researchers, Diameter Covid-19 Virus has been found to range between $< 5\mu\text{m}$.

IV. METHODOLOGY

CNN Feature Algorithms Method:

[4][CNN (Convolution Neural network) joins the image in the form of pixels (the smallest unit of the image) to identify the patterns of their features. The CNN terminology is called Feature Detector OR Kernel OR Filter CNN infers and recognizes patterns of data. The concept of convolution is the images is detected from of number and computer is understand the image form of number of array will be assign a number of 0 to 255.

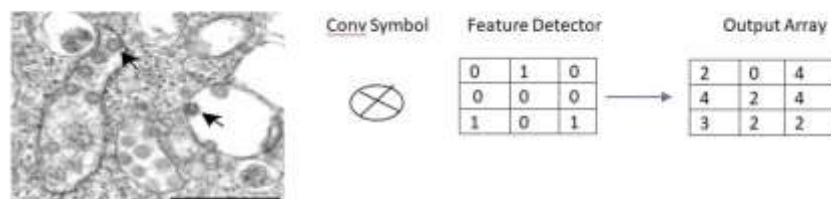
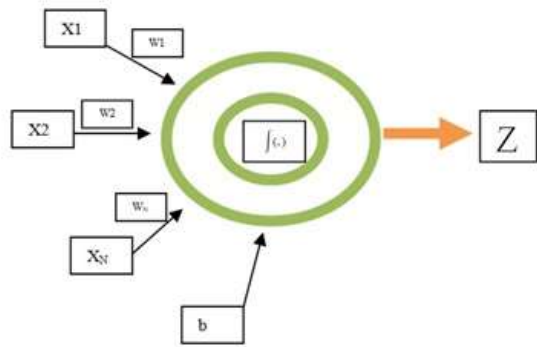


Fig1. Concept of Convolution Layer

The Artificial Neuron



$$X = (x_1, x_2, x_3, \dots, x_N)$$

$$\Omega = (w_1, w_2, w_3, \dots, w_N)$$

$$Z = f(\sum_{i=1}^N x_i * w_i + b)$$

In this Neuron Network is several input and single output here x_1, x_2, \dots, x_n is input data And w_1, w_2, \dots, w_n is the weight of the input value $f(.)$ is the function of input value and weight and Z is the output of prediction.

V. EXPERIMENT RESULT

Dataset

To create this application, data has been trained on CNN, using more than 400 corona virus microscopic images and many other virus, bacteria microscopic images so that many diseases can be detected simultaneously.

VI. EXPERIMENT

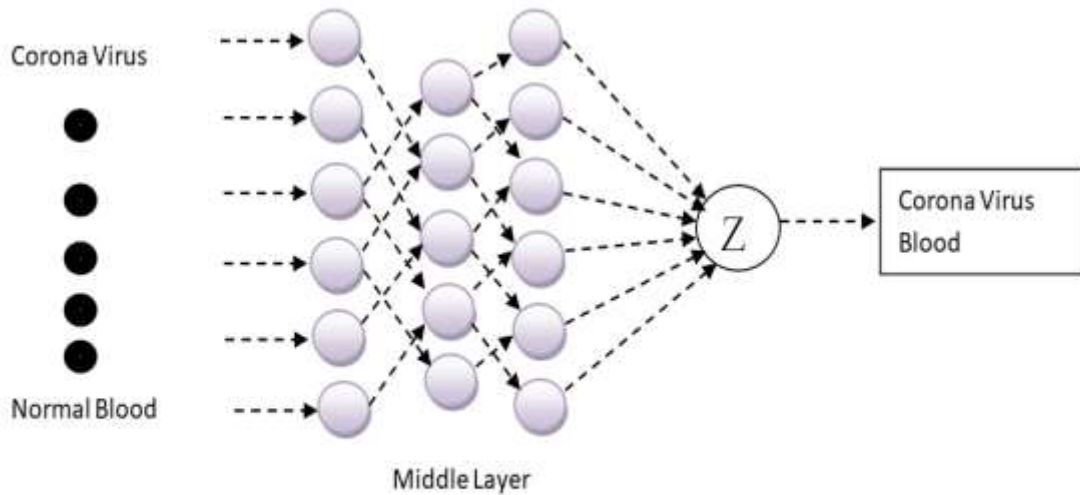


Fig. Virus Detector Using Neural Network

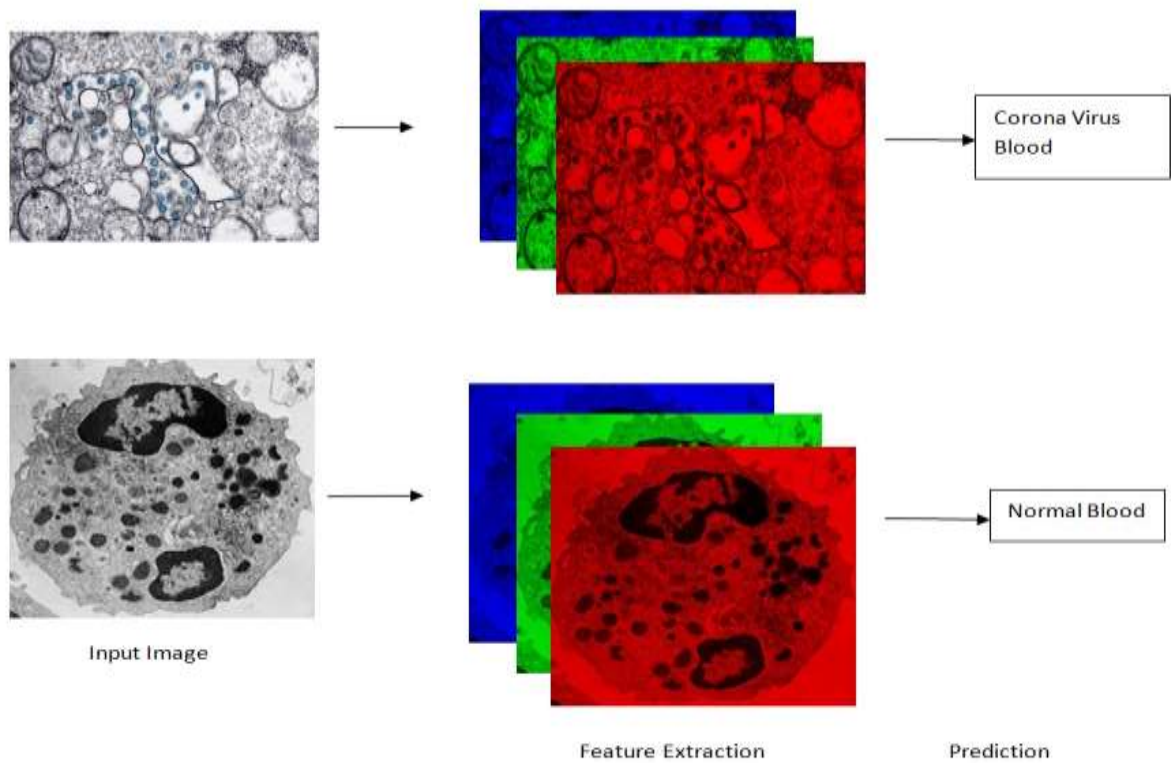


Fig. Diagram of Detection Corona or Normal Blood

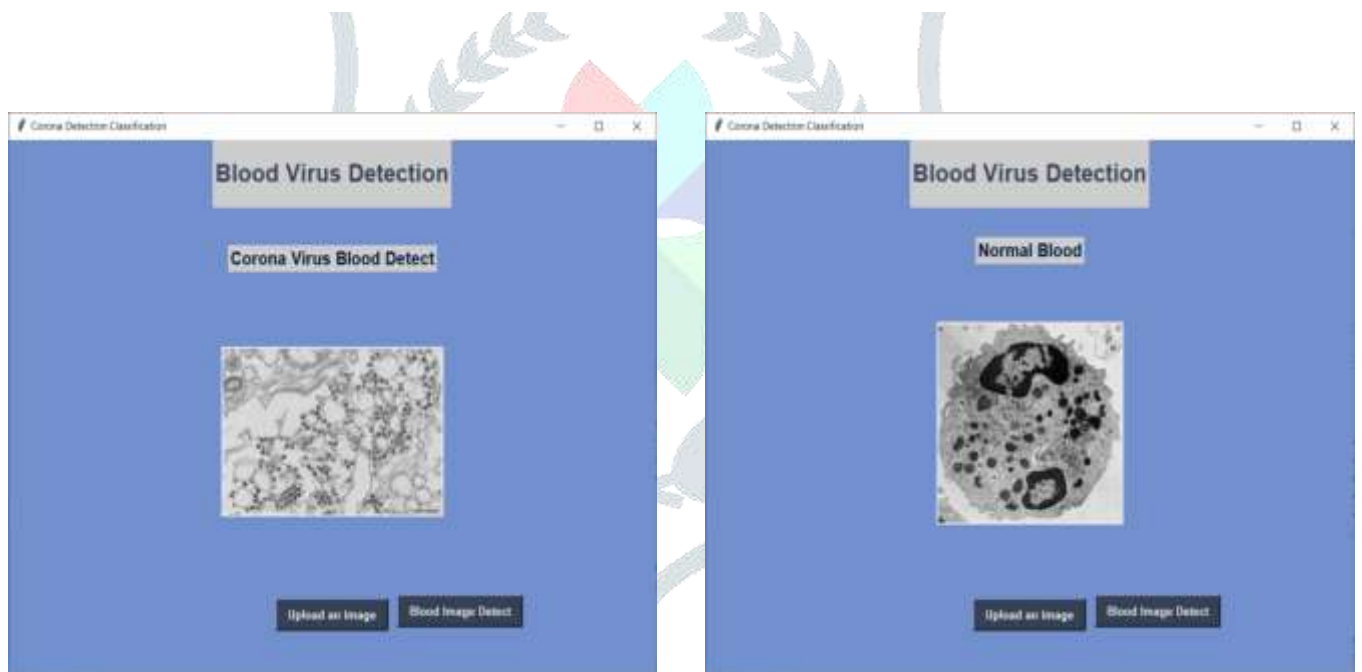


Fig. Virus Detection Tool

VII. APPLICATION

With the help of electron microscope or microscope, we can take a zoom photo of the blood sample and upload the photo to the application and identify the virus involved in the blood. With its use, many viruses and diseases can be detected.

CONCLUSION

Doctors may take a long time to detect the virus and prepare a manual report. Right now the epidemic of corona is going on all over the world. At this time it is very important to use the right technology and save the time. That is why this tool will have the ability to recognize different viruses quickly. Using this tool, the doctors will also be able to make their report very fast with accuracy and this application will be trustworthy for doctors as well as all other people.

REFERENCES

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