

Fruits and Vegetables Disease Detection using CNN

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Abstract: Fruit and vegetable diseases are typically brought on by pests, insects, and pathogens, and if they are not promptly handled, they significantly reduce yield. Due to several ailments, farmers are suffering losses. The proposed system provides the solution for these problems faced by farmers. These issues that farmers are facing have a remedy in the suggested system. Pre-processing is utilised in the initial phase. In the second phase, various cutting-edge features are retrieved from the segmented picture in order to remove the noisy and blurry parts, and finally, images are categorised into one of the classes by utilising a multi-class. As a test instance, we looked at fruit and vegetable diseases. According to the findings of our experiments, the suggested method can considerably support the accurate detection and automatic identification of vegetable and fruit diseases.

Keywords: Attributes, Classification, Convolution Neural Network, Prediction.

I. INTRODUCTION

60% of the people in India relies on agriculture for their livelihood. Climate conditions are always changing. India is the second most populous nation on earth, hence there is a great demand for food. The majority of fruit and vegetable categorization (good or bad) in India is done manually, which leads to mistakes in fruit and vegetable grading when exported. To overcome these kind of problems in market we are providing an interface to farmer so that he can segregate it and sell them on right timing so that there is no loss neither for customer nor for framer. If there is any disease present in fruits and vegetable, we are providing its name and a remedy so that farmer can take instant action to avoid the same. Fruit and vegetable diseases have a severe impact on global agricultural industry productivity and financial losses. This study proposes and experimentally validates an adaptable approach for the identification of fruit diseases and vegetable diseases. The following are the main steps of the suggested strategy based on convolution neural network; in the first step, a pre-processing technique is applied.

II. METHODOLOGY

A Convolutional Neural Network Architecture is suggested for the image-based disease detection of leaves and fruits. When compared to current models, our suggested design provides a better level of accuracy.

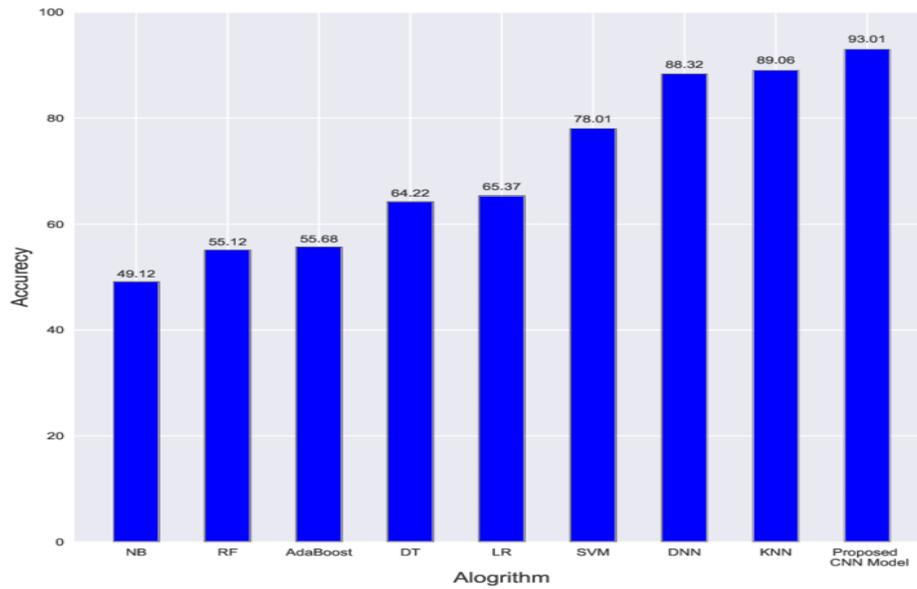


Figure 1 Comparison of others algorithm vs CNN

III. ARCHITECTURAL DIAGRAM

This are the steps which can be useful in taking the maximum advantage of Convolution Neural Network(CNN) algorithm by providing it right attributes and Clean data so that overall data generated will be most accurate .

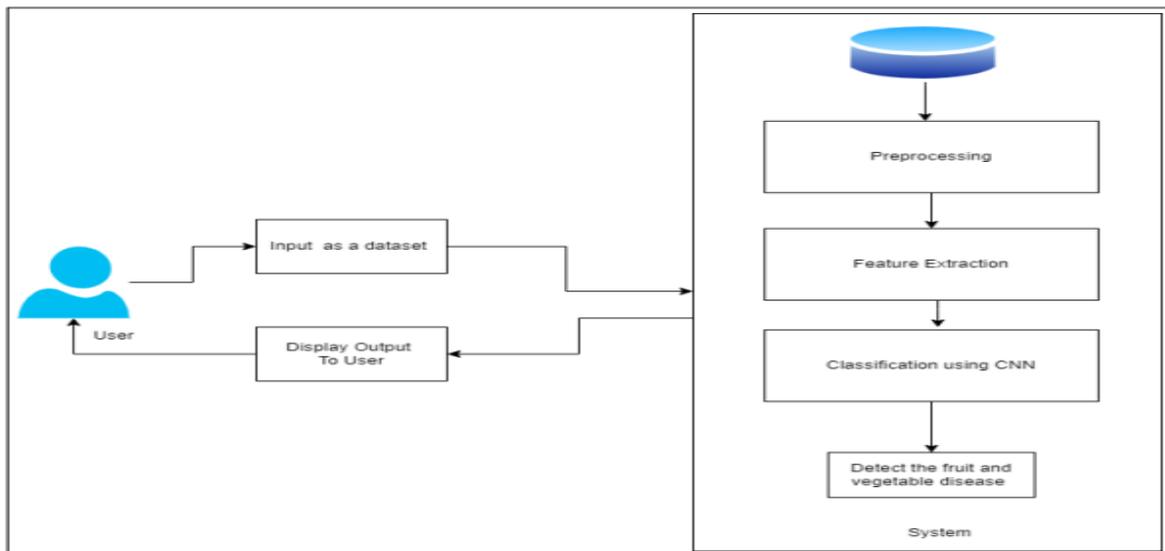


Figure 2 Architecture Design

In a data flow diagram, we demonstrate how data flows through our system using a base data flow diagram.

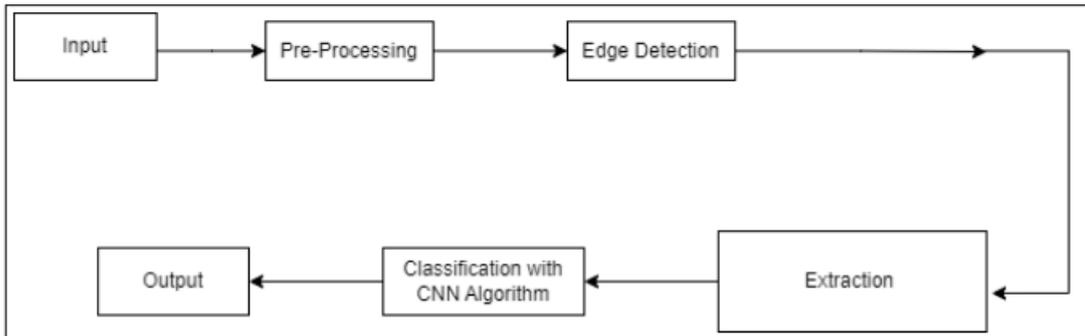


Figure 3 Data Flow Diagram

UML DIAGRAM: -

Following diagram shows the UML Diagram of this system.

1. Use case Diagram

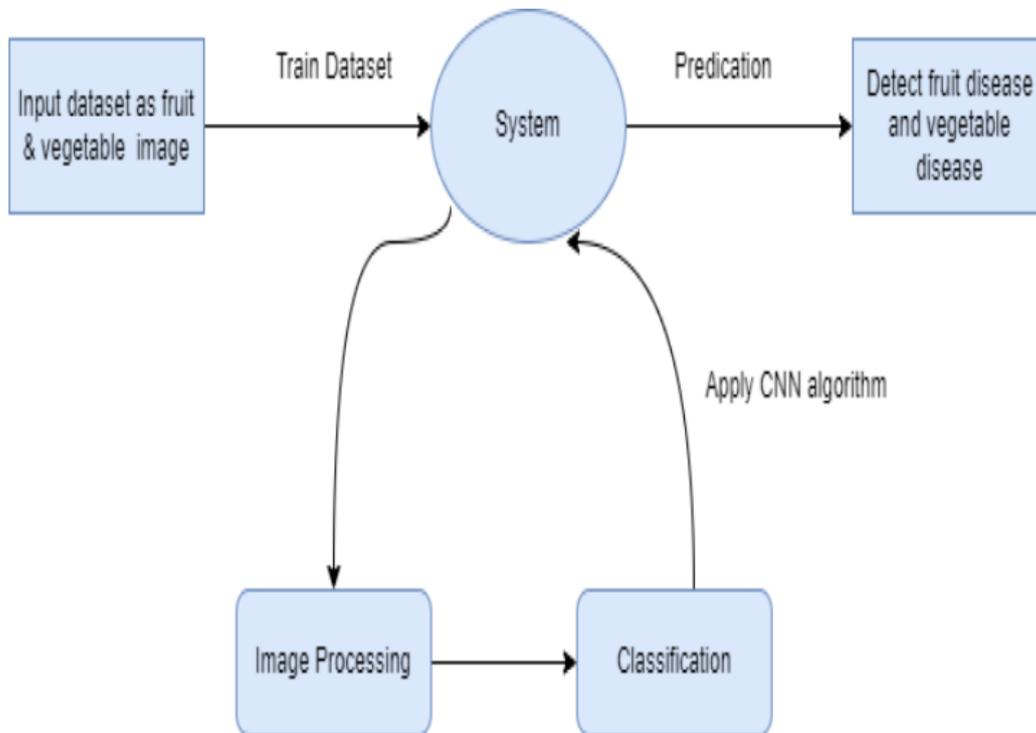


Figure 4 Use case Diagram

These Use case diagram showcase us how the whole process is going to look like.

2. Activity Diagram

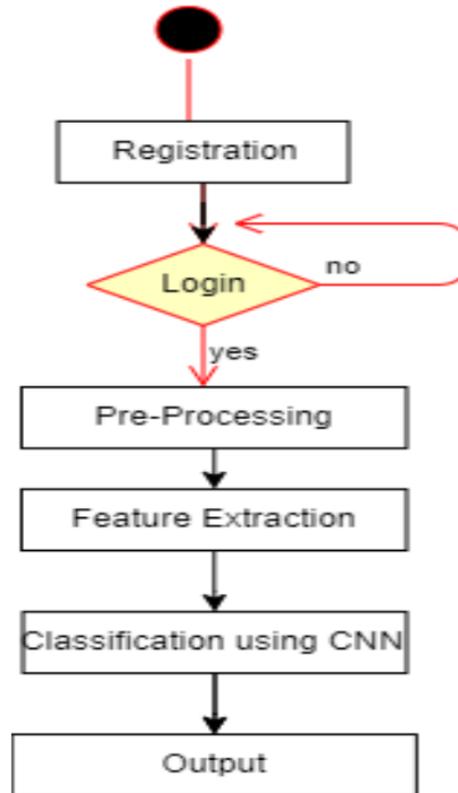


Figure 5 Activity Diagram

These Activity diagram show us what the entire process will entail.

3. Class Diagram

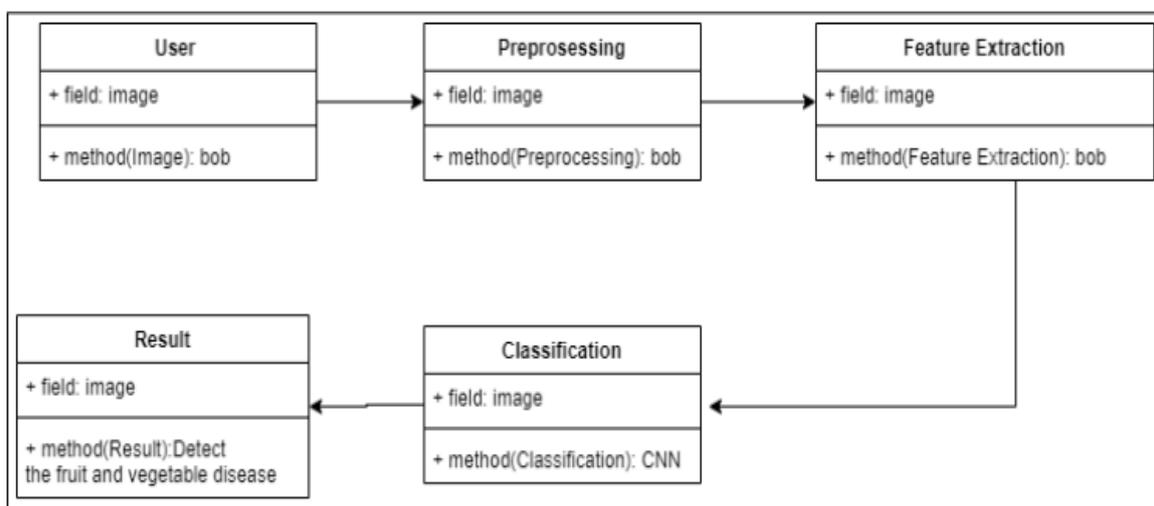


Figure 6 Class Diagram

These use case diagrams show us the details of what the actual system will encompass.

**IV. CONCLUSION**

A current research method for image processing and pattern recognition called CNN can successfully address the issues associated with the identification of diseases in fruits and vegetables. The quantity of training epochs, the size of the batch, and dropout had a higher impact on the corresponding outcomes. Max pooling outperforms typical pooling by a wide margin. The amount of training data is also increased by the data augmentation. The effectiveness of model training can be increased with the help of data augmentation. supports the creation of an intelligent fruit and vegetable disease model.

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