CROP PREDICTION AND PLANT LEAF DISEASE PREDICTION USING DEEP LEARNING

Kalpesh Shinde[1], Nishant Dhamale[2], Sudarshan Dangat[3], Prof. Anand Khatri[4]

[1-3]*Dept. of Computer Engineering, Jaihind College of Engineering, Pune, Maharashtra, India*
[4]*Professor, Dept. of Computer Engineering, Jaihind College of Engineering, Pune, Maharashtra, India*

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Abstract - As a rule, agribusiness is the foundation of India and furthermore assumes a significant part in the Indian economy by giving a specific level of a homegrown item to guarantee food security. Be that as it may, presently a-days, food creation and expectation is getting drained because of unnatural climatic changes, which will antagonistically influence the economy of ranchers by getting a helpless yield and furthermore assist the ranchers with staying less natural in anticipating the future harvests. This examination work helps the fledgling rancher in such a manner to direct them for planting the sensible yields by sending AI, one of the cutting edge innovations in crop forecast and illness expectation. CNN calculation advances in the manner to accomplish it. The seed information of the harvests is gathered here, with the proper boundaries like temperature, moistness, and dampness content, which assists the yields with accomplishing an effective development. Also as the product, a portable application for Android is being created. The clients are urged to enter boundaries like temperature and their area will be taken consequently in this application to begin the expectation interaction.

Key Words: Deep Learning, Crop Prediction, Neural Network, Classification,

1. INTRODUCTION

It is seen that sicknesses in the harvest have become so tricky that decrease the amount and nature of the yields in the agribusiness. Thus, the specialists need to identify these issues which may be costly. In a portion of the spots, the ranchers can't reach specialists and they need to travel significant distances to reach out to the specialists. This may be costly for the ranchers and furthermore, parcel of time will be burned-through. Utilizing AI, we can foresee the harvest and furthermore assume that there are any side effects of illness in the yields or not. A few AI calculations like CNN can be utilized. This venture centers around each idea that are associated with horticulture. It is essential to anticipate and screen the yields on the grounds that even a solitary infected harvest can be the justification for the event of illnesses in many yields. This issue is extremely destroying that can deter the ranchers to develop the harvests and in light of this, some of them have considered surrendering. Inexperienced pesticide usage can cause the development of long-term resistance to the pathogens, severely reducing the ability to fight back.

Timely and accurate diagnosis of plant diseases is one of the pillars of precision agriculture

2. MOTIVATION

Modern technologies have enabled human society produce enough food to feed more than 7 billion people. However, food security is still jeopardized due to a variety of factors such as climate change, pollinator decline, plant disease, and others. Crop plant disease not only pose a global threat to the food security, but they can also have disastrous consequences for the smallholder farmers whose livelihoods rely on healthy crops. Furthermost the majority of hungry people (50%) live in smallholder farming house-holds, making smaller holder farmers particularly vulnerable to pathogen-related disruptions in the food supply.

3. SYSTEM ARCHITECTURE
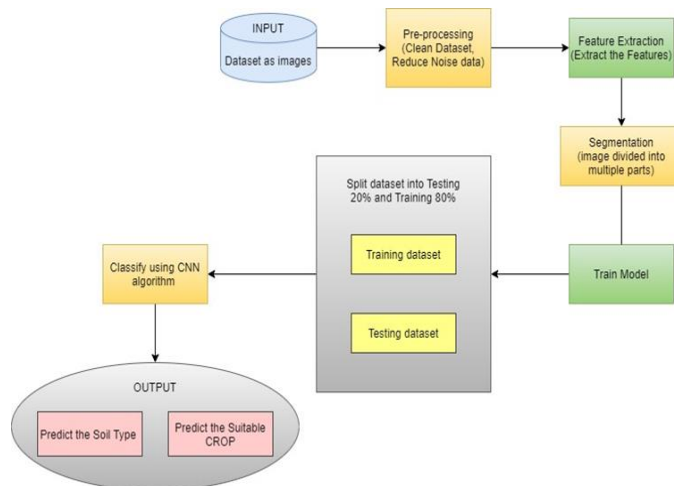
4. METHODOLOGY

The modules in plant disease detection are image collection, image pre-processing, image segmentation, Selection of classifier.

a. **Image collection**: Picture assortment is the progression where the pomegranate leaf picture is taken image as information. The Deep Neural Network is prepared on datasets of solid and unhealthy yield leaves. It fills the need by grouping pictures of leaves into unhealthy or solid classes dependent on their example of deformity. As the leaves have surface and visual similitudes, they are

credits for recognizing illness types. Subsequently, computational vision applied to profound learning gives an effective method for taking care of the issue.

b. **Image Pre-processing**: The aim of pre-processing is an improvement of the image data that suppresses unwanted distortions or enhances some image features important for further processing. The data is processed and passed on for further classification.

c. **Image Segmentation**: Picture segmentation is the method involved with partitioning an advanced picture into various portions. Partitioning is finished by k means grouping.

d. **Selection of Classifier**: In this stage to recognize and order the plant leaf illnesses, we are utilizing the CNN(Convolutional Neural Network).the histogram and accordingly on the size of the local district.

5. PROBLEM STATEMENT

Crop suggestion and also disease prediction is one of the challenging problems in precision agriculture and many models have been proposed and validated so far. This the problem requires the use of several datasets since crop yield depends on many different factors such as climate, weather, and soil, use of fertilizer, etc . to develop crop prediction and crop disease prediction system.

Convolutional Neural Networks specialized for application in images. CNN is mainly used in image analysis tasks like image recognition and Object detection & Segmentation.

There are four types of layers in Convolutional Neural Network.

1. **Convolutional Layer:** In an average neural organization each information neuron is associated with the following secret layer. In CNN, just a little area of the info layer neurons associate with the neuron stowed away layer.

2. **Pooling Layer:** The pooling layer is utilized to diminish the dimensionality of the component map. There will be numerous enactment and pooling layers inside the secret layer of the CNN.

3. **Flatten:** Straightening is changing over the information into a 1-layered exhibit for contributing it to the following layer. We straighten the result of the convolutional layers to make a solitary long component vector.

4. **Fully-Connected-layer:** Completely Connected Layers structure the last couple of layers in the organization. The contribution to the completely associated layer is the result from the last Pooling or Convolutional Layer, which is smoothed and afterward taken care of into the completely associated layer.
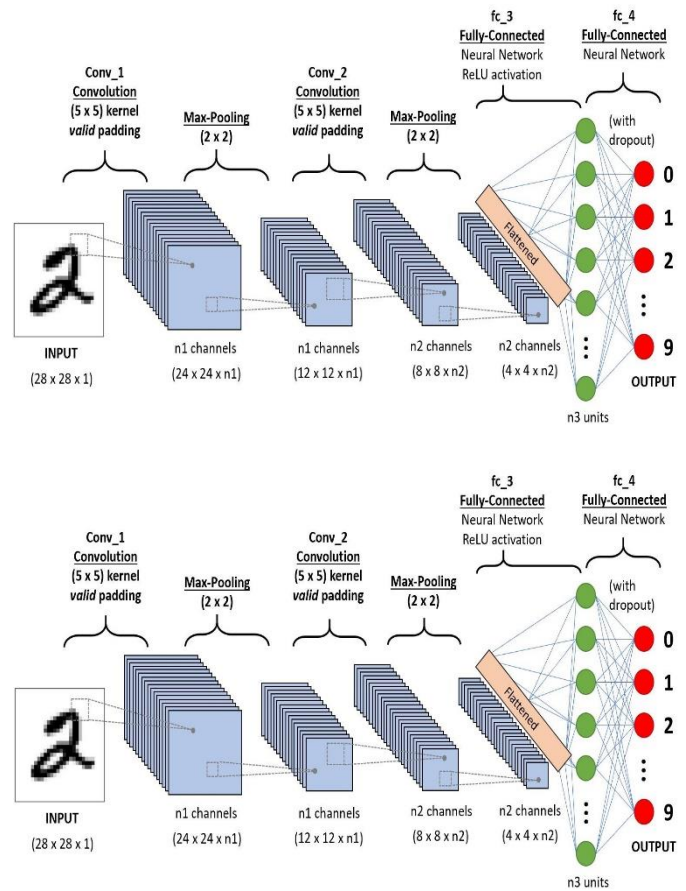
SDLC Models stands for Software Development

Life Cycle Models. In this article, we explore the most widely used SDLC methodologies such as Agil. Each software development life cycle model starts with the analysis complete black and comp There is no single SDLC model. They are divided into main groups, each with its features and weaknesses. let white.

1. Requirement Analysis - Prerequisite Analysis is the most significant and fundamental stage in SDLC. The senior individuals from the group perform it with inputs from every one of the partners and space specialists or SMEs in the business.

2. System Design - The following stage is going to cut down all the information on necessities, investigation, and plan of the product project. This stage is the result of the last two, similar to inputs from the client and necessity gathering

6. IMPLEMENTATION

In the period of SDLC, genuine advancement starts, and the writing computer program is constructed. The execution of configuration starts concerning composing code. Designers need to adhere to the coding rules portrayed by their board and programming apparatuses

like compilers, mediators, debuggers, and so forth are utilized to create and carry out the code.

7. FUTURE WORK

Concerning precipitation can portray whether or not additional water accessibility is required. This project work can be upgraded to a more elevated level by profiting entire India.

Crop sicknesses location utilizing image processing where clients can transfer images of ailing yield and get pesticides proposals. Execution of smart irrigation system to screen climate and soil conditions, plant water use, and so on naturally modify the watering plan.

8. CONCLUSION

A model is proposed for anticipating soil series and giving appropriate harvest yield ideas to that particular soil and identifying plant leaf sickness. The model has been tried by applying various types of deep calculations. CNN shows the most elevated precision in soil arrangement and recommends crops with less time. It gives us more precious when contrasted with the existing framework and gives more advantage to ranchers.

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