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To Detection of Leaf and Weeds Diseases using Image Processing Technology and a CNN Methods

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Abstract:- Agriculture is very important for human life. Now a days artificial foods are also prepared without a natural food .so people are suffering a lot .Now a days farming is not easy .To make it easier some advances are being made in agriculture one of which is DL approaches which help greatly in improving agriculture. By using CNN it helps to classify plants and identify their deficiencies.

Keywords: *Convolutional Neural Network, Natural food, Farming.*

I. INTRODUCTION

Agriculture is also a major cause of climate change. Due to climate change rain does not fall at the right time Due to which people suffer a lot and many types of diseases develop .Improper maintenance of the trees in the forest many beneficial trees are destroying. DL approaches helps in classifying vegetation identifying it's deficiency and maintaining its properly.

➢ *Existing System*

In our proposed system, some methods are used to diagnose diseases.

- *Image Acquisition:*

RGB color images are taken using a camera which are used for leaf analysis.

- *Image Segmentation:*

Instead of using the whole image, it can be divided into parts and can be used to easily detect diseases in important areas.

- *Image Preprocessing:*

It is used to remove noise and improve image quality.

- *Edge Detection:*

It is used to detect points on edges in an image.

➢ *Median Filter:*

Median filter is used to remove the noise from the signal that may come from the images. It is an important filter in filter to help remove noise and detecting points on edges.

- *How are the Leafs are Affected:*

✓ Root worn causes leaf shriveling.
✓ Attack of chapatti but turns the leaf red.
✓ Aphids cause leaf damage.

Fig 1 (a) Cotton Leaf

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Fig 1 (b) Brinjal Leaf

- *Leaf Diseases:*

Bacterial light is a diseases that can develop in large numbers on weeds and stems.

II. METHODOLOGY

Here we use a variety of technologies to detect and automatically correct plant diseases to improve agriculture. Recently LSTM has been used to classify the weeds. LSTM is divided into three sections.

CNN has three parts: Convolutional layer, max polling layer, fully connected layer.

➢ *Pooling Layer:*

Reduces the size of the film.

➢ *Convolutional Layer:*

It creates new images.

➢ *Fully Connected Layers:*

After concatenating all the layers the weights of each neuron or used for linear transformation to the input.

- Different regions in images can be identified using GLCM.
- Gabor filter is used for direct analysis.
- Sobel edge detector it helps to make strong changes in the image.
- This methods are reduces the error rate compared to the previous model.

Various methods have been invented to remove infected weeds one of which is robotics. Robotics can be used to spray pesticide and dig out infected plants. Affected can be removed with a laser weeds. There are several ways to remove infected weeds. Laser technology detects and removes infected weeds. computer vision used to determine which weeds are affected and un affected. LIDAR sensor used to weeding robot.

✓ *There are three Types of Automation Used:*

- Fixed automation
- programmable automation
- flexible automation

➢ *Types of Sensors:*

Sound sensors are used to detect light, Temperature sensor is used to detect fluctuation, Contact sensor is used to detect any obstacles, Distance sensor used to find the distance of the object to the robot relative.

➢ *Types of Robots:*

- Autonomous Mobile Robots
- Automated Guided Vehicles
- Articulated Robots
- Humanoids

Fig 2 Autonomous Mobile Robot

✓ *Three Main Parts of Robot:*

- Sensor is used to gather information
- Effectors is the important part of the robot
- Control system used to detect the robot's behavior

➢ *Experimentation:*

In earlier days humans would go there to find infected weeds and remove it .But now infected weeds can be automatically detected and removed immediately using robots .CNN is used to accurately classify the weeds. we get the idea that we can identify and eliminate affected weeds to increase agricultural productivity .Infected crops also affect non infected crops and thus reduce productivity .Many methods are used to correct these. Poisonous insects can attack humans while removing infected weeds and this can be prevented by using robotics.

III. CONCLUSION

Through machine learning and neural network, we need to increase the production capacity of crops. By using insecticides to accurately identify the affected crops and cure their diseases. Some crop diseases are not easily detected and some methods should be introduced to detect them quickly .while using robotics to remove infected crops

some errors occur and new methods should be introduced to correct the errors. we need to combine robotics with some enlightened ways to remove infected crops even at night using robotics.

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