

A Project Synopsis Report

on

Design and Implementation of Disease Prediction in Crops Using Deep Learning

Submitted to

Department of Computer Science and Engineering

BY

- 1. Sham Johari**
- 2. Prerna Dabhade**
- 3. Pallavi Tayde**
- 4. Megha Chopade**
- 5. Sanjay Junare**

Under Guidance of

Dr. P. M. Hasabnis

**Late Purushottam Hari (Ganesh) Patil Shikshan Sanstha's
Mauli Group of Institutions',
College of Engineering & Technology, Shegaon.**



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Project Title:
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INTRODUCTION

Crop diseases pose a significant threat to global food security, affecting crop yields and quality. Timely and accurate detection of these diseases is crucial for effective disease management and ensuring sustainable agricultural practices. Traditional methods of disease identification often rely on manual observation by trained experts, which can be time-consuming and may not scale well to large agricultural areas. In recent years, the integration of deep learning techniques in agriculture has shown promising results in automating the process of crop disease prediction. Deep learning, a subset of machine learning, involves training artificial neural networks to learn patterns and representations from large amounts of data. In the context of crop disease prediction, deep learning models can be trained on datasets containing images of healthy and diseased crops to automatically identify and classify diseases. This approach offers several advantages, including increased accuracy, efficiency, and scalability.

OBJECTIVE

The objective of crop disease prediction using deep learning is to develop a system that can accurately and efficiently identify and predict diseases affecting crops. This involves leveraging deep learning techniques, such as convolutional neural networks (CNNs) to analyze and learn patterns from large datasets of images or other relevant data sources. The goal is to enhance the speed and accuracy of crop disease diagnosis, enabling early detection and timely intervention to prevent or mitigate potential yield losses. This approach not only streamlines the monitoring process but also empowers farmers with a valuable tool for precision agriculture, aiding in sustainable crop management practices and contributing to global crop security.

HARDWARE REQUIREMENTS:

1. High-performance Computing System

- Ram 12 GB
- Storage 512 GB SSD
- GPU 8 GB
- Strong Internet Connection

SOFTWARE REQUIREMENTS:

1. Operating System

- Windows 10/11

2. Deep Learning Frameworks:

- TensorFlow or PyTorch

3. Development Environment:

- Python
- Flask or Django

4. Integrated Development Environment (IDE):

- Jupyter Notebooks or Google Collaboratory
- PyCharm

FUTURE SCOPE

The future scope of crop disease prediction using deep learning holds tremendous potential in revolutionizing agriculture by enhancing early detection and mitigation strategies. As technology continues to advance, deep learning models can evolve to achieve greater accuracy and efficiency in identifying crop diseases. The integration of cutting-edge technologies such as advanced sensors, drones, and satellite imagery can provide a wealth of data to train and improve these models. Additionally, the development of real-time monitoring systems can enable farmers to receive instant alerts about potential disease outbreaks, allowing for timely intervention.

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Dr. P. M. Hasabnis