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Leaf Detection System

Ms. Nakshatra Digambar Chaudhari[1], Mr. Gaurav Hiraman Sonawane[2],

Ms. Roshani Sukdev Nagare[3], Ms N.S Gite[4]

Diploma- Information Technology, K.K. Wagh Polytechnic, Nashik, Maharashtra, India[1-3]

Project Guide- Information Technology, K.K Wagh Polytechnic, Nashik, Maharashtra, India[4]

Abstract: The Indian economy relies heavily on agricultural productivity. Hence, both the environment and people greatly depend on the contribution of food and cash crops. Many diseases claim the lives of crops every year. Many plants perish as a result of poor diagnosis of these diseases and lack of awareness of the symptoms and cure. The overview of plant disease detection using various algorithms is provided by this work. Here, a CNN-based technique for identifying plant diseases is suggested. On sample photos, simulation research and analysis are carried out in terms of time complexity and the size of the infected area. It is carried out using image processing methods Cases have been fed to the model, out of which some cases are of diseased plant leaves Test accuracy is obtained as 89.80%.

Keywords: CNN Algorithm, Open CV, Keras, TensorFlow, Image Segmentation

I. INTRODUCTION

In today's world, the agricultural land mass serves as more than just a source of food. The Indian economy is heavily reliant on agricultural output. As a result, it is crucial to identify plant diseases in the agricultural area. Use of an automatic disease detection technology is advantageous for spotting a plant disease in its very early stages. For instance, the United States has pine trees that are susceptible to a dangerous illness called small leaf disease. The afflicted tree grows slowly and perishes within six years. Alabama and Georgia are affected, as are other Southern US states. Early discovery in these situations might have been beneficial. Experts can identify and detect plant problems with nothing more than their own naked eyes nowadays, according to the current approach for disease detection in plants. This requires a sizable team of experts and ongoing plant monitoring, both of which are quite expensive when dealing with huge farms. Nevertheless, in some nations, farmers lack access to sufficient resources and even know they can consult specialists. Because of this, consulting specialists is expensive and time-consuming. The suggested method works well in these circumstances for keeping an eye on vast fields of crops.

II. LITERATURE REVIEW

Research Paper 1: International Research Journal of Engineering and Technology (IRJET)

Author Name: P.Abima , R.Aslin Sushmitha , P.Sivagami, Dr.A.Radhakrishnan.

Description: In today's advanced hi-tech world, the need for independent living is recognized in the case of visually impaired people who are facing the main problem of social restrictiveness. They suffer in strange surroundings without any manual aid. Visual information is the basis for most tasks, so visually impaired people are at a disadvantage because necessary information about the surrounding environment is not available. With the recent advances in inclusive technology, it is possible to extend the support given to people with visual impairment. This project is proposed to help those people who are blind or visually impaired using Artificial Intelligence. The idea is implemented through a software that focuses on voice assistants. The Software is capable of using voice commands to perform the task, do text analysis to recognize the text in the hard copy document. It will be an efficient way in which blind people can also interact with the environment with the help of technology and utilize the facilities of the technology. In this paper they discussed the challenges faced by visually impaired people who are facing the main problem of social restrictiveness. The need for independent living is recognized in this case. The software can recognise the content in a hard copy document using text analysis and voice instructions to complete tasks. It will be a productive approach for blind individuals to use technology to engage with their surroundings and take advantage of its features. The difficulties faced by visually challenged people, who mostly struggle with social exclusion, were discussed in this research. In this scenario, it is acknowledged that independent life is necessary.

Research Paper 2: Institute of Electrical and Electronics Engineers (IEEE)

Author Name: Shubham Melvin Felix, Sumer Kumar, A. Veeramuthu.

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Description: Vision impairment is a significant barrier for persons who are blind or visually impaired. A person who is blind will never experience the same emotions as someone who can see. Throughout the entire planet, billions of people struggle with this visibility issue. The goal is to use artificial intelligence to get rid of this black dot. Daily tasks like reading a book and getting around the city might be difficult for blind people. Although there are numerous instruments at their disposal to help them overcome their obstacles, they are insufficient. The most important quality a person may have is vision, which is crucial to their well-being whether they can see or not. Those with visual impairments require assistance even when performing simple daily tasks.

III. SYSTEM ARCHITECTURE

A flowchart is a type of diagram that represents a workflow or process. A flowchart can also be defined as a diagrammatic representation of an algorithm, a step-by-step approach to solving a task.

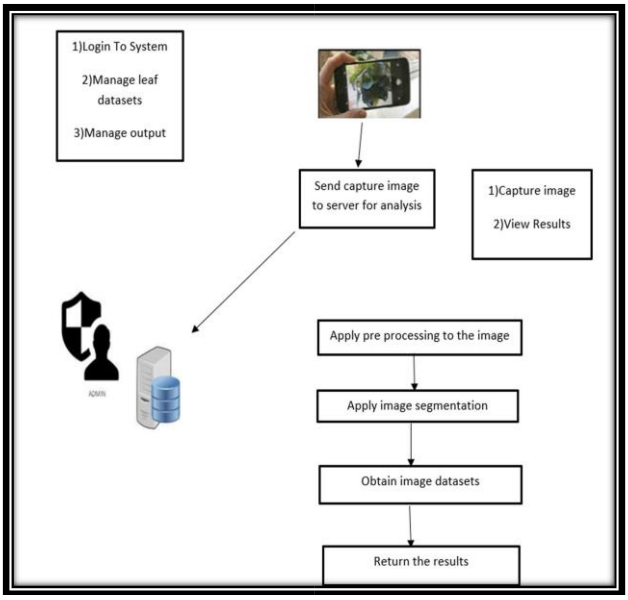

Fig 4.1: Flow Chart of Application

An architectural diagram is a diagram of a system that is used to abstract the overall outline of the software and the relationships, constraints, and boundaries between components.

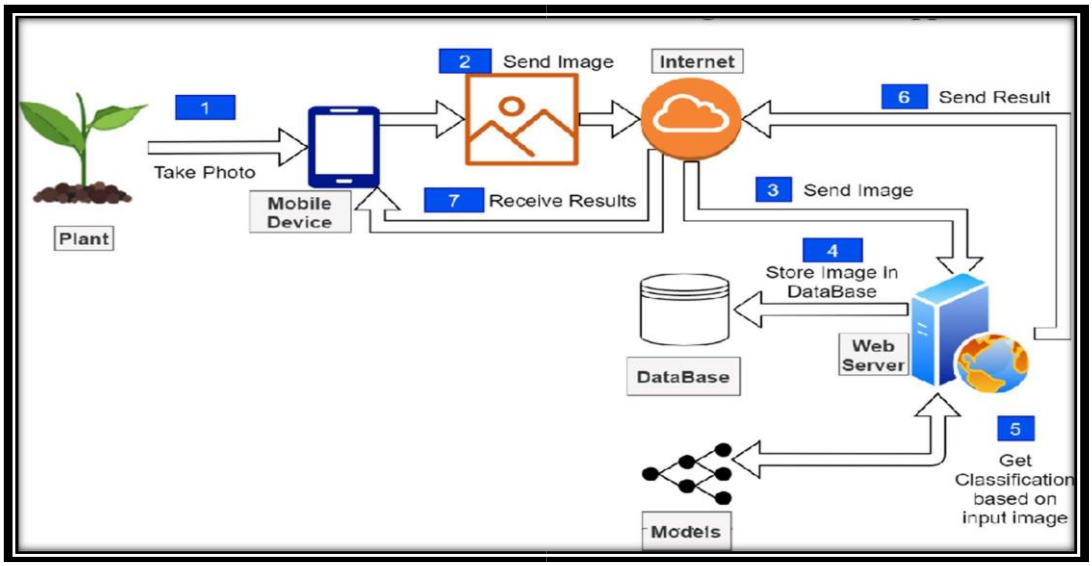

Fig 4.2: System Architecture

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IV. METHODOLOGY

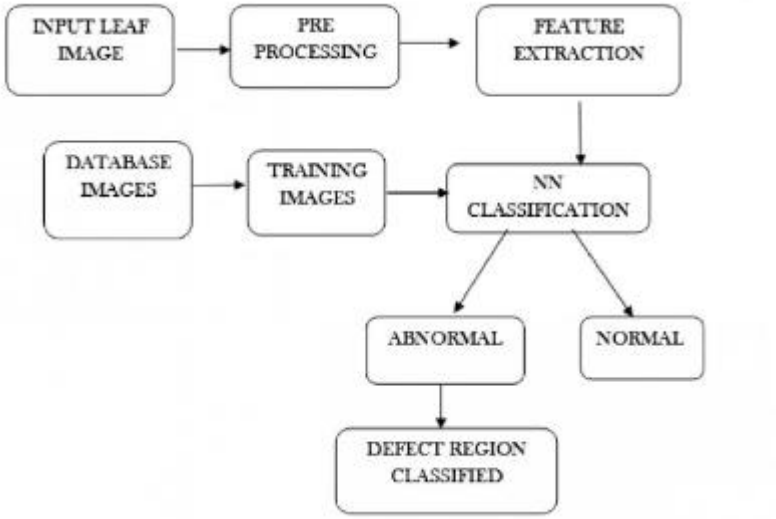
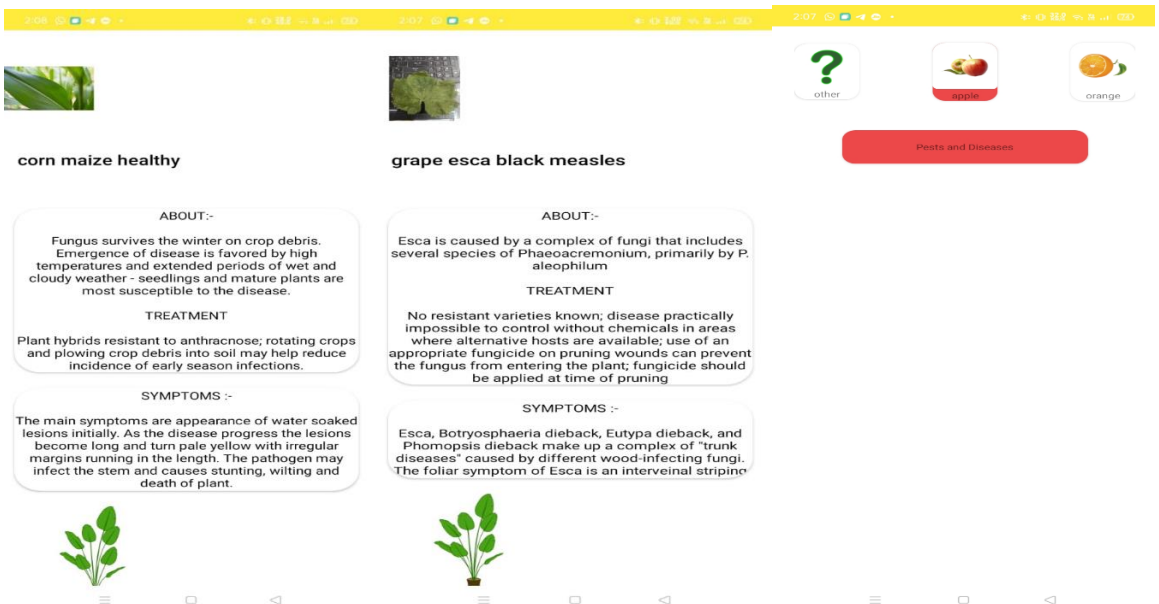


Fig.4.3 Working of Leaf Detection System.

- A leaf detecting system requires a number of stages and technologies to build. The following is a general starting point:
- Choose a programming language. Python is well-liked for determining the type of leaf.
- Choose a keras library: keras is a Python-based open-source neural network library. Its user-friendliness, modularity, and extensibility are its main design goals as it aims to facilitate quick experimentation with deep neural networks.
- Choose an Anaconda tool to create and deploy neural network-based deep learning models using the Anaconda platform
- Choose a tool. Convolutional neural network models may be built and trained using anaconda's simple integration with tensorflow and keras tools.
- Android Studio: In the android project view, Android Studio shows our project files.
- It's crucial to keep in mind that developing a leaf detection system is a challenging endeavour that necessitates solid programming and image recognition skills. Starting with a simpler project and progressing to a more complicated leaf detect over time might be beneficial.

Implementation:



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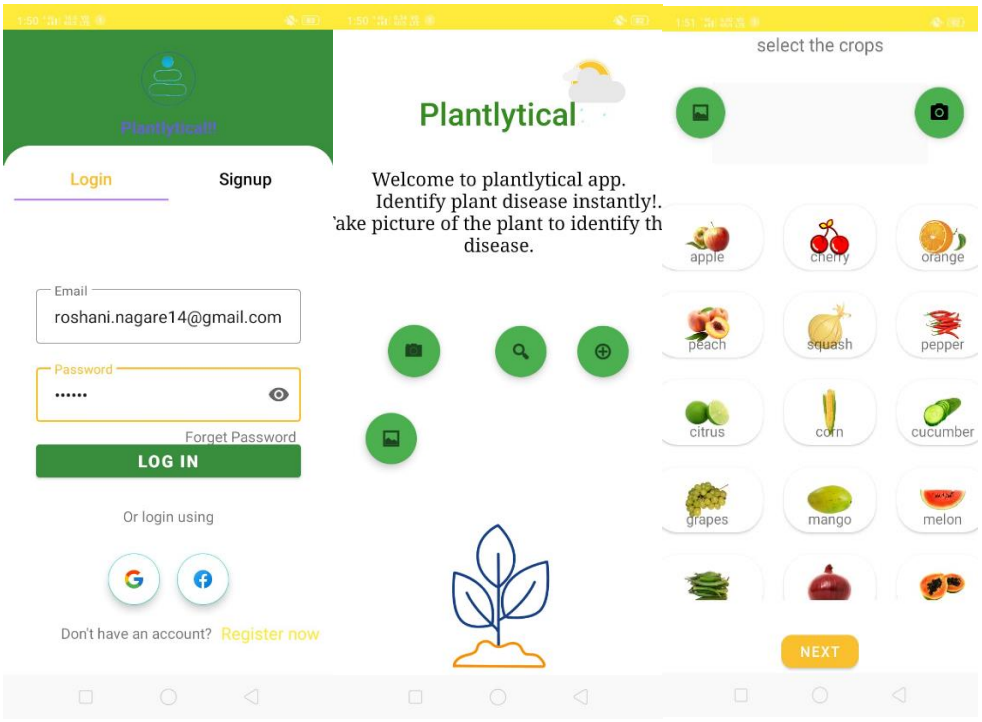

Fig.5 Output Snapshot

A leaf detecting app that we created is now available. The app has a sign-up page and a login option. It has several ways for detection; you can find the leaf by scanning it or uploading an image. Once you've done that, it will display all of the information about the leaf's characteristics, including any diseases it may have and the weeds that could stunt its growth. Moreover, it has a search bar, which displays information about any leaf that is typed in. Also, it contains a function called crops that shows crops pests and diseases, allowing you to choose the crop that best suits your needs.

V. RESULTS & DISCUSSION

As an python language model, I don't have the capability to provide empirical results of a leaf detection system. However, I can discuss some possible results and implications of building a image detection system based on the methodology described. If implemented correctly, a leaf detection system can provide a convenient and hands-free way for users to detect the leaf and its disease. With the ability to recognize natural language, a leaf detection system can help users perform tasks more efficiently by responding to commands and providing information.Overall, building a leaf detection system can be a challenging but rewarding project. The technology is constantly evolving, and there are many opportunities to innovate and improve on existing solutions. By addressing the challenges and ensuring privacy and security, a leaf detection system can be a useful tool for improving user productivity and convenience.

VI. CONCLUSION

Nature and flora are absolutely necessary for human life. So, there should be unique techniques to protect plants from illnesses. The country's economy is also impacted by the drop in crop production. A suitable research methodology that can automatically identify plant leaf disease is required. This system's primary goal is to increase the effectiveness of automatic plant disease detection. According to experimental findings, the suggested method has a 89.2% accuracy rate for detecting and classifying plant diseases. In the future, we will expand our database to identify more plant diseases and use a lot of data to train our classification algorithms.

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REFERENCES

[1] https://www.sciencedirect.com/science/article/pii/S2214317316300154
[2] https://ieeexplore.ieee.org/document/7164858
[3] https://ieeexplore.ieee.org/document/8379584
[4] https://www.researchgate.net/publication/337563261
[5] https://www.ijert.org/detection-and-identification-of-plant-leaf-diseases-based-on-python
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