Report on Crop Disease Detection Software

Introduction:

The Crop Disease Detection Software is designed to help farmers and agricultural experts identify diseases in crops using machine learning models. The software allows users to capture or upload images of crops through a mobile app, which then sends the images to a backend system for disease detection. The machine learning model processes the image and returns the detection result, indicating whether the crop is healthy or diseased.

Features:

1. Image Upload:

Users can upload or capture images of crops directly from their mobile devices. The app allows for easy image capture through the device’s camera or by selecting an image from the gallery.

1. Disease Detection:

The app integrates with a machine learning model that processes the uploaded images and detects if the crop shows signs of any known disease.

1. Result Storage:

The system stores user information and the detection results in a database for future reference and analysis. Each user’s detection results are stored with timestamps and image references.

1. Display Results:

Once the detection process is completed, users can view the results on their device. The result shows whether the crop is healthy or what disease has been detected if any.

System Design:

Mobile Application:

The mobile app is built using React Native, making it accessible to both Android and iOS users. The app features user-friendly interfaces for capturing images and viewing disease detection results.

State management in the app is handled using hooks such as useState to manage user inputs and results. The app communicates with the backend via API calls.

Machine Learning Backend:

The backend houses the Machine Learning model used for disease detection. This model is trained on a dataset of various crop diseases and can predict the disease based on the uploaded image.

The backend server processes the image sent from the mobile app and passes it through the machine learning model for prediction.

Database:

The backend system connects to a database that stores user information, uploaded images, and the corresponding detection results. This allows for easy retrieval of results and future analysis.

Diagrams Overview:

1. Sequence Diagram:

Details the interaction between the user, the app, the backend server, and the machine learning model during the disease detection process.

1. Use Case Diagram:

Highlights the functionalities available to the user, such as capturing/uploading images and viewing results, as well as the system’s disease detection and result storage processes.

1. Class Diagram:

Outlines the structure of the app and backend system, with key components such as the User, App, Server, ML Model, and Database. It details the attributes and methods of each class and their interactions.

Conclusion Remarks

The Crop Disease Detection Software provides an efficient and accessible way for users to detect diseases in crops through a mobile application. The system integrates cutting-edge machine learning technology to analyze images and predict diseases, making it a valuable tool for farmers and agricultural researchers. With a streamlined design and user-friendly interface, the app ensures quick and accurate disease detection, contributing to improved crop management and food security.

Summary

The Crop Disease Detection Software is designed to be a comprehensive solution for identifying crop diseases using machine learning models. The system is structured to handle image uploads, process them with a trained model, and return meaningful results to the user. The provided diagrams and report give a clear view of how the system operates and its design architecture.