* External Interface Requirements

External Interface Requirements

3. **User Interfaces**

* **Requirement:** The application must be accessible on Android and iOS platforms.
* **Context:** With the widespread adoption of smartphones, mobile applications have become essential for user engagement. Users prefer mobile solutions for tasks like monitoring plant health, and the requirement for internet connectivity allows users to access real-time information, which is crucial for timely disease diagnosis and intervention.
* This requirement enhances accessibility and usability, allowing farmers and plant enthusiasts to easily diagnose leaf diseases from anywhere. By making the application available on both Android and iOS platforms, the system can reach a broader audience and provide a more convenient user experience.

3.3 Software Interfaces

* Requirement: The project is based on Convolutional Neural Networks (CNN), requiring a dataset for training.
* Historical Context: The use of machine learning, particularly CNNs, has revolutionized image processing tasks, including plant disease detection. Historically, image analysis was manual and labor-intensive, but with deep learning techniques, automated systems can now learn to identify patterns and features in images effectively.
* Significance: This requirement ensures that the system is built on modern AI technologies, enabling high accuracy and efficiency in disease detection.

3.4 Communications Interfaces

* Requirement: A reliable internet connection is essential for real-time data updates.
* Historical Context: As the internet became more ubiquitous, applications began to leverage cloud computing and real-time data processing. This trend allows applications to stay updated with the latest information, enhancing their functionality and reliability.
* Significance: This requirement facilitates timely updates and access to the latest disease databases, ensuring users receive the most accurate and relevant information for their plant health management.

The External Interface Requirements section is crucial in defining how the Smart Plant Leaf Disease Detection System will operate within its environment. By focusing on user accessibility through mobile platforms, leveraging modern hardware capabilities, utilizing advanced software technologies, and ensuring reliable communication, these requirements help create an effective and user-friendly system that meets the needs of its users. The historical context highlights the evolution of technology in this domain, underscoring the significance of these requirements in the context of current trends and user expectations.

**System Features**

**4.1 System Feature 1: Leaf Disease Detection**

**4.1.1 Description and Priority**

* Leaf Disease Detection : This is the primary feature of the system, aimed at identifying diseases in plant leaves based on uploaded images.
* **Priority**: This feature is classified as high priority since it is essential for the application's functionality and the users' needs.

**4.1.2 Stimulus/Response Sequences**

* **Quick Response**: The system should respond rapidly after a user captures and uploads an image of a leaf, providing timely feedback.
* **Offline Functionality**: The system should be capable of utilizing a previously fetched dataset for analysis when the device is not connected to the internet, ensuring that users can still receive diagnoses without real-time connectivity.

**4.1.3 Functional Requirements**

* **Signup Form**: A feature that allows new users to create an account, enabling personalized access to the system.
* **Login Form**: A secure login mechanism for existing users to access their accounts and previous analyses.
* **Upload Image**: Users can upload images of plant leaves for disease detection, a core function of the application.
* **Report Page**: This page displays detailed results of the disease analysis, including visualizations and information about the detected disease.
* **Settings Page**: A section for users to adjust system settings, such as notification preferences and data update options.

**4.1.4 Performance Requirements**

* **Usability**: The software should be intuitive and easy to use, requiring minimal effort from users to navigate and operate the interface effectively.
* **Maintainability**: The system should be designed so that even individuals without IT expertise can manage and maintain it easily.
* **Response Time**: The application should provide results to users promptly, ensuring a satisfactory user experience and efficient disease diagnosis.