

SOFTWARE REQUIREMENTS SPECIFICATION (SRS)

AGRO VISION - SMART FARMING ADVISORY PLATFORM

Introduction

Agro Vision is a smart farming advisory platform designed to support farmers in improving crop productivity through data-driven insights. The system integrates artificial intelligence, real-time weather information, and modern web technologies to help farmers detect plant diseases, monitor environmental conditions, and receive timely alerts. This Software Requirements Specification (SRS) document provides a clear and structured description of the system's requirements, features, and constraints.

Purpose of the System

The purpose of Agro Vision is to provide an easy-to-use digital platform that assists farmers in agricultural decision-making. The system aims to reduce crop losses caused by plant diseases and unpredictable weather conditions while improving overall farm management. This document serves as a reference for developers, faculty evaluators, and stakeholders to understand the intended functionality and limitations of the system.

Scope

Agro Vision is a web-based application that allows farmers to upload crop images for disease detection, view real-time weather forecasts, and access personalized dashboards. The platform also includes an administrative dashboard that enables experts or authorities to monitor multiple farmers, observe disease trends, and analyze system usage. The system is designed to be scalable, secure, and suitable for users with limited technical expertise.

Overall Description

The system follows a client-server architecture. The frontend is developed using Next.js to provide a responsive and intuitive user interface. The backend is implemented using Flask, which handles authentication, business logic, and communication with the

database. External APIs are integrated for plant disease detection and weather forecasting. All data storage and access are managed securely through the backend.

User Classes

Farmers are the primary users of the system. They interact with Agro Vision to upload crop images, view disease analysis results, receive weather alerts, and access historical reports related to their crops. Administrators are authorized users responsible for monitoring farmer activity, analyzing aggregated data, and overseeing system operations through a centralized dashboard.

Functional Requirements

The system shall provide secure user authentication with role-based access control. Farmers shall be able to upload crop images, which are processed using an AI-based disease detection model. The system shall display detected disease information along with confidence scores in a user-friendly manner. Weather data shall be retrieved from an external weather API and presented clearly on the dashboard. Personalized dashboards shall be available for farmers, while administrators shall have access to consolidated views of farmer data, reports, and trends. The system shall also support email or SMS notifications for critical weather conditions and disease alerts.

External Interface Requirements

The user interface shall be accessible through standard web browsers and designed to be simple and responsive. The system shall interact with external services, such as AI models and weather providers, using RESTful APIs over secure HTTPS connections.

Non-Functional Requirements

The system shall provide acceptable performance with timely responses to user requests. Security shall be ensured through controlled access, authentication mechanisms, and secure communication channels. The platform shall be usable by non-technical users and designed with clarity and simplicity in mind. The system shall be scalable to support multiple concurrent users without performance degradation.

Development Methodology

Agro Vision is developed using an Agile methodology. The system is implemented in iterative development cycles, allowing continuous feedback, incremental feature delivery, and flexibility in adapting to changing requirements.

Conclusion

Agro Vision aims to deliver a practical and reliable solution for modern agriculture by combining artificial intelligence, weather intelligence, and user-centric design. This SRS document outlines the essential requirements and design considerations necessary for the successful implementation and evaluation of the system.