**Problem Statement ID : 1401**

**Problem Statement Title : App-Based Solution to identify and solve disease in plants/crops**

Description

Farmers can upload the photographs of disease affected plants/crops and solutions may be provided by experts/scientists linked to the app.

Organization Ministry of Micro, Small and Medium Enterprises

Category Software

Domain Bucket Agriculture, FoodTech & Rural Development

Youtube Link

Dataset Link NA

Creating an app-based solution to identify and solve diseases in plants and crops involves several steps, including image processing, data management, and user interfaces. Here's an overview of the steps, hardware and software requirements, and potential data sources for this project:

Steps/Algorithms:

1. User Registration and Interface:

- Develop a user-friendly mobile application with registration and login features for farmers.

- Create an intuitive interface for users to upload photographs of disease-affected plants/crops.

2. Image Capture and Preprocessing:

- Implement image capture functionality within the app.

- Preprocess uploaded images to enhance image quality and remove noise.

3. Disease Identification:

- Use image processing and machine learning algorithms to analyze uploaded images.

- Train a machine learning model (e.g., convolutional neural network) on a dataset of plant disease images to identify diseases accurately.

4. Expert Consultation:

- Establish a connection to a network of experts and scientists who can provide solutions.

- Allow experts to review and analyze uploaded images and disease-related information.

5. Disease Diagnosis:

- Utilize the machine learning model to diagnose the disease based on image analysis.

- Present the diagnosis to the expert for validation.

6. Solution Generation:

- Once the disease is diagnosed, generate potential solutions or recommendations for treatment.

- Recommendations may include suggested pesticides, cultural practices, or preventive measures.

7. User Feedback:

- Allow users to provide feedback on the accuracy and effectiveness of the solutions provided.

- Use feedback to improve the accuracy of future diagnoses and recommendations.

8. Data Management:

- Store user profiles, uploaded images, and diagnostic results securely.

- Implement a database to manage user data and expert recommendations.

Hardware and Software:

- Hardware:

- Mobile devices for testing and deployment.

- Server infrastructure for hosting the app and managing user data.

- Software:

- Mobile app development platform (e.g., Android Studio for Android apps, Xcode for iOS apps).

- Programming languages (e.g., Java, Kotlin, Swift).

- Image processing libraries and tools for image enhancement.

- Machine learning frameworks (e.g., TensorFlow, PyTorch) for disease identification.

- Database management systems (e.g., PostgreSQL, MySQL) for storing user data.

- Communication tools for connecting experts and users.

Data Sources:

- User-Provided Data: Farmers provide images of disease-affected plants/crops, location information, and any additional details.

- Expert Knowledge: Experts and scientists contribute their knowledge and recommendations for disease diagnosis and treatment.

- Disease Image Datasets: Use publicly available datasets of disease-affected plant images to train the machine learning model for disease identification.

Important Considerations:

- Ensure data privacy and security, especially when handling user-provided images and information.

- Collaborate with agricultural experts to validate the accuracy of disease identification and recommendations.

- Regularly update the machine learning model with new disease images to improve accuracy.

- Design an intuitive user interface that accommodates users with varying levels of technical expertise.

- Provide a feedback mechanism for continuous improvement of the app's performance.

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