Rai University
EVOLVING THINKING MINDS
NAAC ACCREDITED

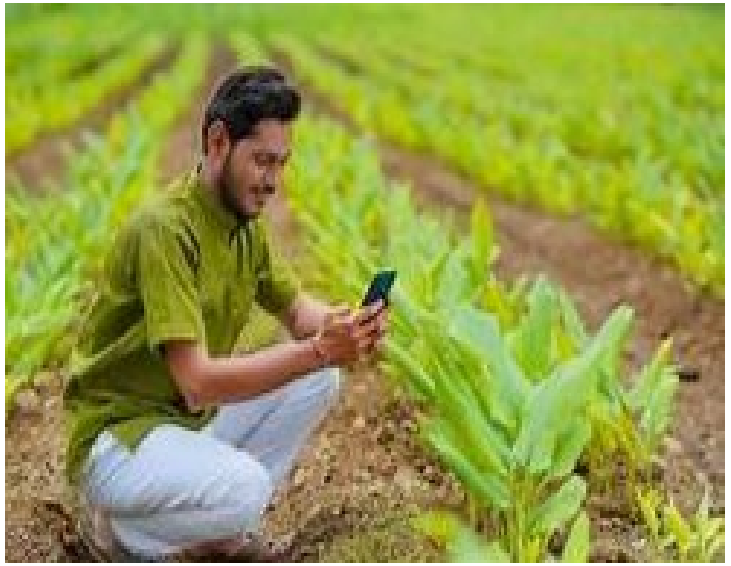
TechHack 2025

- **Problem Statement ID – RUTH007**
- **Problem Statement Title- Crop Disease Identifier**
- **Theme- agriculture, computer vision, machine learning, rural tech, mobile app**

Crop Disease Identifier

❖Proposed Solution – Mobile App for Plant Disease Detection

- A mobile application that allows farmers to capture or upload a photo of plant leaves to detect crop diseases.
- Uses a machine learning model to analyze the image and provide disease name, description, and simple treatment steps.
- Unique farmer-friendly features: Hindi + English support, offline scan history, easy-to-use interface with large icons and simple instructions.



TECHNICAL APPROACH

- **Technologies Used**

  Frontend: React Native

  Backend: Node.js with Express, python AI Model

  Database: Supabase

- **Methodology & Process**
  - Capture leaf image through mobile app
  - Preprocessing of image (resize, noise removal)
  - Predict disease type & suggest solution
  - Display results in user-friendly dashboard
  - Store history for farmers for future reference

FEASIBILITY AND VIABILITY

- **Feasibility Analysis:**
  - Mobile app development is achievable with React Native.
  - Supabase provides secure and scalable database & authentication.
  - Modern frameworks (React Native) ensure scalability and fast development

- **Potential Challenges & Risks:**
  - Dependence on external APIs for accurate and timely data.
  - Internet connectivity issues in remote areas.
  - Ensuring a smooth and user-friendly interface for farmers

- **Strategies to Overcome Challenges:**
  - Use fallback mechanisms if APIs fail (cache last known data).
  - Build lightweight UI that works even on low bandwidth.
  - Provide multi-language support and intuitive navigation for easy adoption.

IMPACT AND BENEFITS

- **Potential impact on the target audience:**

  This solution can directly help farmers by giving the better access to information and resources. It will improve decision-making, reduce dependency on middlemen, and increase productivity

- **Benefits of the solution:**

  Socially, it empowers rural communities by spreading awareness. Economically, it can increase farmers' income through better market prices and reduced costs. Environmentally, sustainable practices can be encouraged, leading to long-term benefits for soil and water conservation.

RESEARCH AND REFERENCES

- **Research Papers & Articles**
  - "Plant Disease Detection using Image Processing and Machine Learning" – IEEE Xplore
  - "Deep Learning Based Plant Disease Recognition" – ScienceDirect

- **Websites / Blogs**
  - React Native Official Docs – https://reactnative.dev/docs
  - Supabase Documentation – https://supabase.com/docs

- **Tools & Libraries**
  - React Native (Expo)
  - Supabase (Backend & Database)
  - Expo Camera, Expo Image Picker