Requirements

Functional

- Users can upload pictures by taking pictures or by uploading pictures from their mobile device's gallery.
- Users will receive diagnostic reports of the plants they uploaded along with the suggested treatments for each plant.
- Users can put in metadata about the plants.
- Mobile application is able to run on the Android operating system.

Non Functional

- Users' data are securely stored.
- UI is user friendly.
- Machine learning model has a performance (accuracy and recall) of 85% or higher.
- Diagnostic reports are available within 5 seconds.

User Stories

User

- As a user, I want to be able to take a picture of a plant so I can get a diagnosis of what disease my plant has and a suggested treatment for my plant(s).
- As a user, I want to be able to upload a picture or batches of pictures of plants on my phone so I can get a diagnosis of what diseases my plant has and a suggested treatment(s) for my plant(s).
- As a user, I want to be able to put in diagnostic metadata about my plants so that I can receive a diagnosis for my plants and a suggested treatment for them.

Product Backlog

Develop CNN Model

- Collect datasets of plant diseases
- Create the actual CNN model
- Train the CNN model with the datasets
- Test the performance of the CNN model

- Improve the performance (accuracy and recall) of the CNN model until the performance of the CNN model is greater than or equal to 85%

Program Expert System

- Define the facts and rules
- Based on predictions from CNN, match plants to specific plant type
- Based on predictions from CNN, match symptoms to specific disease
- Return the diagnostic report

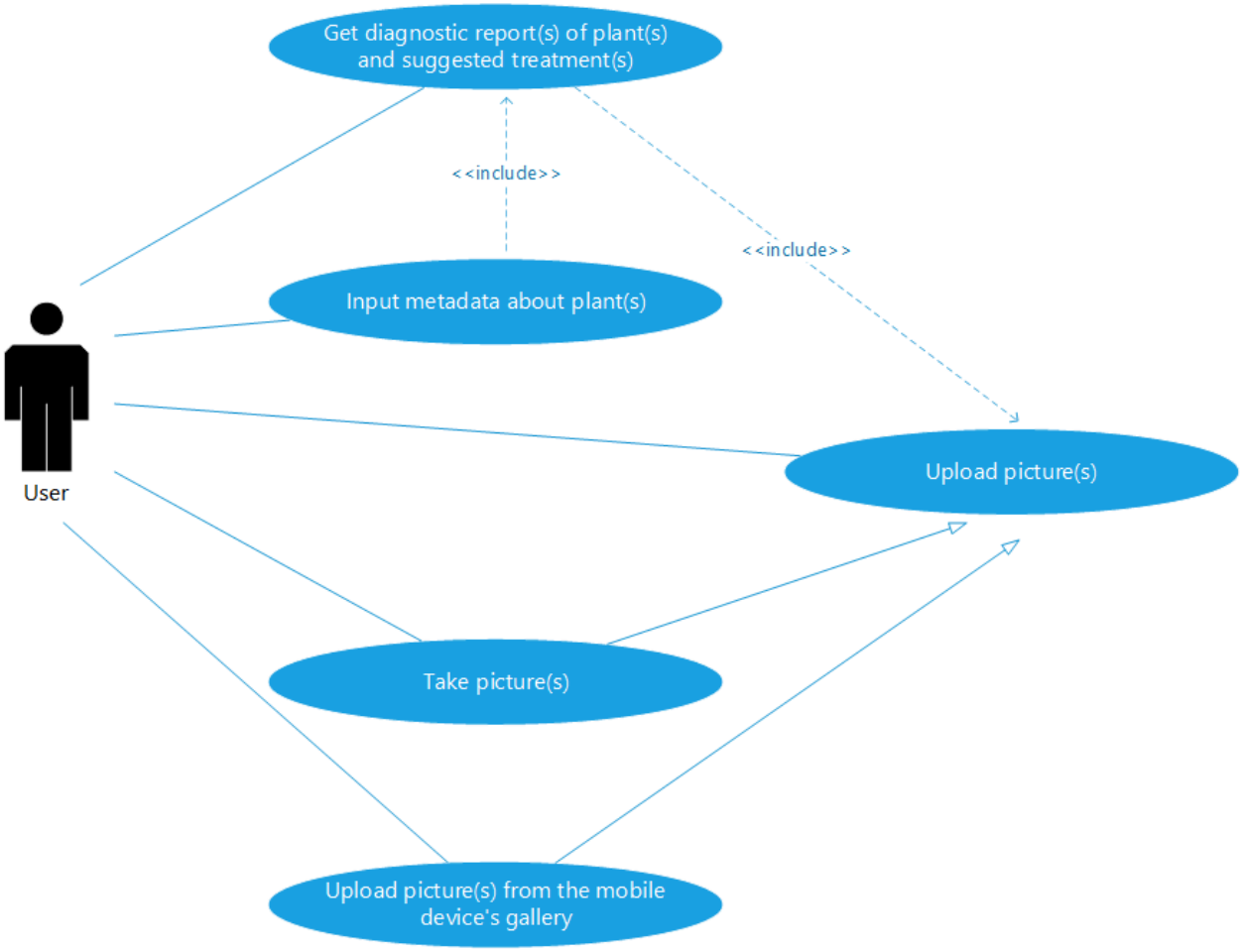
Develop Android Mobile Application

- Code the UI of the mobile application
- User able to take pictures
- User able to upload pictures
- Handle locally-stored files
- Integrate the mobile application with the expert system via API

Deploy System for Online Access

- Find web host
- Design API
- Deploy combined CNN/Expert system

Use Case Model


Get diagnostic report(s) of plant(s) and suggested treatment(s)
<<include>>
<<include>>
Input metadata about plant(s)
User
Upload picture(s)
Take picture(s)
Upload picture(s) from the mobile device's gallery