

Background

The idea is to develop mobile application (Traps Analytics) that uses Computer vision technologies after taking a photo on phone yellow traps in greenhouse, the app was automatically counting pests and doing analysis.

To develop an MVP (Minimum Viable Product), need to create an application and train an ML (Machine Learning) model to detect whitefly pests. Competition is announced which consisting of 3 lots.

Lot 1: To train ML (Machine Learning) model which can detect whiteflies on picture

Lot 2: To develop Backend

Lot 3: To develop UX/UI (User Experience / User Interface) Design

Lot 1: To train ML (Machine Learning) model which can detect whiteflies on picture

Objective(s) of Lot 1: To train ML (Machine Learning) model which can detect whiteflies on picture

The assignment aims to train ML model which can detect whiteflies on picture.

The size of whiteflies are 1.5-2 mm.

- need to annotate whiteflies on 1000-2000 photos
- the model should be able to be manually corrected after automatic detection, to be further improved on the basis of data, the training should be continuous as the database grows

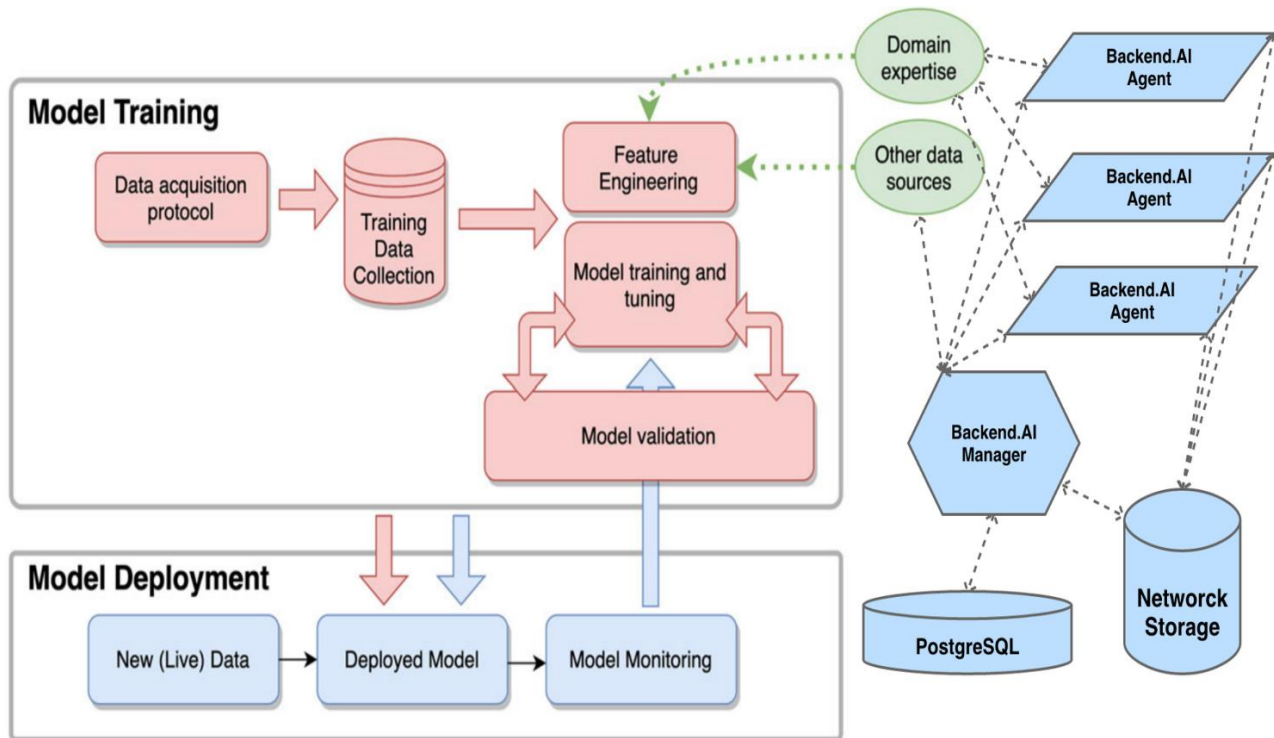
Consulting

- Choose of training strategy (image-processing, using pre-trained models, by creating models from scratch)
- Choose which model will detect whiteflies more effectively

Expected Outputs

Get a trained ML-model that will detect whiteflies: accuracy 85% or more

Flowchart

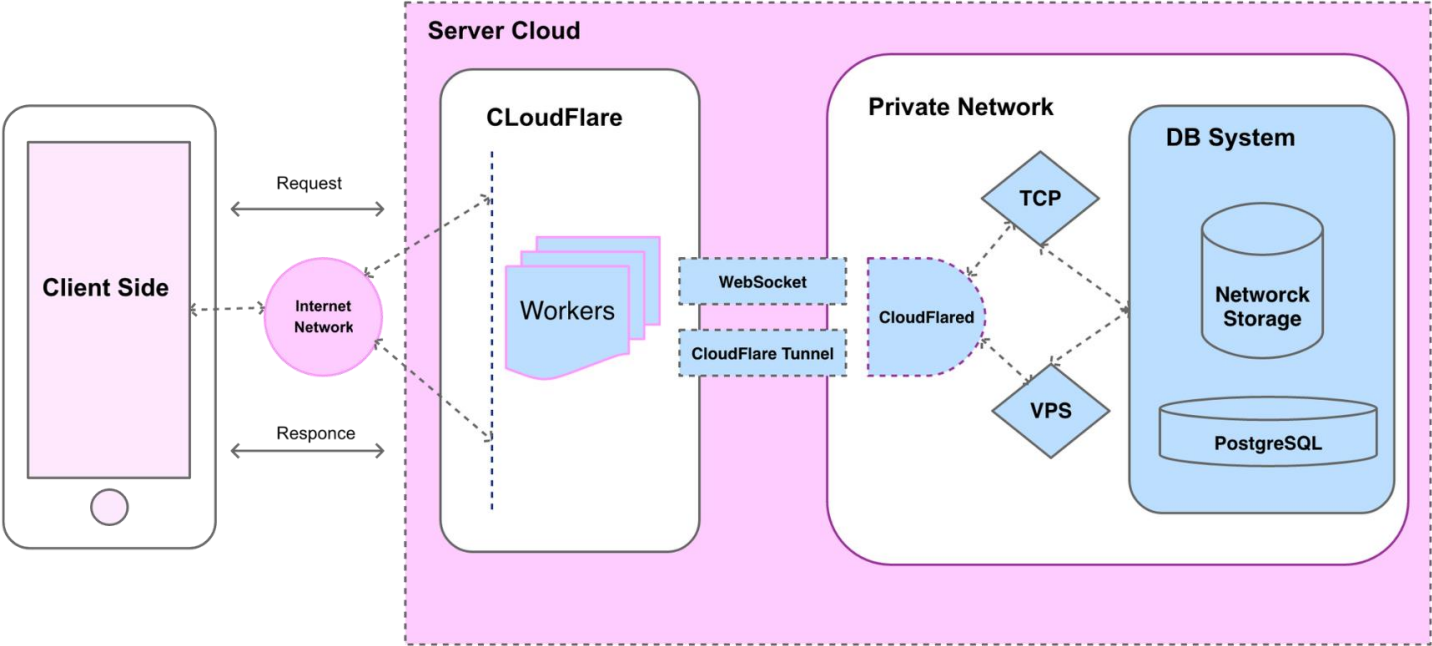


Lot 2: To develop Backend

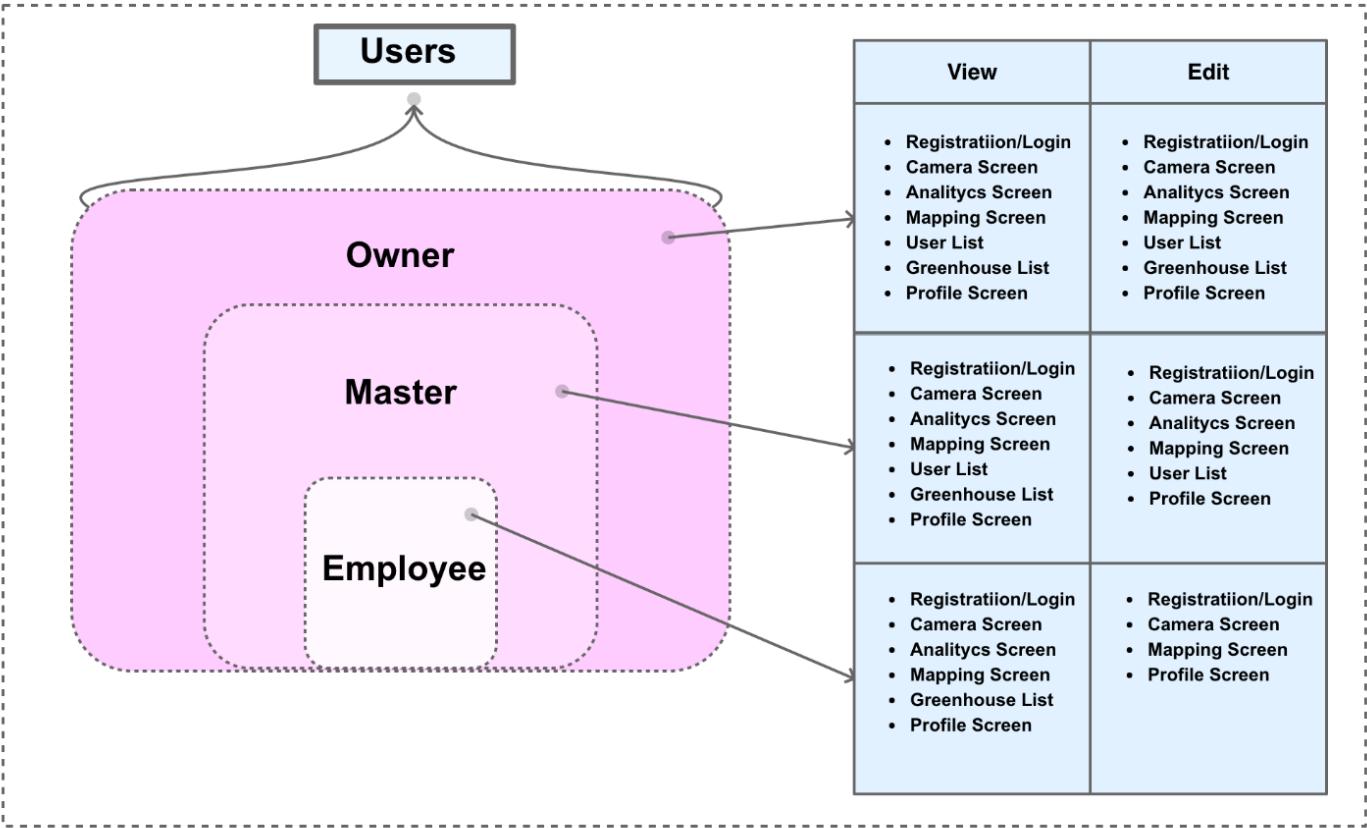
Objective(s) of Lot 2: To develop Backend

- The backend part of the application must be written in Python
- The server architecture must be Monolithic
- Server client communication-REST
- For Database should be use PostgreSQL
- Third party framework is Django (DRF)
- It should work in sync with the ML model and AI agent
- Configuration with Linux server (testing, staging, production) environments
- Integration CI/CD

Server Flowchart



Users Flowchart



Expected Outputs

Full operation of the server side of applications

Lot 3: To develop UX/UI (User Experience / User Interface) Design

Objective(s) of Lot 3: To develop UX/UI (User Experience / User Interface) Design

UX

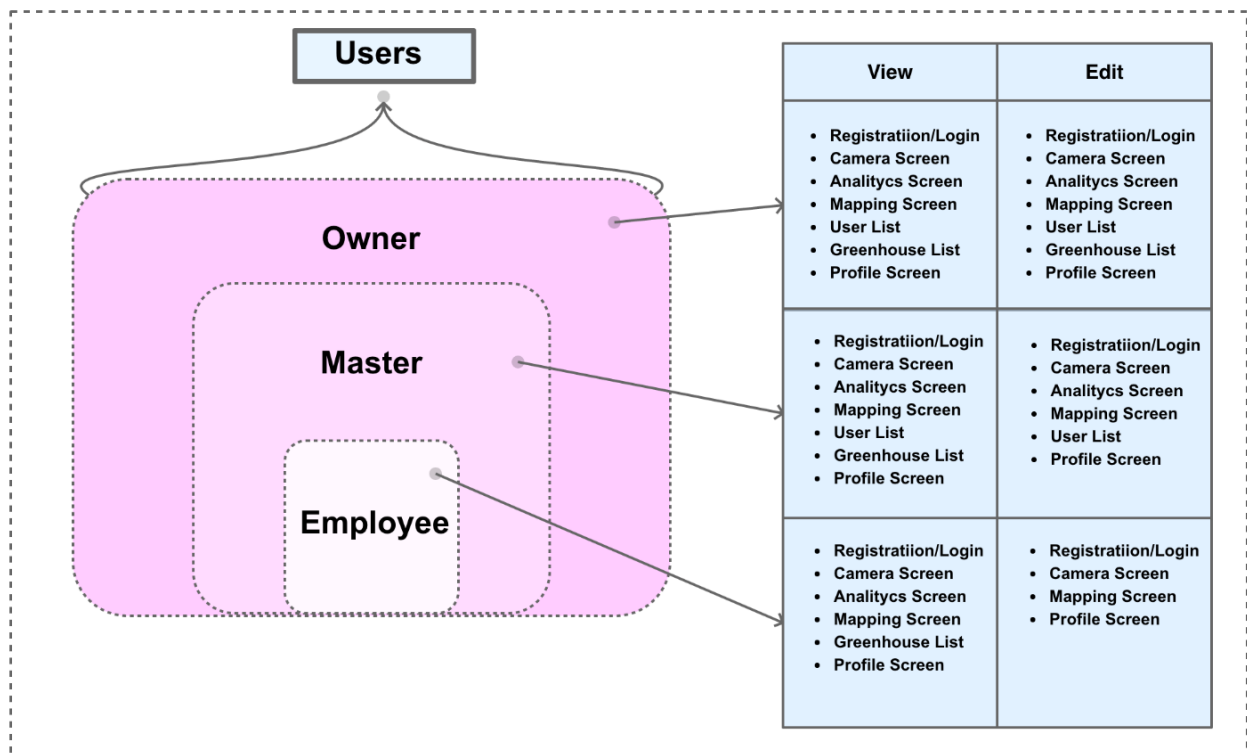
- Create App scenarios & navigation
- Create App information architecture
- Create App wireframes

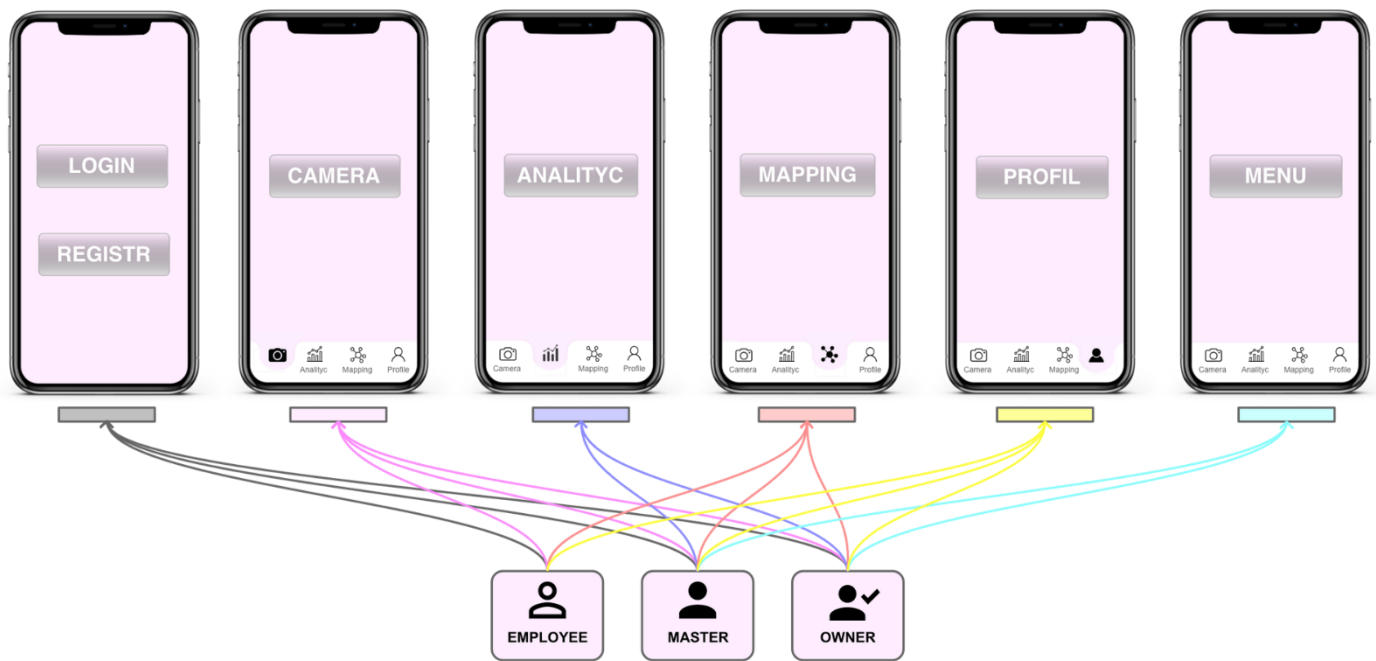
UI

- Create App visual design
- Create App graphic design
- Create possibility that developers to easily export information

Users Flowchart

Early Simple UX Flowchart





Expected Outputs

Get the final design of the app UX/UI