

**Shri Shamrao Patil (Yadravkar) Educational & Charitable Trust's
SHARAD INSTITUTE OF TECHNOLOGY,
POLYTECHNIC, YADRAV.**



Welcome...

**COMPUTER ENGINEERING
DEPARTMENT**

AGROGUIDE PEST DETECTION USING IMAGE PROCESSING

Presented by-

Name Of Student	Roll No.
1. Pranav Pramod Charate	13447
2. Shreyash Santosh Gaikwad	13449
3. Siddhant Lagamanna Keste	13453
4. Aditya Vijay Mali	13454

Under the Guidance of,
Mrs. P. R. Chougule



❖ Introduction

- ❑ The current agriculture field is not proficient enough as the farmers have to face a lot of problems like survey the land manually for pest detection.
- ❑ Usually the old methods trap the insect pests and are brought to the laboratory for counting and identifying manually.
- ❑ This ultimately leads to financial loss of farmers and reduction in productivity.



❖ Choice of topic with reasoning

- ▮ So to tackle this problem, image analysis and processing can provide a realistic opportunity for the automation of insect pest detection.
- ▮ Using an automated system, farmers can easily count the pests from the collected specimens.
- ▮ Right pests management can be applied to increase both the quantity and quality of production.
- ▮ Hence, we decided to create a farmers' friendly Pest Detection application.



❖ Relevant Literature Review

- ❑ Early Pest Detection from Crop using Image Processing and Computational Intelligence by Danish Gondal and Yasir Naiz, their paper proposed a framework for early detection of pests.
- ❑ Reference-
https://www.researchgate.net/publication/282119578_Early_Pest_Detection_from_Crop_using_Image_Processing_and_Computational_Intelligence
- ❑ e-Sagu: An IT based Personalized Agro-Advisory System- This system provided the farmers with the mobile phones to take the pictures of their crops themselves and then it goes to the nearest e-sagu center for the report generation which is again a tedious task to do.
- ❑ Reference-<https://youtu.be/YFvGvr3vzIw>



❖ Proposed System

To overcome the problems mentioned in previous points we have proposed the following system as a solution:

1. Loading image of damaged crop in the application memory which will be captured from farmer's smart phone.
2. Image pre-processing.
3. Detection of pest in the image.
4. Extraction of the detected pest.
5. Displaying results in the farmer's smart phone.



SDLC of AgroGuide Pest Detection Using Image Processing

Phase - 1

Training and Testing of ML Model

Collecting Datasets

Training ML Model

Testing ML Model

Conversion of ML Model into
Android Deployable file

Phase - 2

Designing and Deployment of ML Model

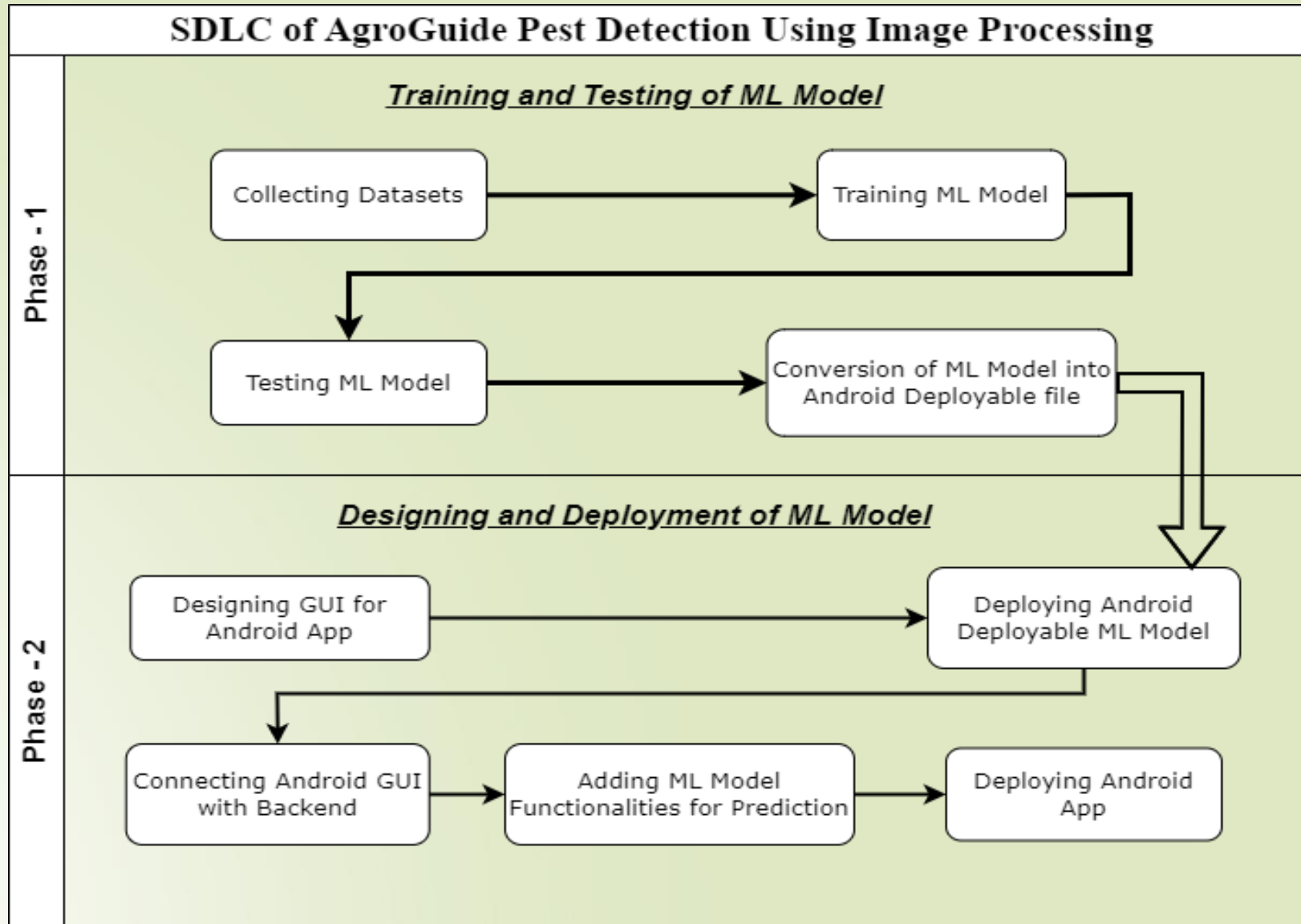
Designing GUI for
Android App

Deploying Android
Deployable ML Model

Connecting Android GUI
with Backend

Adding ML Model
Functionalities for Prediction

Deploying Android
App



❖ Methodology

▮ Methods of Data Collection

- Interviews
- Observations
- Documents and records
- News

▮ Processes used for ML Model creation

- Training and Testing of ML Model

▮ Designing application and Deploying ML model

- Create Android UI
- Run your UI using AVD
- Deploying ML Model on Android App
- Write backend logic in java

❖ Modules (Features)

➤ Weather –

- ☐ We are using “OpenWeathermap’s” Current weather API for access current weather data.
- ☐ The API provides information on temperature, precipitation and other related weather observations elements as well as date /time, weather icon codes and phrases.

➤ News –

- ☐ We are using “NewsAPI’s” for searching and retriving news from all over the web.
- ☐ News API is a simple, easy to use REST API that returns JSON search results for current and historic news articles published by over 80000 worldwide sources.



➤ **Daily Market price –**

- ☐ We use Open Government Data Platform of India's Daily Prices of commodities from markets various API.
- ☐ According to various state the daily vegetable prices are continually change. In various places there are various product price so it is important to understand farmer what is the market rate of his product so that he get high cost for his product and he not cheated from brokers. So that reason we develop daily market price feature in our application. Which shows daily market price of product of various state. It is most important which make farmer economically stronger



➤ To do list –

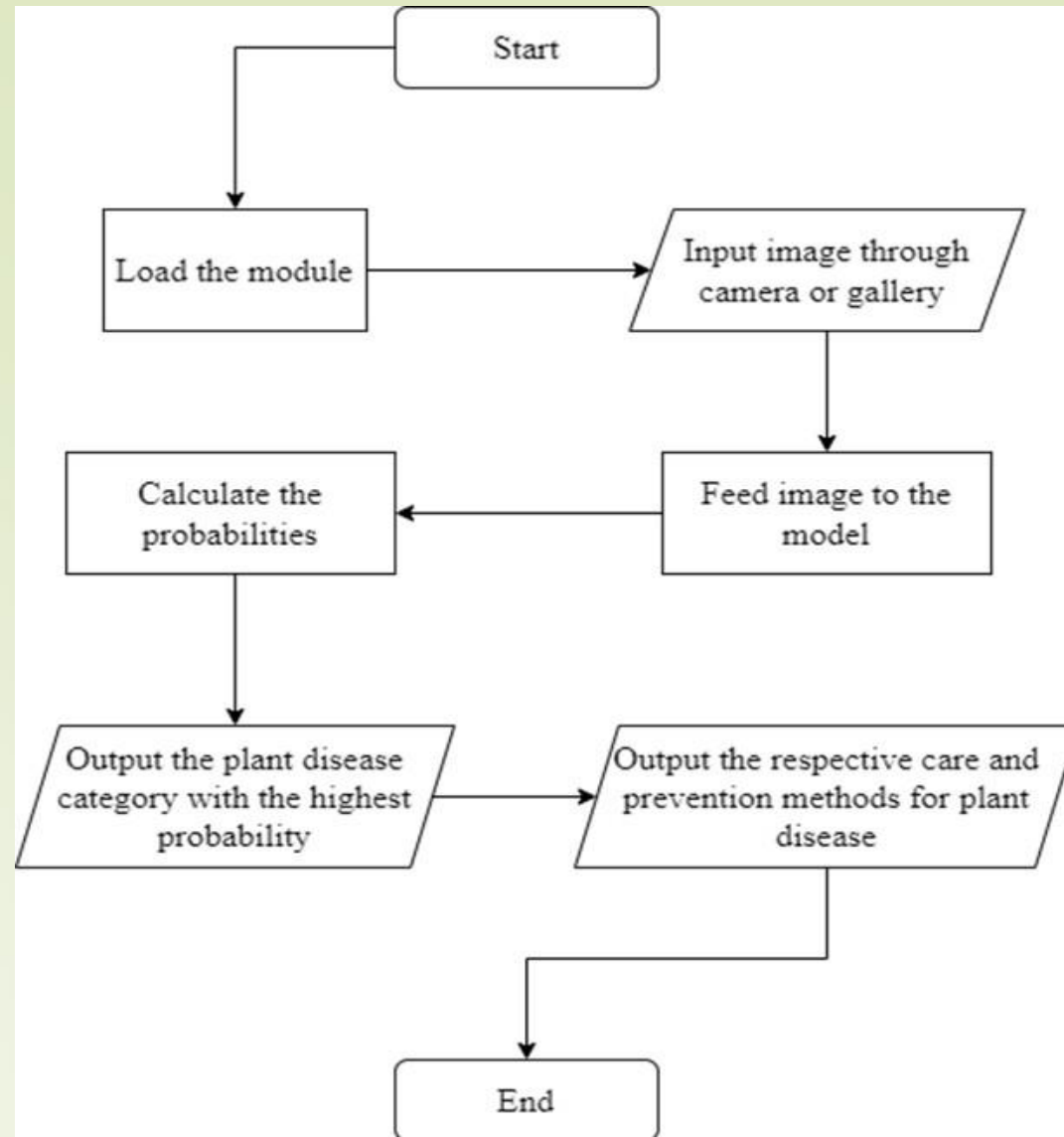
- ☐ To-do lists offer a way to increase productivity, stopping you from forgetting things, helps prioritise tasks, manage tasks effectively, use time wisely and improve time management as well as workflow. With the help of this farmer can manage his daily work properly and also he complete his task within a time.

Fertilizer calculator –

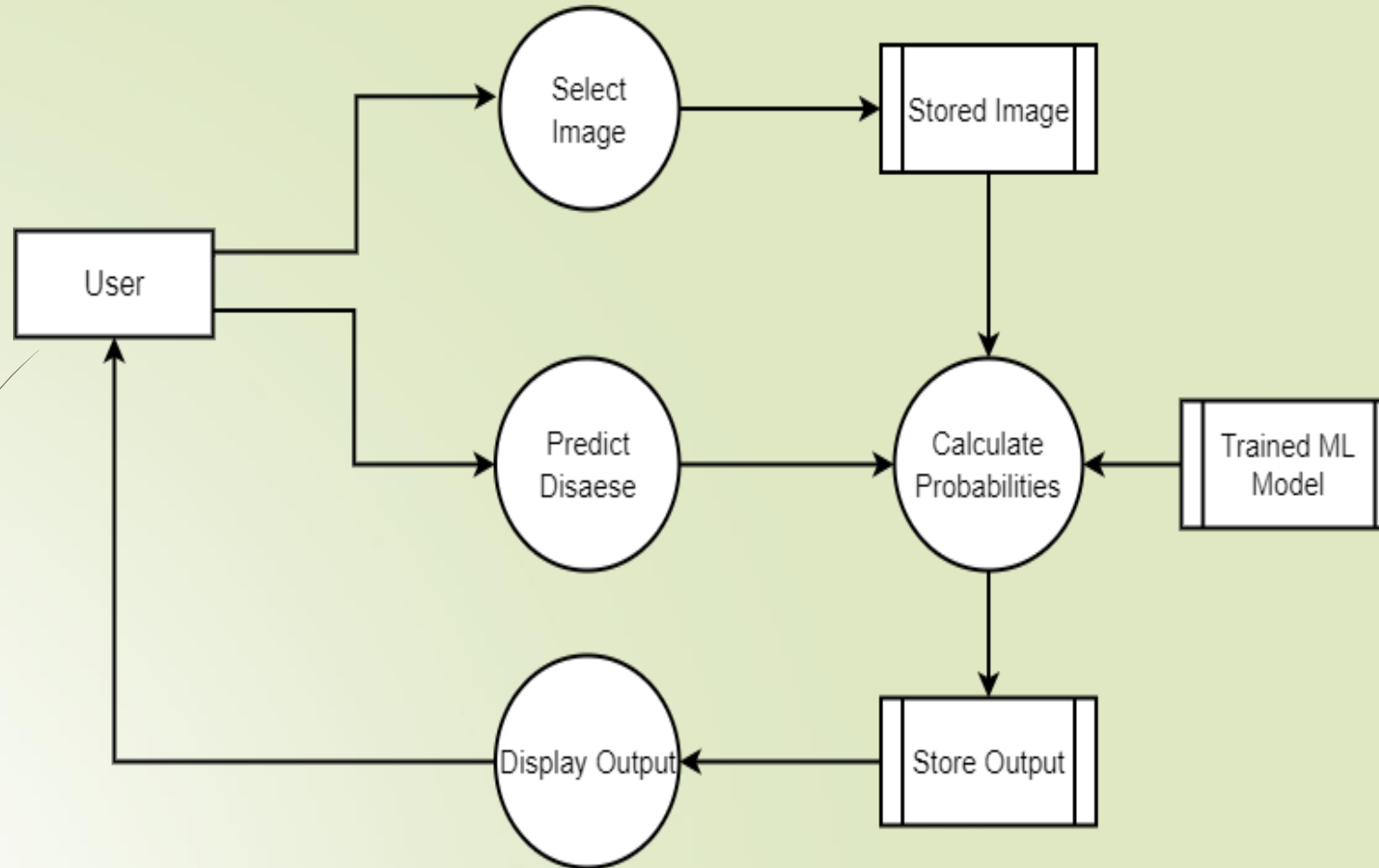
- ☐ Fertilizers provide crops with essential nutrients like nitrogen, so that the crops grow bigger, faster, and produce more food. But high amount of fertilizer damage the crops so it is necessary to give right amount of fertilizer to the crop. And farmer can not predict what amount of fertilizer they need to their farm. By understanding this problem we make fertilizer calculator so that shows what amount of fertilizer need to the farm by simply giving input as farm area.



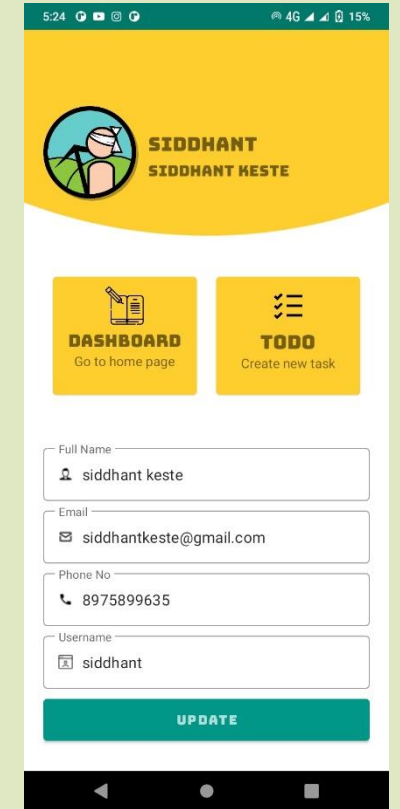
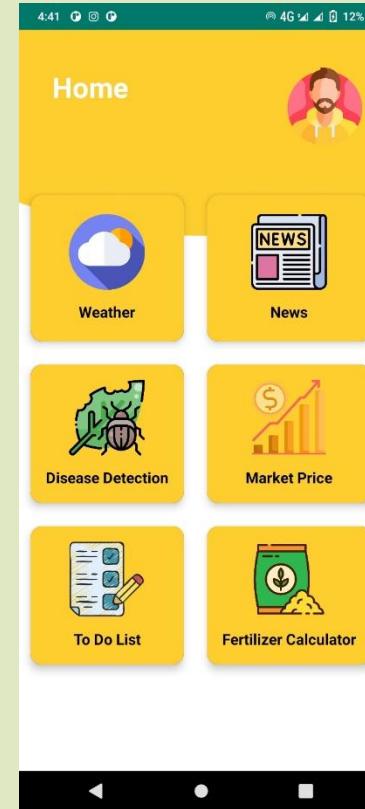
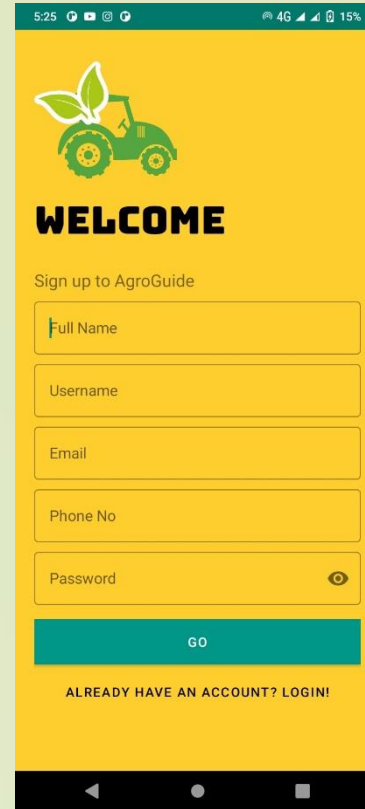
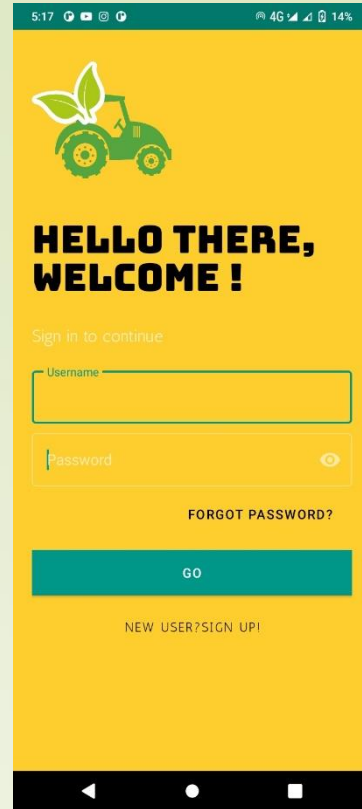
❖ Application Flow Diagram

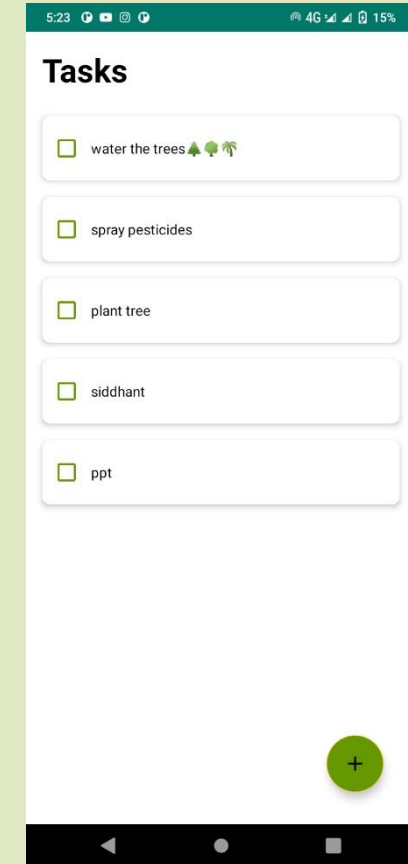
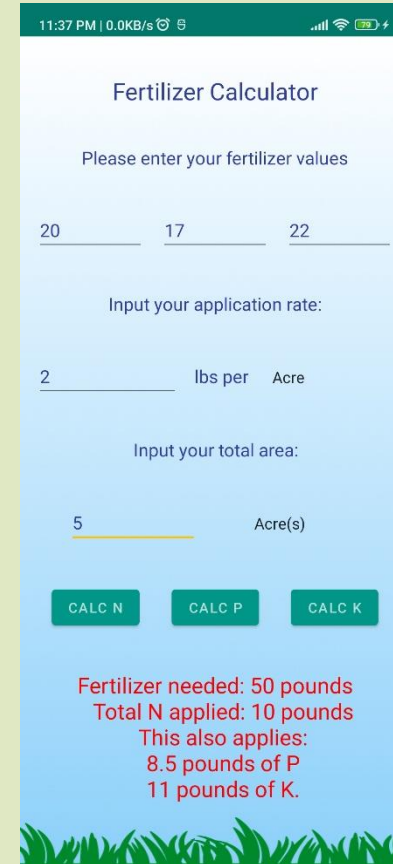


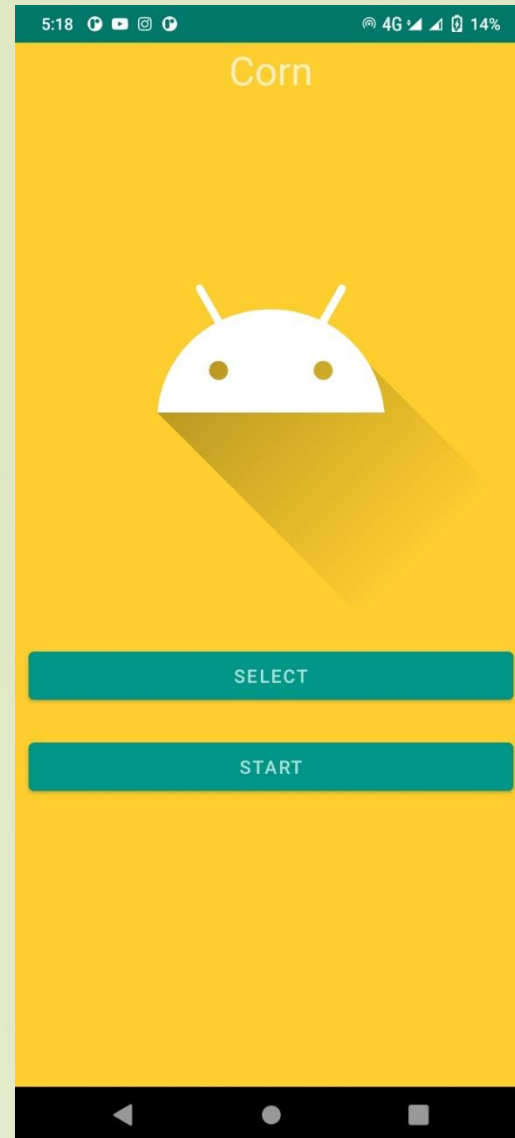
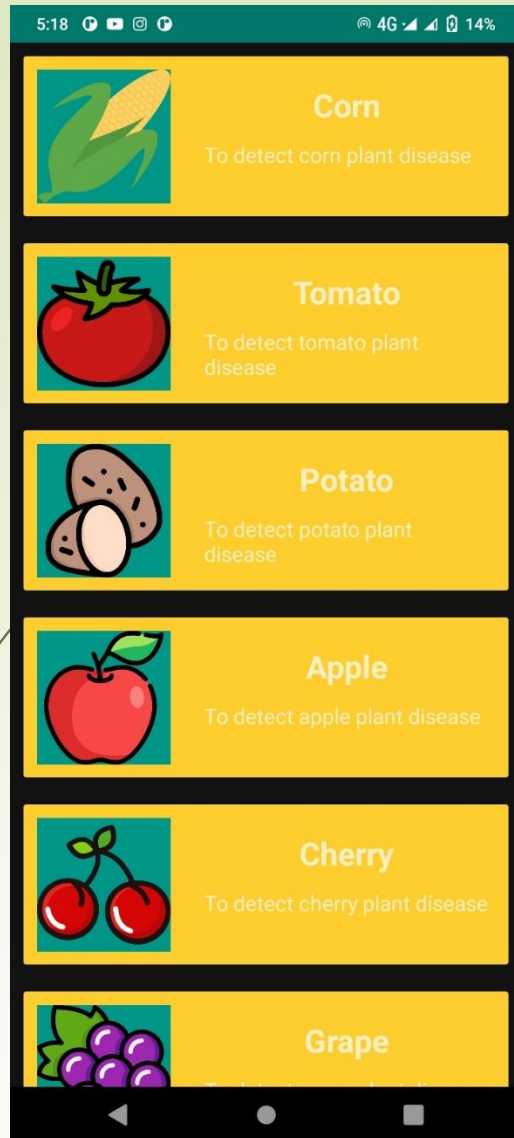
❖ Application Data Flow Diagram



❖ Application Output







❖ Modules or proposed system

▮ Inception V3

This is module containing our algorithm for image processing.

▮ Mobile Application

This module is the front end of project residing on the client side.

▮ Other modules:

Weather detection, market prices, daily news,
fertilizer calculator, to do-tasks



❖ System Requirements

▮ Software Requirements

- Android OS
- Android Studio
- PyCharm Community Edition 2020.3
- JDK, Python 3.8
- **Python modules-**
- Tensorflow 1.6.0
- NumPy 1.19.2

▮ Hardware Requirements

- Android smart phone with internet connection
- PC with minimum 8 GB RAM.
- Processor : AMD Ryzen 5 2500U 2.00 GHz



❖ Advantages and Limitations

▮ Advantages

- Solution about detected pests.
- Time Saving
- Daily weather updates
- Agriculture Related News

▮ Limitations

- Images captured by farmers should be clear proper light source.



❖ Conclusion

- ▮ Image processing technique plays an important role in the detection of the pests. We propose a novel approach for early detection of pests. Our goal is to detect the pests as early as possible and reduce the use of pesticides.



❖ Future Scope

- ▮ More features can be added further to analyse the growth of plant and provide insights to increase gross income of farmer.
- ▮ A complete guide of latest farming which will be designed by experts.
- ▮ Detailed report of daily market prices of vegetables.





Thank You....

