ROOFTOP REPUBLIC

Dashboard

Presented by **Team 2**

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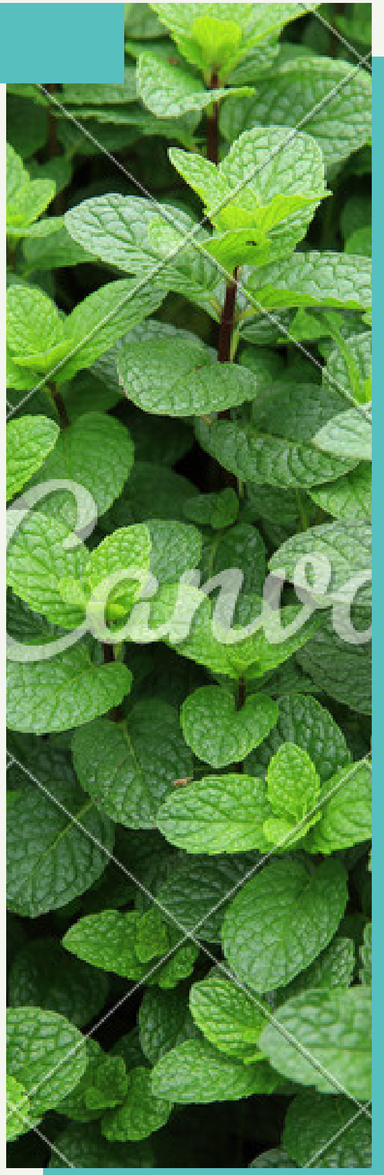
Presentation Outline

TOPICS FOR TODAY

Project Overview

MVP

Future Recommendations



Project Overview - Dashboard Manage farms for current clients

1. An integrated dashboard for farm management
2. Simplifies crop resources, farm maintenance, and impacts summary
3. Enable clients to keep track of their progress towards their designated goals

MVP

Future Recommendations

- Predict whether a plant is diseased and require pesticides.
- In future, farmer can simply take a picture of the crop and identify whether plant is diseased or not.
- Other AI techniques such as pest detection or crop estimate can also be deployed using AI/ML models.
- Data set has images for bell pepper, tomato and potato only but in future can train the model to include other crops

```
Model: "sequential_1"
_________________________________________________________________
 Layer (type)                Output Shape              Param #
=================================================================
 rescaling_3 (Rescaling)     (None, 180, 180, 3)       0

 conv2d_3 (Conv2D)           (None, 180, 180, 16)      448

 max_pooling2d_3 (MaxPooling  (None, 90, 90, 16)       0
 2D)

 conv2d_4 (Conv2D)           (None, 90, 90, 32)        4640

 max_pooling2d_4 (MaxPooling  (None, 45, 45, 32)       0
 2D)

 conv2d_5 (Conv2D)           (None, 45, 45, 64)        18496

 max_pooling2d_5 (MaxPooling  (None, 22, 22, 64)       0
 2D)

 flatten_1 (Flatten)         (None, 30976)             0

 dense_2 (Dense)             (None, 128)               3965056

 dense_3 (Dense)             (None, 15)                1935

=================================================================
Total params: 3,990,575
Trainable params: 3,990,575
Non-trainable params: 0
_________________________________________________________________
```

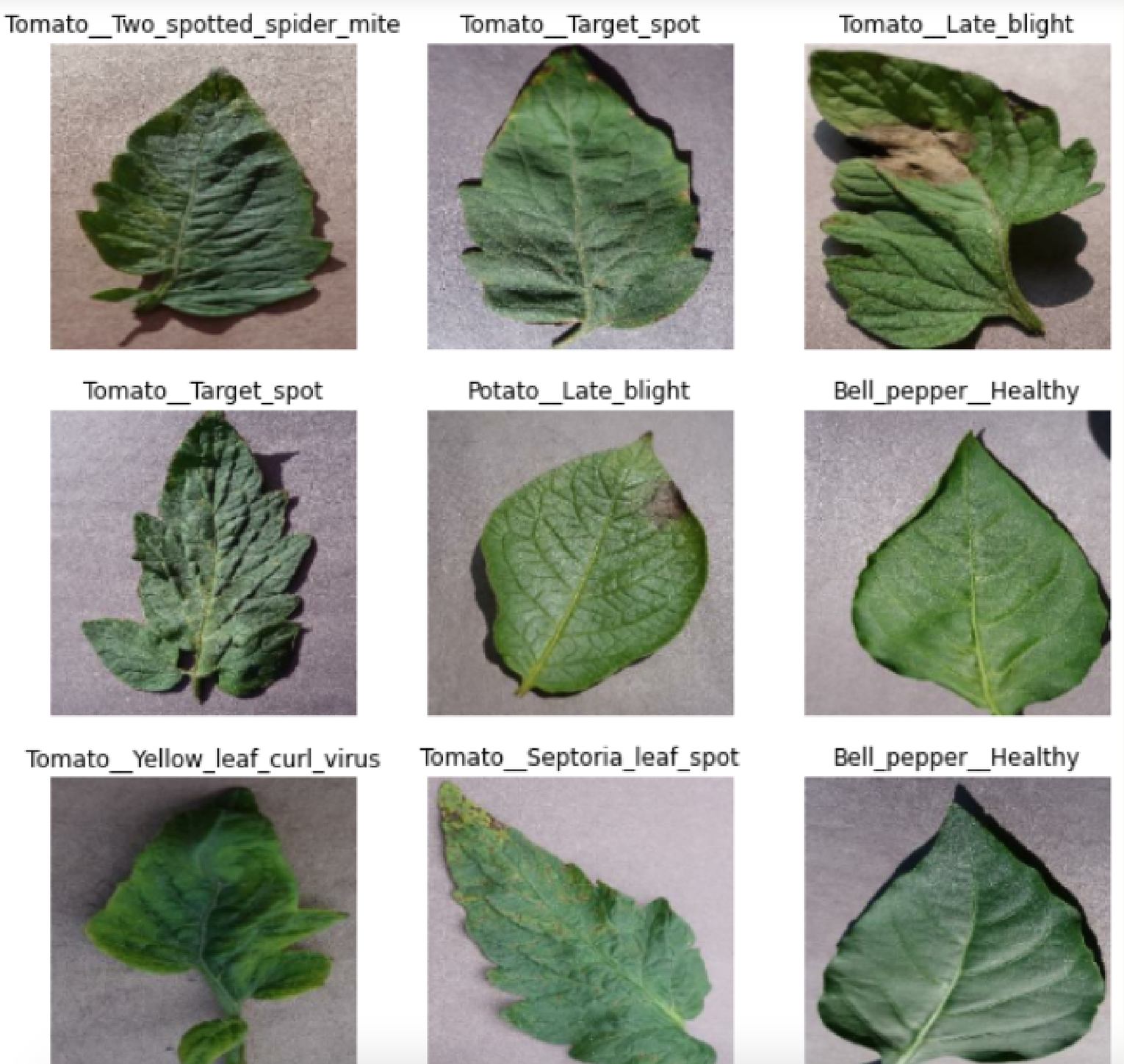
Dataset_Pesticides_Prescription_For_Leaf_Diseases

- Trained a CNN model to classify plant disease based on 15245 training and 1900 validation images found on Kaggle

- Images contains 15 classes of diseased and healthy plant leaves belonging to:
  - Bell pepper
  - Potato
  - Tomato

Image classes

```
['Bell_pepper__Bacterial_spot', 'Bell_pepper__Healthy', 'Potato__Early_blight', 'Potato__Healthy', 'Potato__Late_blig
ht', 'Tomato__Bacterial_spot', 'Tomato__Early_blight', 'Tomato__Healthy', 'Tomato__Late_blight', 'Tomato__Leaf_mold',
'Tomato__Mosaic_virus', 'Tomato__Septoria_leaf_spot', 'Tomato__Target_spot', 'Tomato__Two_spotted_spider_mite', 'Toma
to__Yellow_leaf_curl_virus']
```



Some images from the training dataset

Predicted: Bell_pepper__Healthy
Actual: Bell_pepper__Healthy
Confidence: 99.94

Predicted: Tomato__Septoria_leaf_spot
Actual: Tomato__Septoria_leaf_spot
Confidence: 99.99

Predicted: Bell_pepper__Bacterial_spot
Actual: Bell_pepper__Bacterial_spot
Confidence: 100.00

Predicted: Tomato__Bacterial_spot
Actual: Tomato__Bacterial_spot
Confidence: 100.00

Predicted: Tomato__Target_spot
Actual: Tomato__Target_spot
Confidence: 100.00

Predicted: Bell_pepper__Healthy
Actual: Potato__Healthy
Confidence: 99.65

Model evaluated on testing dataset with 90% accuracy.

Model can be improved by applying other techniques such as transfer learning and increasing image dataset through data augmentation to improve accuracy

Can also get image data for other crops to classify more plant diseases.

Thank you!

Figma: use ratio, % to decide frame size instead of pixel

Chrome: 1280 width