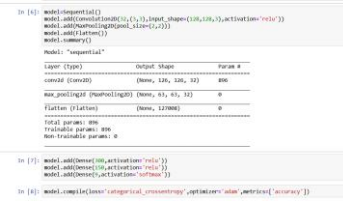
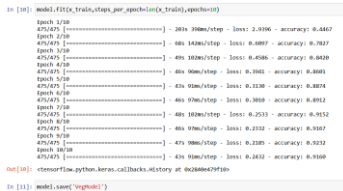
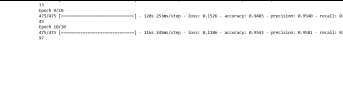


Project Development Phase Model Performance Test

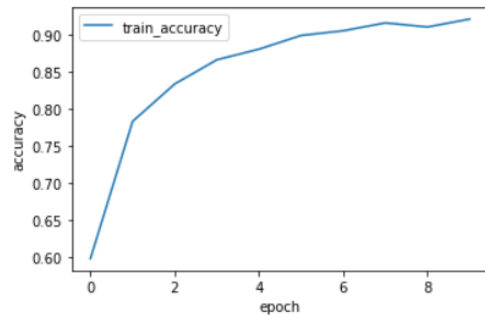
Date	10 November 2022
Team ID	PNT2022TMID52715
Project Name	Project - Fertilizers Recommendation System For Disease Prediction
Maximum Marks	10 Marks

Model Performance Testing:

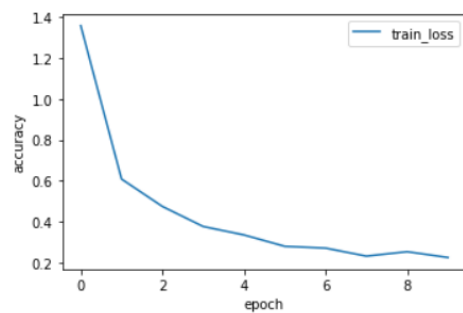
Project team shall fill the following information in model performance testing template.

S.No.	Parameter	Values	Screenshot
1.	Model Summary	Model: "sequential" Layer (type) conv2d (Conv2D) (None, 126, 126, 32) 896 max_pooling2d (MaxPooling2D) (None, 63, 63, 32) 0 flatten (Flatten) (None, 127008) 0 Total params: 896 Trainable params: 896 Non-trainable params: 0	 <pre> In [10]: model.summary() Model: "sequential" Layer (type) Output Shape Param # ----- conv2d (Conv2D) (None, 126, 126, 32) 896 max_pooling2d (MaxPooling2D) (None, 63, 63, 32) 0 flatten (Flatten) (None, 127008) 0 Total params: 896 Trainable params: 896 Non-trainable params: 0 </pre>
2.	Accuracy	Training Accuracy - 91 % Validation Accuracy – 86 %	 <pre> In [10]: model.fit(x_train, y_train, epochs=10, verbose=1) Epoch 1/10 47/475 [=====>] - loss: 0.4006 - accuracy: 0.4467 Epoch 2/10 47/475 [=====>] - loss: 0.4006 - accuracy: 0.4467 Epoch 3/10 47/475 [=====>] - loss: 0.4006 - accuracy: 0.4467 Epoch 4/10 47/475 [=====>] - loss: 0.4006 - accuracy: 0.4467 Epoch 5/10 47/475 [=====>] - loss: 0.4006 - accuracy: 0.4467 Epoch 6/10 47/475 [=====>] - loss: 0.4006 - accuracy: 0.4467 Epoch 7/10 47/475 [=====>] - loss: 0.4006 - accuracy: 0.4467 Epoch 8/10 47/475 [=====>] - loss: 0.4006 - accuracy: 0.4467 Epoch 9/10 47/475 [=====>] - loss: 0.4006 - accuracy: 0.4467 Epoch 10/10 47/475 [=====>] - loss: 0.4006 - accuracy: 0.4467 Out[10]: <tensorflow.python.keras.callbacks.History at 0x288647f50> In [11]: model.save('yolo.h5') </pre>
3.	Confidence Score (Only Yolo Projects)	Class Detected - Confidence Score -	
4	Precision and Recall	Precision – 0.95 Recall – 0.94 F1 Score	 <pre> In [10]: model.fit(x_train, y_train, epochs=10, verbose=1) Epoch 1/10 47/475 [=====>] - loss: 0.4006 - accuracy: 0.4467 - precision: 0.94 - recall: 0.94 Epoch 2/10 47/475 [=====>] - loss: 0.4006 - accuracy: 0.4467 - precision: 0.94 - recall: 0.94 Epoch 3/10 47/475 [=====>] - loss: 0.4006 - accuracy: 0.4467 - precision: 0.94 - recall: 0.94 Epoch 4/10 47/475 [=====>] - loss: 0.4006 - accuracy: 0.4467 - precision: 0.94 - recall: 0.94 Epoch 5/10 47/475 [=====>] - loss: 0.4006 - accuracy: 0.4467 - precision: 0.94 - recall: 0.94 Epoch 6/10 47/475 [=====>] - loss: 0.4006 - accuracy: 0.4467 - precision: 0.94 - recall: 0.94 Epoch 7/10 47/475 [=====>] - loss: 0.4006 - accuracy: 0.4467 - precision: 0.94 - recall: 0.94 Epoch 8/10 47/475 [=====>] - loss: 0.4006 - accuracy: 0.4467 - precision: 0.94 - recall: 0.94 Epoch 9/10 47/475 [=====>] - loss: 0.4006 - accuracy: 0.4467 - precision: 0.94 - recall: 0.94 Epoch 10/10 47/475 [=====>] - loss: 0.4006 - accuracy: 0.4467 - precision: 0.94 - recall: 0.94 Out[10]: <tensorflow.python.keras.callbacks.History at 0x288647f50> In [11]: model.save('yolo.h5') </pre>

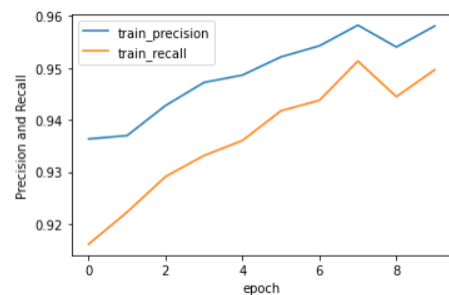
Accuracy Graph:



Loss Graph:



Precision and Recall Graph:



F1 Score, Precision and Recall Value

```
13 Epoch 9/10
475/475 [=====] - 120s 253ms/step - loss: 0.1526 - accuracy: 0.9485 - precision: 0.9540 - recall: 0.9445
Epoch 10/10
475/475 [=====] - 116s 245ms/step - loss: 0.1286 - accuracy: 0.9543 - precision: 0.9581 - recall: 0.9497
```

INFO:tensorflow:Assets written to: VegModel\ass

```
In [2]: F1score = (2*0.9581*0.94) / (0.9581 + 0.94)
print("The F1 Score is ", F1score)
```

The F1 Score is 0.9489637005426479