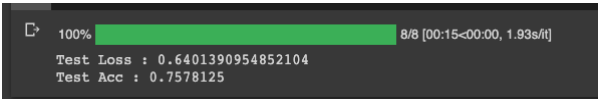
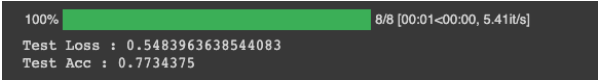
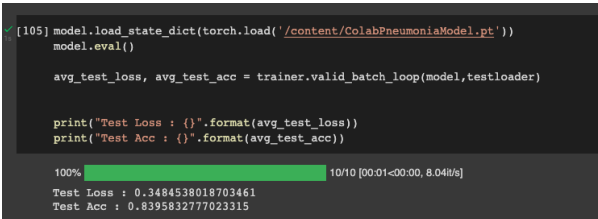
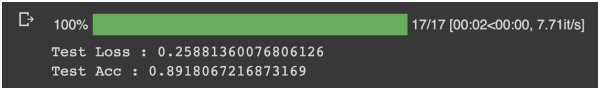
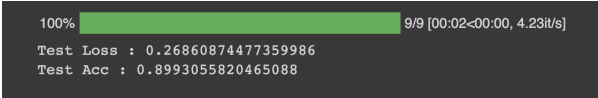
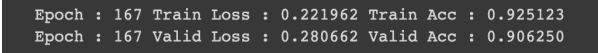
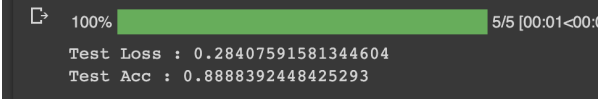
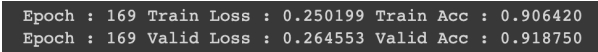
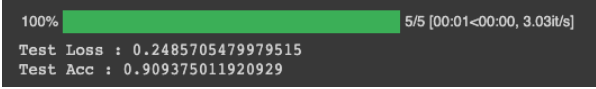
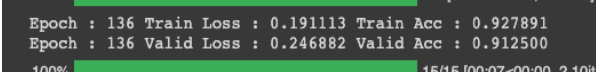
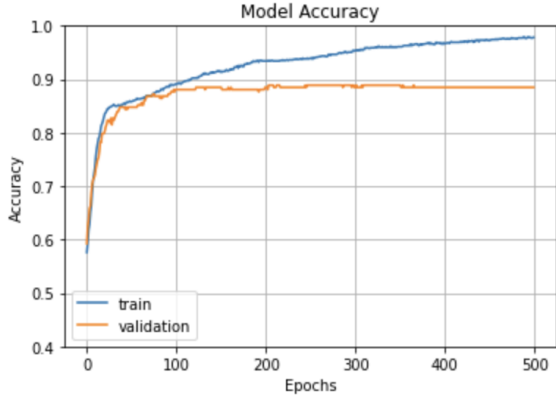
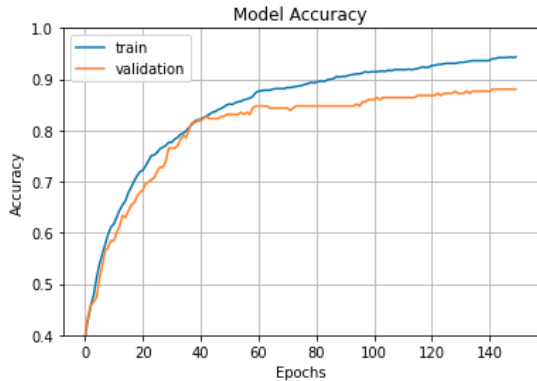
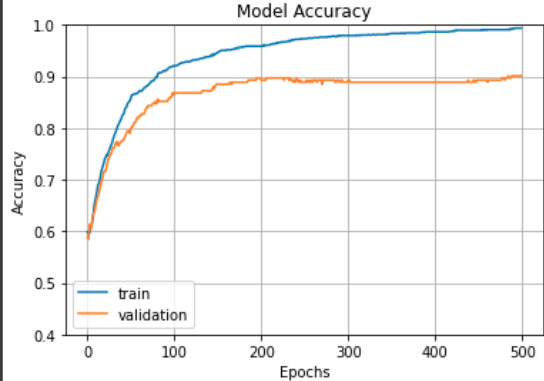


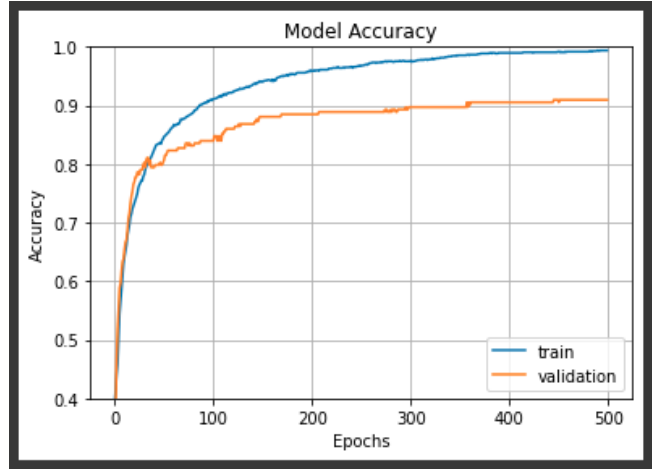
	Model	Accuracy
	Efficientnet_b4 - for 4 classes(normal, rot, bloatch, scab)  epochs =20 lr = 0.001	
	Efficientnet_b4 - for 4 classes(normal, rot, bloatch, scab)  epochs =200 lr = 0.00001	
	Efficientnet_b4 - for 2 classes(normal, defected)  epochs =250 lr = 0.00001	
	Efficientnet_b4 - for 2 classes(normal, defected) - More data - merged data (2 classes + 4 classes)  epochs =200 lr = 0.00001	
	Efficientnet_b4 - for 2 classes(normal, defected) - More data - merged data (2 classes + 4 classes)  <b>Increased Batch size to 32</b>  epochs =200 lr = 0.000005	<p>Average accuracy:</p>  <p>Best Accuracy at epoch 167:</p> 
	Efficientnet_b4 - for 2 classes(normal, defected) - More data - merged data (2 classes + 4 classes)  <b>Increased Batch size to 64</b>  epochs =200 lr = 0.000005	<p>Average Accuracy:</p>  <p>Best Accuracy at epoch 169:</p> 

	<p>Efficientnet_b4 - for 2 classes(normal, defected) - More data - merged data (2 classes + 4 classes)</p> <p><b>Increased Batch size to 64</b></p> <p>epochs =400 lr = 0.000005</p>	<p>Average accuracy:</p>  <p>Best Accuracy at epoch 336:</p> 
	<p><b>EfficientNetV2L-transfer-learning</b></p> <p><b>Dataset:-</b> apple_dataset_normal_and_defected_with_extra_data_for_resnet_only_validation_data</p> <p><b>Batch size:- 32</b> epochs = 350 lr = 0.000002</p>	<p>Epoch 350/350 31/31 [=====] - 10s 320ms/step - loss: 0.1893 - accuracy: 0.9444 - val_loss: 0.2980 - val_accuracy: 0.8848</p> <p><b>Val accuracy = 88.48%</b></p>
	<p><b>EfficientNetV2L-transfer-learning</b></p> <p><b>Dataset:-</b> apple_dataset_normal_and_defected_with_extra_data_for_resnet_only_validation_data</p> <p><b>Batch size:- 32</b> epochs = 500 lr = 0.000003</p>	<p>Epoch 500/500 31/31 [=====] - 10s 322ms/step - loss: 0.1043 - accuracy: 0.9784 - val_loss: 0.2767 - val_accuracy: 0.8848</p> <p><b>Val accuracy = 88.48%</b></p> 
	<p><b>Resnet-50</b></p> <p>Batch_size = 32 Epochs = 150 Learning_rate = 0.000001</p> <p>Dataset -&gt;</p>	<p>Epoch 150/150 31/31 [=====] - 4s 117ms/step - loss: 0.1948 - accuracy: 0.9434 - val_loss: 0.3101 - val_accuracy: 0.8807</p> <p><b>Val accuracy = 0.8807</b></p>

	<p>apple_dataset_normal_and_defected_with_extra_data_for_resnet_only_validation_data</p>	
	<p><b>Resnet-50</b></p> <p>Batch_size = 32 Epochs = 500 Learning_rate = 0.000001</p> <p>Dataset -&gt;</p> <p>apple_dataset_normal_and_defected_with_extra_data_for_resnet_only_validation_data</p>	<pre>Epoch 500/500 31/31 [=====] - 4s 118ms/step - loss: 0.0598 -  accuracy: 0.9938 - val_loss: 0.2697 -  val_accuracy: 0.9012</pre> <p><b>Training Accuracy: 99.38</b></p> <p><b>Validation Accuracy: 90.12</b></p> 
**	<p><b>Resnet-50</b></p> <p>Batch_size = 32 Epochs = 500 Learning_rate = 0.000001</p> <p>Dataset -&gt;</p> <p>apple_dataset_normal_and_defected_with_extra_data_for_resnet_only_validation_data</p>	<pre>Epoch 500/500 31/31 [=====] - 4s 122ms/step - loss: 0.0587 -  accuracy: 0.9938 - val_loss: 0.2695 -  val_accuracy: 0.9095</pre>

### Loading this model:-

"/content/drive/MyDrive/CMPE-295-A/my\_resnet\_model"



Training Accuracy: 99.38

Validation Accuracy: 90.95

```
[116] print(classification_report(labels, predictions, target_names=classnames))
```

	precision	recall	f1-score	support
DEFECTED	0.95	0.91	0.93	157
NORMAL	0.85	0.91	0.88	86
accuracy			0.91	243
macro avg	0.90	0.91	0.90	243
weighted avg	0.91	0.91	0.91	243

### Resnet-50

Batch\_size = 32

Epochs = 500

Learning\_rate = 0.000001

Dataset ->

/content/drive/MyDrive/CMPE-295-A/apple\_dataset\_normal\_and\_defected\_with\_extra\_data\_for\_resnet\_only\_validation\_data\_more\_data\_added

Training Accuracy: 100%

Validation Accuracy: 97%

The model was trained wrong because dataset has repeated images and hence images were repeating training set and validation set.

Can be improved but will look into it after 14th.

\*\* Work on dataset