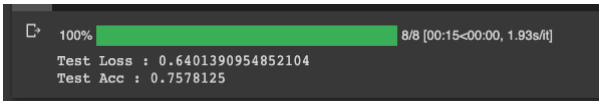
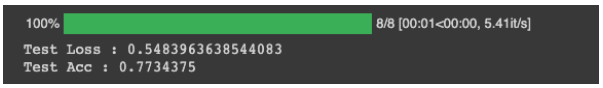
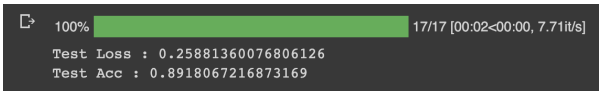
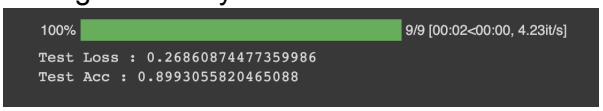
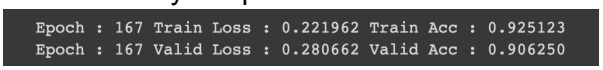
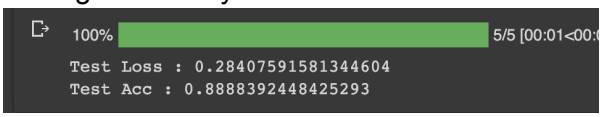
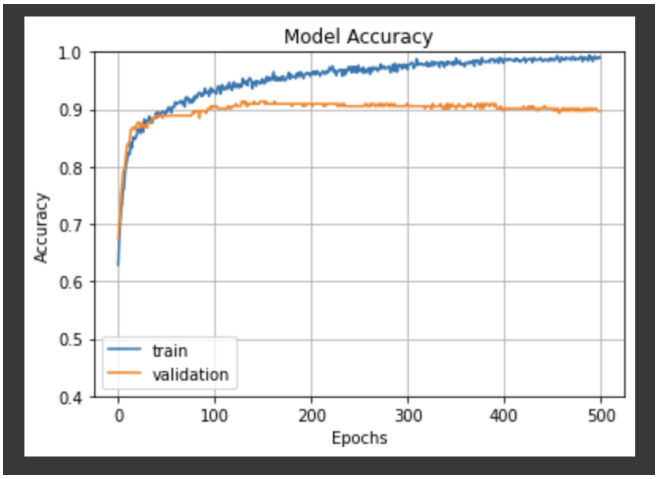
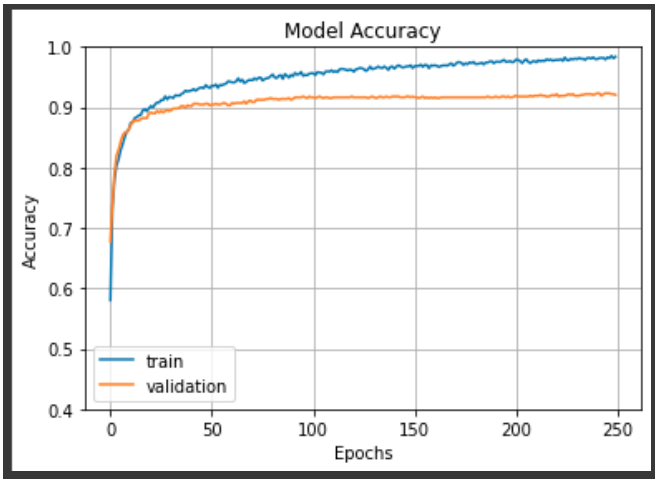
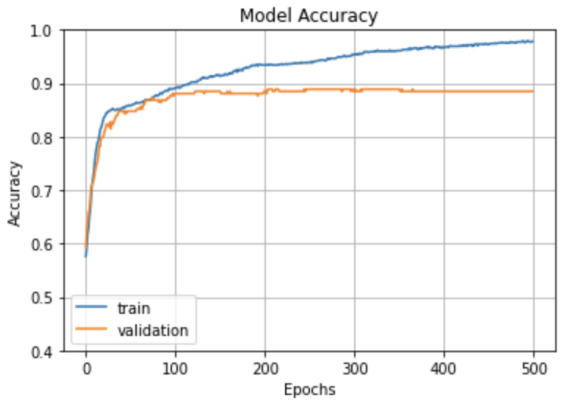
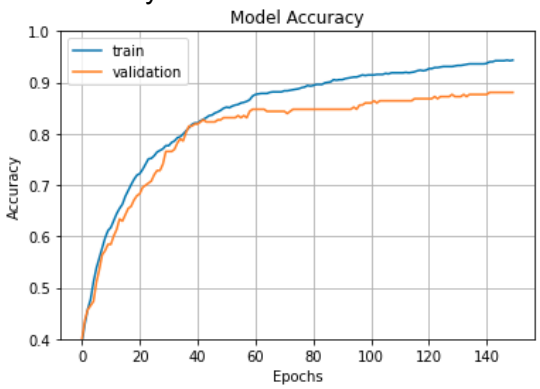
	Model	Accuracy
	Efficientnet_b4 - for 4 classes(normal, rot, bloatch, scab) epochs =20 lr = 0.001	
	Efficientnet_b4 - for 4 classes(normal, rot, bloatch, scab) epochs =200 lr = 0.00001	
	Efficientnet_b4 - for 2 classes(normal, defected) epochs =250 lr = 0.00001	
	Efficientnet_b4 - for 2 classes(normal,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

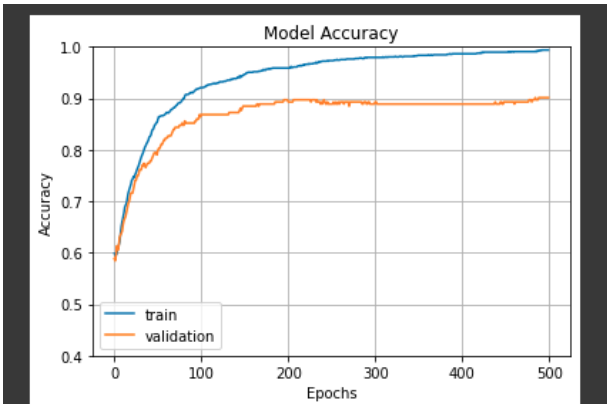
	Increased Batch size to 64
	
	epochs =200
	lr = 0.000005
		Best Accuracy at epoch 169:
		`Epoch : 169 Train Loss : 0.250199 Train Acc : 0.906420`
		`Epoch : 169 Valid Loss : 0.264553 Valid Acc : 0.918750`

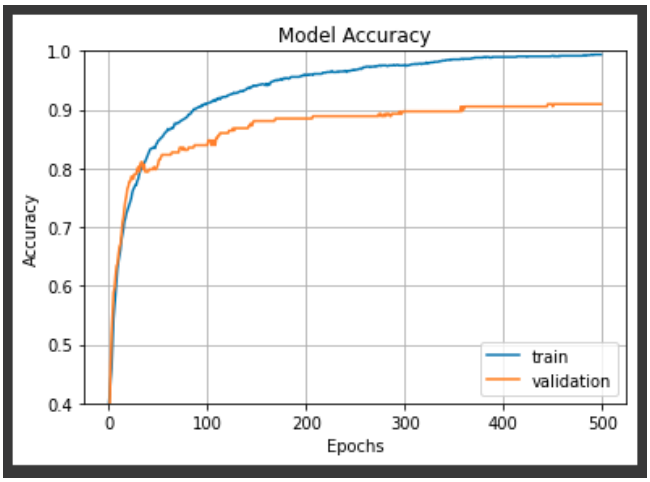
	Efficientnet_b4 - for 2 classes(normal, defected) - More data - merged data (2 classes + 4 classes)
	
	Increased Batch size to 64
	
	epochs =400
	lr = 0.000005
		Average accuracy:
		`100% 5/5 [00:01<00:00, 3.03it/s]`
		`Test Loss : 0.2485705479979515`
		`Test Acc : 0.909375011920929`
		
		Best Accuracy at epoch 336:
		`Epoch : 136 Train Loss : 0.191113 Train Acc : 0.927891`
		`Epoch : 136 Valid Loss : 0.246882 Valid Acc : 0.912500`

****	**Efficientnet_b4**
	
	Batch_size = 32
	Epochs = 500
	`Learning_rate = 0.000005`
	
	Dataset ->
	
	apple_dataset_normal_and_defected_with_extra_data_for_resnet_only_validation_data
	
	Dataset link →
	
	https://drive.google.com/drive/folders/1NlmW5_Vja29hoDbwE0AxnfaRM4T2wQG-?usp=sharing
	
	Trained Efficientnet_b4 model link →
	
	https://drive.google.com/drive/folders/1-BEEEKPcD8uDyZK_QWg85A0-lePAzbEg?usp=sharing
	
	Loading this model:-
	
	"/content/drive/MyDrive/CMPE-295-A/my_EfficientNetB4_model_1"
		`Epoch 500/500`
		`31/31 [==============================] - 5s 163ms/step - loss: 0.0580 - accuracy: 0.9897 - val_loss: 0.2811 - val_accuracy: 0.8971`
		
		 
		
		`Training Accuracy: 98.97`
		
		`Validation Accuracy: 89.71`
		
		`precision recall f1-score support`
		
		`DEFECTED 0.94 0.90 0.92 157`
		`NORMAL 0.83 0.90 0.86 86`
		
		`accuracy 0.90 243`
		`macro avg 0.88 0.90 0.89 243`
		`weighted avg 0.90 0.90 0.90 243`
		
		`Using this instead of restnet-50 as this gives prediction results under 30ms.`

****	**Efficientnet_b4** Batch_size = 32 Epochs = 250 **Learning_rate = 0.000005** **Dataset ->** dataset_for_all_3_fruits **Dataset link →** https://drive.google.com/drive/u/4/folders/1s7GP9iYfF5wgv1AmFbai2TqUHaUpMntG **Trained Efficientnet_b4 model link →** https://drive.google.com/drive/u/4/folders/1eGn99n5yu8xcxEsoA9U7Y-hI_sx4gSBI **Loading this model:-** **"/content/drive/MyDrive/Fruit Defect Detection for all 3 fruits/for_all_3_fruits_my_EfficientNetB4_model"** **Link for everything →** **https://drive.google.com/drive/u/4/folders/1vARRana9nl64yo0d7p2dep8gAlsrSm3k**	Epoch 250/250 95/95 [==============================] - 10s 98ms/step - loss: 0.0669 - accuracy: 0.9838 - val_loss: 0.2054 - val_accuracy: 0.9204  **Training Accuracy: 98.38** **Validation Accuracy: 92.04** precision recall f1-score support DEFECTED 0.91 0.93 0.92 379 NORMAL 0.93 0.91 0.92 375 accuracy 0.92 754 macro avg 0.92 0.92 0.92 754 weighted avg 0.92 0.92 0.92 754 **Final Model for defect detection for all three fruits.**
	EfficientNetV2L-transfer-learning **Dataset:-** **apple_dataset_normal_and_defected_with_extra_data_for_resnet_only_validation_data** **Batch size:- 32** epochs = 350 lr = 0.000002	Epoch 350/350 31/31 [==============================] - 10s 320ms/step - loss: 0.1893 - accuracy: 0.9444 - val_loss: 0.2980 - val_accuracy: 0.8848 **Val accuracy = 88.48%**
	EfficientNetV2L-transfer-learning	Epoch 500/500

	Dataset:- **apple_dataset_normal_and_defected_with_extra_data_for_resnet_only_validation_data** **Batch size:- 32** epochs = 500 lr = 0.000003	31/31 [==============================] - 10s 322ms/step - loss: 0.1043 - accuracy: 0.9784 - val_loss: 0.2767 - val_accuracy: 0.8848 **Val accuracy = 88.48%** 
	Resnet-50 Batch_size = 32 Epochs = 150 **Learning_rate = 0.000001** Dataset -> apple_dataset_normal_and_defected_with_extra_data_for_resnet_only_validation_data	Epoch 150/150 31/31 [==============================] - 4s 117ms/step - loss: 0.1948 - accuracy: 0.9434 - val_loss: 0.3101 - val_accuracy: 0.8807 Val accuracy = 0.8807 
	Resnet-50 Batch_size = 32 Epochs = 500 **Learning_rate = 0.000001** Dataset -> apple_dataset_normal_and_defected_with_extra_data_for_resnet_only_validation_data	Epoch 500/500 31/31 [==============================] - 4s 118ms/step - loss: 0.0598 - accuracy: 0.9938 - val_loss: 0.2697 - val_accuracy: 0.9012 **Training Accuracy: 99.38** **Validation Accuracy: 90.12**

**	**Resnet-50**
	
	Batch_size = 32
	Epochs = 500
	`Learning_rate = 0.000001`
	
	Dataset ->
	
	apple_dataset_normal_and_defected_with_extra_data_for_resnet_only_validation_data
	
	Dataset link →
	
	https://drive.google.com/drive/folders/1NlmW5_Vja29hoDbwE0AxnfaRM4T2wQG-?usp=sharing
	
	Trained RestNet-50 model link →
	
	https://drive.google.com/drive/folders/193IKkpITwwEWv_5RanUPVnuzYvR83qCL?usp=sharing
	
	Loading this model:-
	
	"/content/drive/MyDrive/CMPE-295-A/my_resnet_model"
		`Epoch 500/500`
		`31/31 [==============================] - 4s 122ms/step - loss: 0.0587 - accuracy: 0.9938 - val_loss: 0.2695 - val_accuracy: 0.9095`
		
		 
		
		`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	**`Training Accuracy: 100%`** **`Validation Accuracy: 97%`**

	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**	**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**