

Model Development Phase Template

Date	9 July 2024
Team ID	SWTID1719992739
Project Title	Visual Diagnostics: Detecting Tomato Plant Diseases through Leaf Image Analysis
Maximum Marks	10 Marks

Initial Model Training Code, Model Validation and Evaluation Report

The initial model training code will be showcased in the future through a screenshot. The model validation and evaluation report will include a summary and training and validation performance metrics for multiple models, presented through respective screenshots.

Initial Model Training Code (5 marks):

Paste the screenshot of the model training code

Model Validation and Evaluation Report (5 marks):

Model	Summary	Training and Validation Performance Metrics
ResNet152V2	 <pre> model.summary() ✓ 1h Model: "model" Layer (type) Output Shape Param # Connected to ----- input_1 (InputLayer) [(None, 256, 256, 3)] 0 [] conv1_pad (ConvPadding2D) (None, 256, 256, 3) 0 ["input_1[0][0]"] conv1_conv (Conv2D) (None, 128, 128, 64) 9472 ["conv1_pad[0][0]"] pool1_pad (ConvPadding2D) (None, 128, 128, 64) 0 ["conv1_conv[0][0]"] pool1_pool (MaxPooling2D) (None, 64, 64, 64) 0 ["pool1_pad[0][0]"] conv2_block1_preact_bn (BatchNormalisation) (None, 64, 64, 64) 256 ["pool1_pool[0][0]"] conv2_block1_preact_relu (Activation) (None, 64, 64, 64) 0 ["conv2_block1_preact_bn[0][0]"] conv2_block1_conv (Conv2D) (None, 64, 64, 64) 4096 ["conv2_block1_preact_relu[0][0]"] conv2_block1_bn (BatchNormalisation) (None, 64, 64, 64) 256 ["conv2_block1_conv[0][0]"] Total params: 6839008 (258.37 MB) Trainable params: 5628832 (215.26 MB) Non-trainable params: 796032 (31.11 MB) </pre>	 <pre> epoch 1/15 [=====] - 2803s 22s/step - loss: 0.9972 - accuracy: 0.7046 - val_loss: 0.6202 - val_accuracy: 0.8020 epoch 2/15 [=====] - 2806 2s/step - loss: 0.2472 - accuracy: 0.9240 - val_loss: 0.2086 - val_accuracy: 0.9270 epoch 3/15 [=====] - 2815 2s/step - loss: 0.1340 - accuracy: 0.9581 - val_loss: 0.1439 - val_accuracy: 0.9510 epoch 4/15 [=====] - 2806 2s/step - loss: 0.0971 - accuracy: 0.9691 - val_loss: 0.1590 - val_accuracy: 0.9430 epoch 5/15 [=====] - 2815 2s/step - loss: 0.0710 - accuracy: 0.9772 - val_loss: 0.1339 - val_accuracy: 0.9570 epoch 6/15 [=====] - 2806 2s/step - loss: 0.0550 - accuracy: 0.9828 - val_loss: 0.0997 - val_accuracy: 0.9690 epoch 7/15 [=====] - 2825 2s/step - loss: 0.0492 - accuracy: 0.9852 - val_loss: 0.0921 - val_accuracy: 0.9780 epoch 8/15 [=====] - 2845 2s/step - loss: 0.0390 - accuracy: 0.9860 - val_loss: 0.0845 - val_accuracy: 0.9760 epoch 9/15 [=====] - 2806 2s/step - loss: 0.0314 - accuracy: 0.9904 - val_loss: 0.0753 - val_accuracy: 0.9770 epoch 10/15 [=====] - 2806 2s/step - loss: 0.0262 - accuracy: 0.9926 - val_loss: 0.0862 - val_accuracy: 0.9680 epoch 11/15 [=====] - 2806 2s/step - loss: 0.0281 - accuracy: 0.9946 - val_loss: 0.0720 - val_accuracy: 0.9750 epoch 12/15 [=====] - 2796 2s/step - loss: 0.0215 - accuracy: 0.9929 - val_loss: 0.0619 - val_accuracy: 0.9800 epoch 13/15 [=====] - 2815 2s/step - loss: 0.0148 - accuracy: 0.9952 - val_loss: 0.0606 - val_accuracy: 0.9790 epoch 14/15 [=====] - 2815 2s/step - loss: 0.0148 - accuracy: 0.9952 - val_loss: 0.0606 - val_accuracy: 0.9790 epoch 15/15 [=====] - 2815 2s/step - loss: 0.0148 - accuracy: 0.9952 - val_loss: 0.0606 - val_accuracy: 0.9790 </pre>

MobilenetV2		Epoch 1/15	
0	torch.nn.Conv2d (16, 3, 3, 1)	0	['torch.nn.Conv2d', 16, 3, 3, 1]
	torch.nn.BatchNorm2d (16)	100	['torch.nn.BatchNorm2d', 16]
	torch.nn.Conv2d (16, 3, 3, 1)	100	['torch.nn.Conv2d', 16, 3, 3, 1]
	torch.nn.BatchNorm2d (16)	100	['torch.nn.BatchNorm2d', 16]
	torch.nn.Conv2d (16, 3, 3, 1)	0	['torch.nn.Conv2d', 16, 3, 3, 1]
	torch.nn.BatchNorm2d (16)	100	['torch.nn.BatchNorm2d', 16]
	torch.nn.Conv2d (16, 3, 3, 1)	100	['torch.nn.Conv2d', 16, 3, 3, 1]
	torch.nn.BatchNorm2d (16)	100	['torch.nn.BatchNorm2d', 16]
	torch.nn.Conv2d (16, 3, 3, 1)	100	['torch.nn.Conv2d', 16, 3, 3, 1]
	torch.nn.BatchNorm2d (16)	100	['torch.nn.BatchNorm2d', 16]
	torch.nn.Conv2d (16, 3, 3, 1)	100	['torch.nn.Conv2d', 16, 3, 3, 1]
	torch.nn.BatchNorm2d (16)	100	['torch.nn.BatchNorm2d', 16]
	torch.nn.Conv2d (16, 3, 3, 1)	100	['torch.nn.Conv2d', 16, 3, 3, 1]
	torch.nn.BatchNorm2d (16)	100	['torch.nn.BatchNorm2d', 16]
	torch.nn.Conv2d (16, 3, 3, 1)	100	['torch.nn.Conv2d', 16, 3, 3, 1]
total params: 340,000 (220.4 KiB)		Epoch 1/15	
trainable params: 340,000 (220.4 KiB)		125/125 [=====] - 2016 25/step - loss: 0.0000 - accuracy: 0.0000 - val_loss: 0.0000 - val_accuracy: 0.0000	
non-trainable params: 0 (0 KiB)		Epoch 2/15	
		125/125 [=====] - 2016 25/step - loss: 0.0000 - accuracy: 0.0000 - val_loss: 0.0000 - val_accuracy: 0.0000	
		Epoch 3/15	
		125/125 [=====] - 2016 25/step - loss: 0.0000 - accuracy: 0.0000 - val_loss: 0.0000 - val_accuracy: 0.0000	
		Epoch 4/15	
		125/125 [=====] - 2016 25/step - loss: 0.0000 - accuracy: 0.0000 - val_loss: 0.0000 - val_accuracy: 0.0000	
		Epoch 5/15	
		125/125 [=====] - 2016 25/step - loss: 0.0000 - accuracy: 0.0000 - val_loss: 0.0000 - val_accuracy: 0.0000	
		Epoch 6/15	
		125/125 [=====] - 2016 25/step - loss: 0.0000 - accuracy: 0.0000 - val_loss: 0.0000 - val_accuracy: 0.0000	
		Epoch 7/15	
		125/125 [=====] - 2016 25/step - loss: 0.0000 - accuracy: 0.0000 - val_loss: 0.0000 - val_accuracy: 0.0000	
		Epoch 8/15	
		125/125 [=====] - 2016 25/step - loss: 0.0000 - accuracy: 0.0000 - val_loss: 0.0000 - val_accuracy: 0.0000	
		Epoch 9/15	
		125/125 [=====] - 2016 25/step - loss: 0.0000 - accuracy: 0.0000 - val_loss: 0.0000 - val_accuracy: 0.0000	
		Epoch 10/15	
		125/125 [=====] - 2016 25/step - loss: 0.0000 - accuracy: 0.0000 - val_loss: 0.0000 - val_accuracy: 0.0000	
		Epoch 11/15	
		125/125 [=====] - 2016 25/step - loss: 0.0000 - accuracy: 0.0000 - val_loss: 0.0000 - val_accuracy: 0.0000	
		Epoch 12/15	
		125/125 [=====] - 2016 25/step - loss: 0.0000 - accuracy: 0.0000 - val_loss: 0.0000 - val_accuracy: 0.0000	
		Epoch 13/15	
		125/125 [=====] - 2016 25/step - loss: 0.0000 - accuracy: 0.0000 - val_loss: 0.0000 - val_accuracy: 0.0000	
		Epoch 14/15	
		125/125 [=====] - 2016 25/step - loss: 0.0000 - accuracy: 0.0000 - val_loss: 0.0000 - val_accuracy: 0.0000	
		Epoch 15/15	
		125/125 [=====] - 2016 25/step - loss: 0.0000 - accuracy: 0.0000 - val_loss: 0.0000 - val_accuracy: 0.0000	