

Project Development Phase Model Performance Test

Date	15 November 2022
Team ID	PNT2022TMID35960
Project Name	Project - Intelligent Vehicle Damage Assessment & Cost Estimator for Insurance Companies
Maximum Marks	10 Marks

Model Performance Testing:

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

S.No.	Parameter	Values	Screenshot
1.	Model Summary	<p>Total params: 14,789,955</p> <p>Trainable params: 75,267</p> <p>Non-trainable params: 14,714,688</p>	<p>Damage in the Body:</p> <pre> first_flatten (Flatten) (None, 25088) 0 dropout (Dropout) (None, 25088) 0 dense (Dense) (None, 3) 75267 ===== Total params: 14,789,955 Trainable params: 75,267 Non-trainable params: 14,714,688 </pre> <p>Level of Damage:</p> <pre> first_flatten (Flatten) (None, 25088) 0 dropout (Dropout) (None, 25088) 0 dense (Dense) (None, 3) 75267 ===== Total params: 14,789,955 Trainable params: 75,267 Non-trainable params: 14,714,688 </pre>
2.	Accuracy	<p>Damage in the Body:</p> <p>Training Accuracy - 93.28%</p> <p>Validation Accuracy - 89.31%</p> <p>Level of Damage:</p> <p>Training Accuracy - 92.47%</p> <p>Validation Accuracy - 89.31%</p>	<p>Damage in the Body:</p> <pre> Epoch 6/8 100/100 [=====] - 37s 373ms/step - loss: 0.2278 - accuracy: 0.9215 - val_loss: 0.3148 - val_accuracy: 0.8830 Epoch 7/8 100/100 [=====] - 38s 388ms/step - loss: 0.2161 - accuracy: 0.9271 - val_loss: 0.3125 - val_accuracy: 0.8818 Epoch 8/8 100/100 [=====] - 38s 376ms/step - loss: 0.1965 - accuracy: 0.9247 - val_loss: 0.2934 - val_accuracy: 0.8931 </pre> <p>Damage in the Body:</p> <pre> Epoch 6/8 100/100 [=====] - 37s 373ms/step - loss: 0.2278 - accuracy: 0.9215 - val_loss: 0.3148 - val_accuracy: 0.8830 Epoch 7/8 100/100 [=====] - 38s 388ms/step - loss: 0.2161 - accuracy: 0.9271 - val_loss: 0.3125 - val_accuracy: 0.8818 Epoch 8/8 100/100 [=====] - 38s 376ms/step - loss: 0.1965 - accuracy: 0.9247 - val_loss: 0.2934 - val_accuracy: 0.8931 </pre>

Model Summary:

```
# To print the hidden layer summary of vgg model without top layer  
vgg_model.summary()
```

Model: "vgg16"

Layer (type)	Output Shape	Param #
=====		
input_1 (InputLayer)	[(None, 224, 224, 3)]	0

block1_conv1 (Conv2D)	(None, 224, 224, 64)	1792

block1_conv2 (Conv2D)	(None, 224, 224, 64)	36928

block1_pool (MaxPooling2D)	(None, 112, 112, 64)	0

block2_conv1 (Conv2D)	(None, 112, 112, 128)	73856

block2_conv2 (Conv2D)	(None, 112, 112, 128)	147584

block2_pool (MaxPooling2D)	(None, 56, 56, 128)	0

block3_conv1 (Conv2D)	(None, 56, 56, 256)	295168

block3_conv2 (Conv2D)	(None, 56, 56, 256)	590080

block4_conv1 (Conv2D)	(None, 28, 28, 512)	1180160
block4_conv2 (Conv2D)	(None, 28, 28, 512)	2359808
block4_conv3 (Conv2D)	(None, 28, 28, 512)	2359808
block4_pool (MaxPooling2D)	(None, 14, 14, 512)	0
block5_conv1 (Conv2D)	(None, 14, 14, 512)	2359808
block5_conv2 (Conv2D)	(None, 14, 14, 512)	2359808
block5_conv3 (Conv2D)	(None, 14, 14, 512)	2359808
block5_pool (MaxPooling2D)	(None, 7, 7, 512)	0

=====

Total params: 14,714,688
Trainable params: 14,714,688
Non-trainable params: 0

Accuracy:

1) Body of Damage:

```
103/103 [=====] - 59s 429ms/step - loss: 1.1261 - accuracy:
0.5473 - val_loss: 0.5016 - val_accuracy: 0.8044
Epoch 2/8
103/103 [=====] - 38s 372ms/step - loss: 0.4785 - accuracy:
0.8156 - val_loss: 0.4922 - val_accuracy: 0.8067
Epoch 3/8
103/103 [=====] - 39s 372ms/step - loss: 0.3765 - accuracy:
0.8539 - val_loss: 0.3778 - val_accuracy: 0.8518
Epoch 4/8
103/103 [=====] - 39s 375ms/step - loss: 0.3013 - accuracy:
0.8922 - val_loss: 0.3098 - val_accuracy: 0.8883
Epoch 5/8
103/103 [=====] - 39s 373ms/step - loss: 0.2647 - accuracy:
0.8991 - val_loss: 0.2942 - val_accuracy: 0.8871
Epoch 6/8
103/103 [=====] - 39s 375ms/step - loss: 0.2228 - accuracy:
0.9230 - val_loss: 0.2986 - val_accuracy: 0.8879
Epoch 7/8
103/103 [=====] - 39s 375ms/step - loss: 0.2106 - accuracy:
0.9263 - val_loss: 0.2655 - val_accuracy: 0.9079
Epoch 8/8
103/103 [=====] - 39s 375ms/step - loss: 0.1951 - accuracy:
0.9328 - val_loss: 0.2807 - val_accuracy: 0.8914
```

2) Level of Damage:

```
100/100 [=====] - 59s 445ms/step - loss: 1.2741 - accuracy:
0.5368 - val_loss: 0.5413 - val_accuracy: 0.7882
Epoch 2/8
100/100 [=====] - 38s 376ms/step - loss: 0.5157 - accuracy:
0.7891 - val_loss: 0.4553 - val_accuracy: 0.8209
Epoch 3/8
100/100 [=====] - 37s 370ms/step - loss: 0.3666 - accuracy:
0.8547 - val_loss: 0.3729 - val_accuracy: 0.8661
Epoch 4/8
100/100 [=====] - 38s 376ms/step - loss: 0.3082 - accuracy:
0.8837 - val_loss: 0.3692 - val_accuracy: 0.8580
Epoch 5/8
100/100 [=====] - 37s 373ms/step - loss: 0.2678 - accuracy:
0.9017 - val_loss: 0.3201 - val_accuracy: 0.8778
Epoch 6/8
100/100 [=====] - 37s 373ms/step - loss: 0.2278 - accuracy:
0.9215 - val_loss: 0.3148 - val_accuracy: 0.8830
Epoch 7/8
100/100 [=====] - 38s 380ms/step - loss: 0.2161 - accuracy:
0.9271 - val_loss: 0.3125 - val_accuracy: 0.8818
Epoch 8/8
100/100 [=====] - 38s 376ms/step - loss: 0.1965 - accuracy:
0.9247 - val_loss: 0.2934 - val_accuracy: 0.8931
```