**Project Development Phase**
**Model Performance Test**

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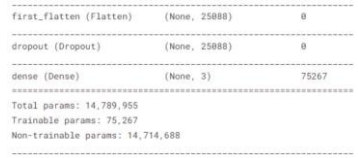
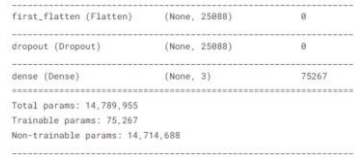
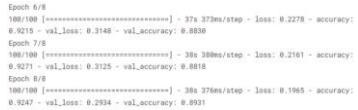
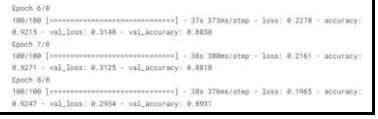
|---|---|
| Date | 15 November 2022 |
| Team ID | PNT2022TMID51924 |
| Project Name | Project - Intelligent Vehicle Damage Assessment & Cost Estimator for Insurance Companies |
| Maximum Marks | 10 Marks |

**Model Performance Testing:**

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

| S.No. | Parameter | Values | Screenshot |
|---|---|---|---|
| 1. | Model Summary | Total params: 14,789,955<br>Trainable params: 75,267<br>Non-trainable params: 14,714,688 | **Damage in the Body:**<br>  <br>**Level of Damage:**<br>  |
| 2. | Accuracy | **Damage in the Body:**<br>Training Accuracy - 93.28%<br>Validation Accuracy - 89.31%<br><br>**Level of Damage:**<br>Training Accuracy - 92.47%<br>Validation Accuracy - 89.31% | **Damage in the Body:**<br>  <br>**Damage in the Body:**<br>  |

**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
```