Project Development Phase

Model Performance Test

Date	13 November 2022
Team ID	PNT2022TMID53189
Project Name	Deep Learning Fundus Image Analysis for Early Detection of Diabetic Retinopathy

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 Parameters: 21,885,485 Trainable Parameters: 1,024,005 No Non-trainable Parameters: 20,861,480	Attached Below
2.	Accuracy	Training Accuracy:0.7188 Validation Accuracy:0.7452	Attached Below
3.	Confidence Score	Class Detected: N/A Confidence Score: N/A	N/A

Screenshots:

```
conv2d_3 (Conv2D)              (None, 10, 10, 1024  745472      ['add_10[0][0]']
                               )

block13_pool (MaxPooling2D)    (None, 10, 10, 1024  0           ['block13_sepconv2_bn[0][0]']
                               )

batch_normalization_3 (BatchNo  (None, 10, 10, 1024  4096       ['conv2d_3[0][0]']
rmalization)                   )

add_11 (Add)                   (None, 10, 10, 1024  0           ['block13_pool[0][0]',
                               )                                 'batch_normalization_3[0][0]']

block14_sepconv1 (SeparableCon  (None, 10, 10, 1536  1582080    ['add_11[0][0]']
v2D)                           )

block14_sepconv1_bn (BatchNorm  (None, 10, 10, 1536  6144       ['block14_sepconv1[0][0]']
alization)                     )

block14_sepconv1_act (Activati  (None, 10, 10, 1536  0           ['block14_sepconv1_bn[0][0]']
on)                            )

block14_sepconv2 (SeparableCon  (None, 10, 10, 2048  3159552    ['block14_sepconv1_act[0][0]']
v2D)                           )

block14_sepconv2_bn (BatchNorm  (None, 10, 10, 2048  8192       ['block14_sepconv2[0][0]']
alization)                     )

block14_sepconv2_act (Activati  (None, 10, 10, 2048  0           ['block14_sepconv2_bn[0][0]']
on)                            )

flatten (Flatten)              (None, 204800)       0           ['block14_sepconv2_act[0][0]']

dense (Dense)                  (None, 5)            1024005     ['flatten[0][0]']

==================================================================================================
Total params: 21,885,485
Trainable params: 1,024,005
Non-trainable params: 20,861,480
__________________________________________________________________________________________________
```

```
Epoch 1/30
3/3 [==============================] - 62s 19s/step - loss: 12.6991 - accuracy: 0.3646
Epoch 2/30
3/3 [==============================] - 49s 15s/step - loss: 10.5394 - accuracy: 0.4375
Epoch 3/30
3/3 [==============================] - 45s 12s/step - loss: 13.0203 - accuracy: 0.4744
Epoch 4/30
3/3 [==============================] - 48s 15s/step - loss: 11.0801 - accuracy: 0.5833
Epoch 5/30
3/3 [==============================] - 50s 15s/step - loss: 6.4611 - accuracy: 0.5938
Epoch 6/30
3/3 [==============================] - 49s 15s/step - loss: 4.8388 - accuracy: 0.6146
Epoch 7/30
3/3 [==============================] - 51s 14s/step - loss: 5.9661 - accuracy: 0.4375
Epoch 8/30
3/3 [==============================] - 50s 15s/step - loss: 4.2331 - accuracy: 0.6354
Epoch 9/30
3/3 [==============================] - 51s 15s/step - loss: 4.1708 - accuracy: 0.5938
Epoch 10/30
3/3 [==============================] - 51s 16s/step - loss: 3.9045 - accuracy: 0.7083
Epoch 11/30
3/3 [==============================] - 48s 15s/step - loss: 3.3453 - accuracy: 0.7188
Epoch 12/30
3/3 [==============================] - 49s 15s/step - loss: 4.6753 - accuracy: 0.6458
Epoch 13/30
3/3 [==============================] - 51s 15s/step - loss: 3.8727 - accuracy: 0.6354
Epoch 14/30
3/3 [==============================] - 51s 15s/step - loss: 3.1925 - accuracy: 0.6979
Epoch 15/30
3/3 [==============================] - 52s 16s/step - loss: 2.8910 - accuracy: 0.6562
Epoch 16/30
3/3 [==============================] - 54s 16s/step - loss: 2.9868 - accuracy: 0.7396
Epoch 17/30
3/3 [==============================] - 49s 15s/step - loss: 2.2207 - accuracy: 0.6667
Epoch 18/30
3/3 [==============================] - 50s 15s/step - loss: 3.5526 - accuracy: 0.7604
Epoch 19/30
3/3 [==============================] - 51s 15s/step - loss: 3.1636 - accuracy: 0.6771
Epoch 20/30
3/3 [==============================] - 51s 16s/step - loss: 3.1460 - accuracy: 0.7188
Epoch 21/30
3/3 [==============================] - 56s 16s/step - loss: 3.2419 - accuracy: 0.6979
```

```
Epoch 22/30
3/3 [==============================] - 50s 15s/step - loss: 2.4704 - accuracy: 0.7812
Epoch 23/30
3/3 [==============================] - 50s 15s/step - loss: 2.6599 - accuracy: 0.7604
Epoch 24/30
3/3 [==============================] - 50s 16s/step - loss: 2.7428 - accuracy: 0.6771
Epoch 25/30
3/3 [==============================] - 48s 14s/step - loss: 3.1063 - accuracy: 0.7292
Epoch 26/30
3/3 [==============================] - 49s 15s/step - loss: 2.4408 - accuracy: 0.7292
Epoch 27/30
3/3 [==============================] - 50s 15s/step - loss: 2.9661 - accuracy: 0.7083
Epoch 28/30
3/3 [==============================] - 47s 15s/step - loss: 2.6510 - accuracy: 0.7500
Epoch 29/30
3/3 [==============================] - 50s 15s/step - loss: 3.4746 - accuracy: 0.6667
Epoch 30/30
3/3 [==============================] - 57s 18s/step - loss: 4.2034 - accuracy: 0.6042
```

```
[17]  model.evaluate(testing_set)

...   23/23 [==============================] - 287s 12s/step - loss: 2.6429 - accuracy: 0.7452

      [2.642930507659912, 0.7452316284179688]
```