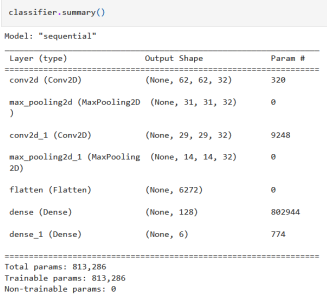
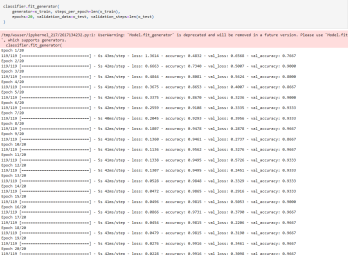


Project Development Phase Model Performance Test

Date	14 November 2022
Team ID	PNT2022TMID29553
Project Name	A Gesture-based Tool for Sterile Browsing of Radiology Images
Maximum Marks	10 Marks

Model Performance Testing:

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

S.No.	Parameter	Values	Screenshot
1.	Model Summary	conv2d (Conv2D) - 320 max_pooling2d (MaxPooling2D) - 0 conv2d_1 (Conv2D) - 9248 max_pooling2d_1 (MaxPooling2D) - 0 flatten (Flatten) - 0 dense (Dense) - 802944 dense_1 (Dense) - 774 ===== Total params: 813,286 Trainable params: 813,286 Non-trainable params: 0	 <pre> classifier.summary() Model: "sequential" Layer (type) Output Shape Param # ----- conv2d (Conv2D) (None, 62, 62, 32) 320 max_pooling2d (MaxPooling2D) (None, 31, 31, 32) 0 conv2d_1 (Conv2D) (None, 29, 29, 32) 9248 max_pooling2d_1 (MaxPooling2D) (None, 14, 14, 32) 0 flatten (Flatten) (None, 6272) 0 dense (Dense) (None, 128) 802944 dense_1 (Dense) (None, 6) 774 Total params: 813,286 Trainable params: 813,286 Non-trainable params: 0 </pre>
2.	Accuracy	Training Accuracy - 99.16% Validation Accuracy - 96.67%	 <pre> Epoch 100: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 99: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 98: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 97: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 96: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 95: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 94: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 93: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 92: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 91: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 90: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 89: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 88: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 87: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 86: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 85: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 84: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 83: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 82: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 81: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 80: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 79: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 78: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 77: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 76: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 75: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 74: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 73: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 72: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 71: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 70: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 69: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 68: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 67: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 66: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 65: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 64: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 63: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 62: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 61: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 60: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 59: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 58: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 57: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 56: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 55: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 54: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 53: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 52: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 51: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 50: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 49: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 48: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 47: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 46: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 45: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 44: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 43: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 42: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 41: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 40: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 39: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 38: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 37: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 36: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 35: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 34: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 33: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 32: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 31: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 30: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 29: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 28: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 27: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 26: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 25: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 24: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 23: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 22: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 21: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 20: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 19: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 18: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 17: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 16: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 15: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 14: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 13: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 12: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 11: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 10: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 9: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 8: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 7: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 6: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 5: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 4: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 3: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 2: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 Epoch 1: 100.0000 accuracy: 0.9916 - val_accuracy: 0.9667 </pre>
3.	Confidence Score (Only Yolo Projects)	Class Detected - Confidence Score -	NA

Screenshots:

1. Model Summary:

```
classifier.summary()
```

Model: "sequential"

Layer (type)	Output Shape	Param #
=====		
conv2d (Conv2D)	(None, 62, 62, 32)	320
max_pooling2d (MaxPooling2D)	(None, 31, 31, 32)	0
conv2d_1 (Conv2D)	(None, 29, 29, 32)	9248
max_pooling2d_1 (MaxPooling2D)	(None, 14, 14, 32)	0
flatten (Flatten)	(None, 6272)	0
dense (Dense)	(None, 128)	802944
dense_1 (Dense)	(None, 6)	774

=====
Total params: 813,286
Trainable params: 813,286
Non-trainable params: 0
=====

2. Accuracy:

```
classifier.fit_generator(  
    generator=x_train, steps_per_epoch=len(x_train),  
    epochs=20, validation_data=x_test, validation_steps=len(x_test)  
)
```

/tmp/wsuser/ipykernel_217/2617134232.py:1: UserWarning: 'Model.fit_generator' is deprecated and will be removed in a future version. Please use 'Model.fit', which supports generators.

```
classifier.fit_generator(  
Epoch 1/20
```

```
119/119 [=====] - 6s 43ms/step - loss: 1.3614 - accuracy: 0.4832 - val_loss: 0.6568 - val_accuracy: 0.7667
```

```
Epoch 2/20
```

```
119/119 [=====] - 5s 42ms/step - loss: 0.6663 - accuracy: 0.7340 - val_loss: 0.5007 - val_accuracy: 0.9000
```

```
Epoch 3/20
```

```
119/119 [=====] - 5s 42ms/step - loss: 0.4844 - accuracy: 0.8081 - val_loss: 0.5624 - val_accuracy: 0.8000
```

```
Epoch 4/20
```

```
119/119 [=====] - 5s 41ms/step - loss: 0.3675 - accuracy: 0.8653 - val_loss: 0.4007 - val_accuracy: 0.8667
```

```
Epoch 5/20
```

```
119/119 [=====] - 5s 42ms/step - loss: 0.3375 - accuracy: 0.8670 - val_loss: 0.3236 - val_accuracy: 0.9000
```

```
Epoch 6/20
```

```
119/119 [=====] - 5s 42ms/step - loss: 0.2559 - accuracy: 0.9108 - val_loss: 0.3335 - val_accuracy: 0.9333
```

```
Epoch 7/20
```

```
119/119 [=====] - 5s 40ms/step - loss: 0.2045 - accuracy: 0.9293 - val_loss: 0.3956 - val_accuracy: 0.9333
```

```
Epoch 8/20
```

```
119/119 [=====] - 5s 42ms/step - loss: 0.1807 - accuracy: 0.9478 - val_loss: 0.2878 - val_accuracy: 0.9667
```

```
Epoch 9/20
```

```
119/119 [=====] - 5s 41ms/step - loss: 0.1360 - accuracy: 0.9461 - val_loss: 0.2737 - val_accuracy: 0.8667
```

```
Epoch 10/20
```

```
119/119 [=====] - 5s 41ms/step - loss: 0.1136 - accuracy: 0.9562 - val_loss: 0.3276 - val_accuracy: 0.9667
```

```
Epoch 11/20
```

```
119/119 [=====] - 5s 41ms/step - loss: 0.1338 - accuracy: 0.9495 - val_loss: 0.5726 - val_accuracy: 0.9333
```

```
Epoch 12/20
```

```
119/119 [=====] - 5s 42ms/step - loss: 0.1307 - accuracy: 0.9495 - val_loss: 0.2451 - val_accuracy: 0.9333
```

```
Epoch 13/20
```

```
119/119 [=====] - 5s 42ms/step - loss: 0.0528 - accuracy: 0.9848 - val_loss: 0.3329 - val_accuracy: 0.9333
```

```
Epoch 14/20
```

```
119/119 [=====] - 5s 42ms/step - loss: 0.0472 - accuracy: 0.9865 - val_loss: 0.2916 - val_accuracy: 0.9333
```

```
Epoch 15/20
```

```
119/119 [=====] - 5s 41ms/step - loss: 0.0496 - accuracy: 0.9815 - val_loss: 0.5053 - val_accuracy: 0.9000
```

```
Epoch 16/20
```

```
119/119 [=====] - 5s 41ms/step - loss: 0.0866 - accuracy: 0.9731 - val_loss: 0.3790 - val_accuracy: 0.9667
```

```
Epoch 17/20
```

```
119/119 [=====] - 5s 41ms/step - loss: 0.0454 - accuracy: 0.9815 - val_loss: 0.2206 - val_accuracy: 0.9667
```

```
Epoch 18/20
```

```
119/119 [=====] - 5s 43ms/step - loss: 0.0479 - accuracy: 0.9815 - val_loss: 0.3190 - val_accuracy: 0.9667
```

```
Epoch 19/20
```

```
119/119 [=====] - 5s 41ms/step - loss: 0.0276 - accuracy: 0.9916 - val_loss: 0.3461 - val_accuracy: 0.9667
```

```
Epoch 20/20
```

```
119/119 [=====] - 5s 42ms/step - loss: 0.0228 - accuracy: 0.9916 - val_loss: 0.3098 - val_accuracy: 0.9667
```