

Training the model

```
In [30]: 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_156/2938698048.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(generator=x_train, steps_per_epoch = len(x_train), epochs=20, validation_data=x_test, validation_steps = len(x_test))
```

Epoch 1/20
526/526 [=====] - 14s 25ms/step - loss: 0.1182 - accuracy: 0.9543 - val_loss: 0.0608 - val_accuracy: 0.9583
Epoch 2/20
526/526 [=====] - 13s 25ms/step - loss: 0.0204 - accuracy: 0.9958 - val_loss: 0.0154 - val_accuracy: 0.9953
Epoch 3/20
526/526 [=====] - 14s 26ms/step - loss: 0.0284 - accuracy: 0.9931 - val_loss: 0.0452 - val_accuracy: 0.9820
Epoch 4/20
526/526 [=====] - 13s 25ms/step - loss: 0.0010 - accuracy: 1.0000 - val_loss: 0.0050 - val_accuracy: 1.0000
Epoch 5/20
526/526 [=====] - 13s 25ms/step - loss: 4.6515e-05 - accuracy: 1.0000 - val_loss: 0.0065 - val_accuracy: 1.0000
Epoch 6/20
526/526 [=====] - 13s 25ms/step - loss: 2.0956e-05 - accuracy: 1.0000 - val_loss: 0.0037 - val_accuracy: 1.0000
Epoch 7/20
526/526 [=====] - 13s 25ms/step - loss: 1.5190e-05 - accuracy: 1.0000 - val_loss: 0.0027 - val_accuracy: 1.0000
Epoch 8/20
526/526 [=====] - 13s 25ms/step - loss: 8.6012e-06 - accuracy: 1.0000 - val_loss: 0.0036 - val_accuracy: 1.0000

```
Epoch 10/20
526/526 [=====] - 13s 25ms/step - loss: 5.0627e-06 - accuracy: 1.0000 - val_loss: 0.0019 - val_accu
acy: 1.0000
Epoch 11/20
526/526 [=====] - 13s 24ms/step - loss: 2.5573e-06 - accuracy: 1.0000 - val_loss: 0.0026 - val_accu
acy: 1.0000
Epoch 12/20
526/526 [=====] - 14s 26ms/step - loss: 1.7628e-06 - accuracy: 1.0000 - val_loss: 0.0026 - val_accu
acy: 1.0000
Epoch 13/20
526/526 [=====] - 13s 25ms/step - loss: 0.0742 - accuracy: 0.9848 - val_loss: 0.3702 - val_accuracy:
0.9431
Epoch 14/20
526/526 [=====] - 13s 25ms/step - loss: 0.0038 - accuracy: 0.9992 - val_loss: 0.1328 - val_accuracy:
0.9564
Epoch 15/20
526/526 [=====] - 13s 25ms/step - loss: 1.3004e-04 - accuracy: 1.0000 - val_loss: 0.0880 - val_accu
acy: 0.9621
Epoch 16/20
526/526 [=====] - 13s 25ms/step - loss: 4.2907e-05 - accuracy: 1.0000 - val_loss: 0.0961 - val_accu
acy: 0.9697
Epoch 17/20
526/526 [=====] - 14s 27ms/step - loss: 2.2274e-05 - accuracy: 1.0000 - val_loss: 0.1027 - val_accu
acy: 0.9678
Epoch 18/20
526/526 [=====] - 13s 25ms/step - loss: 1.8160e-05 - accuracy: 1.0000 - val_loss: 0.0949 - val_accu
acy: 0.9687
Epoch 19/20
526/526 [=====] - 13s 25ms/step - loss: 1.0766e-05 - accuracy: 1.0000 - val_loss: 0.0861 - val_accu
acy: 0.9697
Epoch 20/20
526/526 [=====] - 13s 25ms/step - loss: 6.3222e-06 - accuracy: 1.0000 - val_loss: 0.0904 - val_accu
acy: 0.9697
```

Out[30]: <keras.callbacks.History at 0x7f0980119040>