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Layer (type) Output Shape Param #

=================================================================

input\_2 (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

block3\_conv3 (Conv2D) (None, 56, 56, 256) 590080

block3\_conv4 (Conv2D) (None, 56, 56, 256) 590080

block3\_pool (MaxPooling2D) (None, 28, 28, 256) 0

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\_conv4 (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\_conv4 (Conv2D) (None, 14, 14, 512) 2359808

block5\_pool (MaxPooling2D) (None, 7, 7, 512) 0

flatten (Flatten) (None, 25088) 0

dense (Dense) (None, 1) 25089

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Total params: 20,049,473

Trainable params: 25,089

Non-trainable params: 20,024,384

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Epoch 1/100

55/55 [==============================] - 380s 7s/step - loss: 0.5324 - accuracy: 0.7362 - val\_loss: 0.5071 - val\_accuracy: 0.7604 - lr: 0.0010

Epoch 2/100

55/55 [==============================] - 72s 1s/step - loss: 0.3126 - accuracy: 0.8635 - val\_loss: 0.2507 - val\_accuracy: 0.8963 - lr: 0.0010

Epoch 3/100

55/55 [==============================] - 72s 1s/step - loss: 0.2406 - accuracy: 0.9026 - val\_loss: 0.2134 - val\_accuracy: 0.9147 - lr: 0.0010

Epoch 4/100

55/55 [==============================] - 72s 1s/step - loss: 0.2296 - accuracy: 0.9044 - val\_loss: 0.2448 - val\_accuracy: 0.8963 - lr: 0.0010

Epoch 5/100

55/55 [==============================] - 72s 1s/step - loss: 0.2123 - accuracy: 0.9147 - val\_loss: 0.2085 - val\_accuracy: 0.9032 - lr: 0.0010

Epoch 6/100

55/55 [==============================] - 71s 1s/step - loss: 0.2085 - accuracy: 0.9165 - val\_loss: 0.1757 - val\_accuracy: 0.9378 - lr: 0.0010

Epoch 7/100

55/55 [==============================] - 71s 1s/step - loss: 0.1838 - accuracy: 0.9320 - val\_loss: 0.1653 - val\_accuracy: 0.9424 - lr: 0.0010

Epoch 8/100

55/55 [==============================] - 74s 1s/step - loss: 0.1751 - accuracy: 0.9274 - val\_loss: 0.3196 - val\_accuracy: 0.8664 - lr: 0.0010

Epoch 9/100

55/55 [==============================] - 71s 1s/step - loss: 0.1721 - accuracy: 0.9309 - val\_loss: 0.1687 - val\_accuracy: 0.9355 - lr: 0.0010

Epoch 10/100

55/55 [==============================] - 72s 1s/step - loss: 0.1637 - accuracy: 0.9349 - val\_loss: 0.2350 - val\_accuracy: 0.9055 - lr: 0.0010

Epoch 11/100

55/55 [==============================] - 71s 1s/step - loss: 0.1517 - accuracy: 0.9435 - val\_loss: 0.1623 - val\_accuracy: 0.9240 - lr: 1.0000e-04

Epoch 12/100

55/55 [==============================] - 70s 1s/step - loss: 0.1439 - accuracy: 0.9441 - val\_loss: 0.1593 - val\_accuracy: 0.9378 - lr: 1.0000e-04

Epoch 13/100

55/55 [==============================] - 71s 1s/step - loss: 0.1424 - accuracy: 0.9430 - val\_loss: 0.1544 - val\_accuracy: 0.9401 - lr: 1.0000e-04

Epoch 14/100

55/55 [==============================] - 71s 1s/step - loss: 0.1535 - accuracy: 0.9401 - val\_loss: 0.1532 - val\_accuracy: 0.9447 - lr: 1.0000e-04

Epoch 15/100

55/55 [==============================] - 71s 1s/step - loss: 0.1493 - accuracy: 0.9395 - val\_loss: 0.1490 - val\_accuracy: 0.9424 - lr: 1.0000e-04

Epoch 16/100

55/55 [==============================] - 72s 1s/step - loss: 0.1409 - accuracy: 0.9528 - val\_loss: 0.1584 - val\_accuracy: 0.9240 - lr: 1.0000e-04

Epoch 17/100

55/55 [==============================] - 71s 1s/step - loss: 0.1324 - accuracy: 0.9516 - val\_loss: 0.1538 - val\_accuracy: 0.9424 - lr: 1.0000e-04

Epoch 18/100

55/55 [==============================] - 71s 1s/step - loss: 0.1461 - accuracy: 0.9418 - val\_loss: 0.1491 - val\_accuracy: 0.9470 - lr: 1.0000e-04

Epoch 19/100

55/55 [==============================] - 74s 1s/step - loss: 0.1359 - accuracy: 0.9499 - val\_loss: 0.1542 - val\_accuracy: 0.9378 - lr: 1.0000e-05

Epoch 20/100

55/55 [==============================] - 71s 1s/step - loss: 0.1362 - accuracy: 0.9510 - val\_loss: 0.1357 - val\_accuracy: 0.9493 - lr: 1.0000e-05

Epoch 21/100

55/55 [==============================] - 71s 1s/step - loss: 0.1420 - accuracy: 0.9418 - val\_loss: 0.1538 - val\_accuracy: 0.9424 - lr: 1.0000e-05

Epoch 22/100

55/55 [==============================] - 71s 1s/step - loss: 0.1430 - accuracy: 0.9430 - val\_loss: 0.1527 - val\_accuracy: 0.9401 - lr: 1.0000e-05

Epoch 23/100

55/55 [==============================] - 71s 1s/step - loss: 0.1421 - accuracy: 0.9499 - val\_loss: 0.1317 - val\_accuracy: 0.9562 - lr: 1.0000e-05

Epoch 24/100

55/55 [==============================] - 72s 1s/step - loss: 0.1387 - accuracy: 0.9499 - val\_loss: 0.1456 - val\_accuracy: 0.9447 - lr: 1.0000e-05

Epoch 25/100

55/55 [==============================] - 70s 1s/step - loss: 0.1364 - accuracy: 0.9493 - val\_loss: 0.1407 - val\_accuracy: 0.9493 - lr: 1.0000e-05

Epoch 26/100

55/55 [==============================] - 70s 1s/step - loss: 0.1434 - accuracy: 0.9516 - val\_loss: 0.1460 - val\_accuracy: 0.9516 - lr: 1.0000e-05

Epoch 27/100

55/55 [==============================] - 71s 1s/step - loss: 0.1355 - accuracy: 0.9510 - val\_loss: 0.1462 - val\_accuracy: 0.9424 - lr: 1.0000e-06

Epoch 28/100

55/55 [==============================] - 72s 1s/step - loss: 0.1364 - accuracy: 0.9522 - val\_loss: 0.1251 - val\_accuracy: 0.9562 - lr: 1.0000e-06

Epoch 29/100

55/55 [==============================] - 71s 1s/step - loss: 0.1380 - accuracy: 0.9459 - val\_loss: 0.1486 - val\_accuracy: 0.9424 - lr: 1.0000e-06

Epoch 30/100

55/55 [==============================] - 71s 1s/step - loss: 0.1332 - accuracy: 0.9493 - val\_loss: 0.1491 - val\_accuracy: 0.9332 - lr: 1.0000e-06

Epoch 31/100

55/55 [==============================] - 71s 1s/step - loss: 0.1427 - accuracy: 0.9482 - val\_loss: 0.1522 - val\_accuracy: 0.9470 - lr: 1.0000e-06

Epoch 32/100

55/55 [==============================] - 73s 1s/step - loss: 0.1388 - accuracy: 0.9476 - val\_loss: 0.1499 - val\_accuracy: 0.9378 - lr: 1.0000e-07

Epoch 33/100

55/55 [==============================] - 70s 1s/step - loss: 0.1415 - accuracy: 0.9510 - val\_loss: 0.1481 - val\_accuracy: 0.9447 - lr: 1.0000e-07

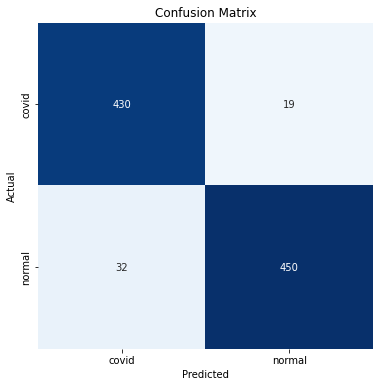
INFO:tensorflow:Assets written to: /content/drive/MyDrive/vgg19Split0.7/assets

Test Loss: 0.12673

Test Accuracy: 94.52%

/usr/local/lib/python3.7/dist-packages/ipykernel\_launcher.py:123: DeprecationWarning: `np.int` is a deprecated alias for the builtin `int`. To silence this warning, use `int` by itself. Doing this will not modify any behavior and is safe. When replacing `np.int`, you may wish to use e.g. `np.int64` or `np.int32` to specify the precision. If you wish to review your current use, check the release note link for additional information.

Deprecated in NumPy 1.20; for more details and guidance: <https://numpy.org/devdocs/release/1.20.0-notes.html#deprecations>



Classification Report:

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precision recall f1-score support

covid 0.93 0.96 0.94 449

normal 0.96 0.93 0.95 482

accuracy 0.95 931

macro avg 0.95 0.95 0.95 931

weighted avg 0.95 0.95 0.95 931

INFO:tensorflow:Assets written to: /content/drive/MyDrive/vgg16/assets

