Data split: train\_size=0.7

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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\_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\_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

flatten (Flatten) (None, 25088) 0

dense (Dense) (None, 1) 25089

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

Total params: 14,739,777

Trainable params: 25,089

Non-trainable params: 14,714,688

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Epoch 1/100

55/55 [==============================] - 367s 6s/step - loss: 0.4161 - accuracy: 0.7995 - val\_loss: 0.3009 - val\_accuracy: 0.8687 - lr: 0.0010

Epoch 2/100

55/55 [==============================] - 72s 1s/step - loss: 0.2366 - accuracy: 0.9090 - val\_loss: 0.2180 - val\_accuracy: 0.9032 - lr: 0.0010

Epoch 3/100

55/55 [==============================] - 73s 1s/step - loss: 0.2068 - accuracy: 0.9217 - val\_loss: 0.1902 - val\_accuracy: 0.9194 - lr: 0.0010

Epoch 4/100

55/55 [==============================] - 72s 1s/step - loss: 0.1954 - accuracy: 0.9199 - val\_loss: 0.2314 - val\_accuracy: 0.8917 - lr: 0.0010

Epoch 5/100

55/55 [==============================] - 71s 1s/step - loss: 0.1612 - accuracy: 0.9418 - val\_loss: 0.1619 - val\_accuracy: 0.9332 - lr: 0.0010

Epoch 6/100

55/55 [==============================] - 71s 1s/step - loss: 0.1636 - accuracy: 0.9418 - val\_loss: 0.1693 - val\_accuracy: 0.9309 - lr: 0.0010

Epoch 7/100

55/55 [==============================] - 73s 1s/step - loss: 0.1453 - accuracy: 0.9499 - val\_loss: 0.1462 - val\_accuracy: 0.9401 - lr: 0.0010

Epoch 8/100

55/55 [==============================] - 74s 1s/step - loss: 0.1339 - accuracy: 0.9505 - val\_loss: 0.1393 - val\_accuracy: 0.9447 - lr: 0.0010

Epoch 9/100

55/55 [==============================] - 73s 1s/step - loss: 0.1407 - accuracy: 0.9435 - val\_loss: 0.1369 - val\_accuracy: 0.9470 - lr: 0.0010

Epoch 10/100

55/55 [==============================] - 73s 1s/step - loss: 0.1253 - accuracy: 0.9539 - val\_loss: 0.1825 - val\_accuracy: 0.9263 - lr: 0.0010

Epoch 11/100

55/55 [==============================] - 72s 1s/step - loss: 0.1211 - accuracy: 0.9585 - val\_loss: 0.1844 - val\_accuracy: 0.9101 - lr: 0.0010

Epoch 12/100

55/55 [==============================] - 71s 1s/step - loss: 0.1181 - accuracy: 0.9551 - val\_loss: 0.1306 - val\_accuracy: 0.9539 - lr: 0.0010

Epoch 13/100

55/55 [==============================] - 70s 1s/step - loss: 0.1019 - accuracy: 0.9626 - val\_loss: 0.1179 - val\_accuracy: 0.9562 - lr: 0.0010

Epoch 14/100

55/55 [==============================] - 71s 1s/step - loss: 0.1185 - accuracy: 0.9522 - val\_loss: 0.1433 - val\_accuracy: 0.9470 - lr: 0.0010

Epoch 15/100

55/55 [==============================] - 71s 1s/step - loss: 0.1173 - accuracy: 0.9597 - val\_loss: 0.1329 - val\_accuracy: 0.9562 - lr: 0.0010

Epoch 16/100

55/55 [==============================] - 73s 1s/step - loss: 0.1114 - accuracy: 0.9603 - val\_loss: 0.1232 - val\_accuracy: 0.9585 - lr: 0.0010

Epoch 17/100

55/55 [==============================] - 74s 1s/step - loss: 0.1010 - accuracy: 0.9654 - val\_loss: 0.1151 - val\_accuracy: 0.9608 - lr: 1.0000e-04

Epoch 18/100

55/55 [==============================] - 73s 1s/step - loss: 0.0922 - accuracy: 0.9654 - val\_loss: 0.1124 - val\_accuracy: 0.9539 - lr: 1.0000e-04

Epoch 19/100

55/55 [==============================] - 73s 1s/step - loss: 0.0910 - accuracy: 0.9683 - val\_loss: 0.1223 - val\_accuracy: 0.9516 - lr: 1.0000e-04

Epoch 20/100

55/55 [==============================] - 74s 1s/step - loss: 0.0916 - accuracy: 0.9672 - val\_loss: 0.1261 - val\_accuracy: 0.9539 - lr: 1.0000e-04

Epoch 21/100

55/55 [==============================] - 73s 1s/step - loss: 0.0796 - accuracy: 0.9758 - val\_loss: 0.1117 - val\_accuracy: 0.9539 - lr: 1.0000e-04

Epoch 22/100

55/55 [==============================] - 73s 1s/step - loss: 0.0929 - accuracy: 0.9695 - val\_loss: 0.1473 - val\_accuracy: 0.9401 - lr: 1.0000e-04

Epoch 23/100

55/55 [==============================] - 73s 1s/step - loss: 0.0947 - accuracy: 0.9677 - val\_loss: 0.1092 - val\_accuracy: 0.9562 - lr: 1.0000e-04

Epoch 24/100

55/55 [==============================] - 71s 1s/step - loss: 0.0921 - accuracy: 0.9712 - val\_loss: 0.1244 - val\_accuracy: 0.9401 - lr: 1.0000e-04

Epoch 25/100

55/55 [==============================] - 70s 1s/step - loss: 0.0926 - accuracy: 0.9666 - val\_loss: 0.1336 - val\_accuracy: 0.9424 - lr: 1.0000e-04

Epoch 26/100

55/55 [==============================] - 71s 1s/step - loss: 0.0944 - accuracy: 0.9654 - val\_loss: 0.1219 - val\_accuracy: 0.9608 - lr: 1.0000e-04

Epoch 27/100

55/55 [==============================] - 71s 1s/step - loss: 0.0913 - accuracy: 0.9747 - val\_loss: 0.1125 - val\_accuracy: 0.9493 - lr: 1.0000e-05

Epoch 28/100

55/55 [==============================] - 71s 1s/step - loss: 0.0851 - accuracy: 0.9724 - val\_loss: 0.0907 - val\_accuracy: 0.9677 - lr: 1.0000e-05

Epoch 29/100

55/55 [==============================] - 71s 1s/step - loss: 0.0874 - accuracy: 0.9741 - val\_loss: 0.1350 - val\_accuracy: 0.9401 - lr: 1.0000e-05

Epoch 30/100

55/55 [==============================] - 71s 1s/step - loss: 0.0872 - accuracy: 0.9735 - val\_loss: 0.1123 - val\_accuracy: 0.9654 - lr: 1.0000e-05

Epoch 31/100

55/55 [==============================] - 72s 1s/step - loss: 0.0941 - accuracy: 0.9695 - val\_loss: 0.1301 - val\_accuracy: 0.9447 - lr: 1.0000e-05

Epoch 32/100

55/55 [==============================] - 71s 1s/step - loss: 0.0879 - accuracy: 0.9747 - val\_loss: 0.1024 - val\_accuracy: 0.9677 - lr: 1.0000e-06

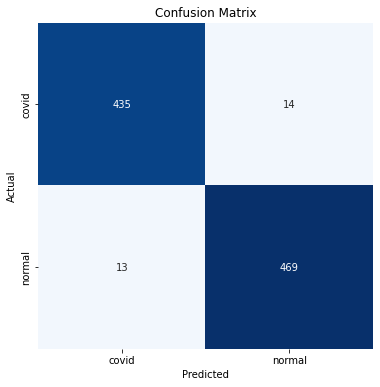
Epoch 33/100

55/55 [==============================] - 71s 1s/step - loss: 0.0845 - accuracy: 0.9712 - val\_loss: 0.1147 - val\_accuracy: 0.9562 - lr: 1.0000e-06

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

Test Loss: 0.08510

Test Accuracy: 97.10%



Classification Report:

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precision recall f1-score support

covid 0.97 0.97 0.97 449

normal 0.97 0.97 0.97 482

accuracy 0.97 931

macro avg 0.97 0.97 0.97 931

weighted avg 0.97 0.97 0.97 931

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

