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

Layer (type) Output Shape Param # Connected to

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

input\_10 (InputLayer) [(None, 224, 224, 3 0 []

)]

conv1\_pad (ZeroPadding2D) (None, 230, 230, 3) 0 ['input\_10[0][0]']

conv1\_conv (Conv2D) (None, 112, 112, 64 9472 ['conv1\_pad[0][0]']

)

conv1\_bn (BatchNormalization) (None, 112, 112, 64 256 ['conv1\_conv[0][0]']

)

conv1\_relu (Activation) (None, 112, 112, 64 0 ['conv1\_bn[0][0]']

)

pool1\_pad (ZeroPadding2D) (None, 114, 114, 64 0 ['conv1\_relu[0][0]']

)

pool1\_pool (MaxPooling2D) (None, 56, 56, 64) 0 ['pool1\_pad[0][0]']

conv2\_block1\_1\_conv (Conv2D) (None, 56, 56, 64) 4160 ['pool1\_pool[0][0]']

conv2\_block1\_1\_bn (BatchNormal (None, 56, 56, 64) 256 ['conv2\_block1\_1\_conv[0][0]']

ization)

conv2\_block1\_1\_relu (Activatio (None, 56, 56, 64) 0 ['conv2\_block1\_1\_bn[0][0]']

n)

conv2\_block1\_2\_conv (Conv2D) (None, 56, 56, 64) 36928 ['conv2\_block1\_1\_relu[0][0]']

conv2\_block1\_2\_bn (BatchNormal (None, 56, 56, 64) 256 ['conv2\_block1\_2\_conv[0][0]']

ization)

conv2\_block1\_2\_relu (Activatio (None, 56, 56, 64) 0 ['conv2\_block1\_2\_bn[0][0]']

n)

conv2\_block1\_0\_conv (Conv2D) (None, 56, 56, 256) 16640 ['pool1\_pool[0][0]']

conv2\_block1\_3\_conv (Conv2D) (None, 56, 56, 256) 16640 ['conv2\_block1\_2\_relu[0][0]']

conv2\_block1\_0\_bn (BatchNormal (None, 56, 56, 256) 1024 ['conv2\_block1\_0\_conv[0][0]']

ization)

conv2\_block1\_3\_bn (BatchNormal (None, 56, 56, 256) 1024 ['conv2\_block1\_3\_conv[0][0]']

ization)

conv2\_block1\_add (Add) (None, 56, 56, 256) 0 ['conv2\_block1\_0\_bn[0][0]',

'conv2\_block1\_3\_bn[0][0]']

conv2\_block1\_out (Activation) (None, 56, 56, 256) 0 ['conv2\_block1\_add[0][0]']

conv2\_block2\_1\_conv (Conv2D) (None, 56, 56, 64) 16448 ['conv2\_block1\_out[0][0]']

conv2\_block2\_1\_bn (BatchNormal (None, 56, 56, 64) 256 ['conv2\_block2\_1\_conv[0][0]']

ization)

conv2\_block2\_1\_relu (Activatio (None, 56, 56, 64) 0 ['conv2\_block2\_1\_bn[0][0]']

n)

conv2\_block2\_2\_conv (Conv2D) (None, 56, 56, 64) 36928 ['conv2\_block2\_1\_relu[0][0]']

conv2\_block2\_2\_bn (BatchNormal (None, 56, 56, 64) 256 ['conv2\_block2\_2\_conv[0][0]']

ization)

conv2\_block2\_2\_relu (Activatio (None, 56, 56, 64) 0 ['conv2\_block2\_2\_bn[0][0]']

n)

conv2\_block2\_3\_conv (Conv2D) (None, 56, 56, 256) 16640 ['conv2\_block2\_2\_relu[0][0]']

conv2\_block2\_3\_bn (BatchNormal (None, 56, 56, 256) 1024 ['conv2\_block2\_3\_conv[0][0]']

ization)

conv2\_block2\_add (Add) (None, 56, 56, 256) 0 ['conv2\_block1\_out[0][0]',

'conv2\_block2\_3\_bn[0][0]']

conv2\_block2\_out (Activation) (None, 56, 56, 256) 0 ['conv2\_block2\_add[0][0]']

conv2\_block3\_1\_conv (Conv2D) (None, 56, 56, 64) 16448 ['conv2\_block2\_out[0][0]']

conv2\_block3\_1\_bn (BatchNormal (None, 56, 56, 64) 256 ['conv2\_block3\_1\_conv[0][0]']

ization)

conv2\_block3\_1\_relu (Activatio (None, 56, 56, 64) 0 ['conv2\_block3\_1\_bn[0][0]']

n)

conv2\_block3\_2\_conv (Conv2D) (None, 56, 56, 64) 36928 ['conv2\_block3\_1\_relu[0][0]']

conv2\_block3\_2\_bn (BatchNormal (None, 56, 56, 64) 256 ['conv2\_block3\_2\_conv[0][0]']

ization)

conv2\_block3\_2\_relu (Activatio (None, 56, 56, 64) 0 ['conv2\_block3\_2\_bn[0][0]']

n)

conv2\_block3\_3\_conv (Conv2D) (None, 56, 56, 256) 16640 ['conv2\_block3\_2\_relu[0][0]']

conv2\_block3\_3\_bn (BatchNormal (None, 56, 56, 256) 1024 ['conv2\_block3\_3\_conv[0][0]']

ization)

conv2\_block3\_add (Add) (None, 56, 56, 256) 0 ['conv2\_block2\_out[0][0]',

'conv2\_block3\_3\_bn[0][0]']

conv2\_block3\_out (Activation) (None, 56, 56, 256) 0 ['conv2\_block3\_add[0][0]']

conv3\_block1\_1\_conv (Conv2D) (None, 28, 28, 128) 32896 ['conv2\_block3\_out[0][0]']

conv3\_block1\_1\_bn (BatchNormal (None, 28, 28, 128) 512 ['conv3\_block1\_1\_conv[0][0]']

ization)

conv3\_block1\_1\_relu (Activatio (None, 28, 28, 128) 0 ['conv3\_block1\_1\_bn[0][0]']

n)

conv3\_block1\_2\_conv (Conv2D) (None, 28, 28, 128) 147584 ['conv3\_block1\_1\_relu[0][0]']

conv3\_block1\_2\_bn (BatchNormal (None, 28, 28, 128) 512 ['conv3\_block1\_2\_conv[0][0]']

ization)

conv3\_block1\_2\_relu (Activatio (None, 28, 28, 128) 0 ['conv3\_block1\_2\_bn[0][0]']

n)

conv3\_block1\_0\_conv (Conv2D) (None, 28, 28, 512) 131584 ['conv2\_block3\_out[0][0]']

conv3\_block1\_3\_conv (Conv2D) (None, 28, 28, 512) 66048 ['conv3\_block1\_2\_relu[0][0]']

conv3\_block1\_0\_bn (BatchNormal (None, 28, 28, 512) 2048 ['conv3\_block1\_0\_conv[0][0]']

ization)

conv3\_block1\_3\_bn (BatchNormal (None, 28, 28, 512) 2048 ['conv3\_block1\_3\_conv[0][0]']

ization)

conv3\_block1\_add (Add) (None, 28, 28, 512) 0 ['conv3\_block1\_0\_bn[0][0]',

'conv3\_block1\_3\_bn[0][0]']

conv3\_block1\_out (Activation) (None, 28, 28, 512) 0 ['conv3\_block1\_add[0][0]']

conv3\_block2\_1\_conv (Conv2D) (None, 28, 28, 128) 65664 ['conv3\_block1\_out[0][0]']

conv3\_block2\_1\_bn (BatchNormal (None, 28, 28, 128) 512 ['conv3\_block2\_1\_conv[0][0]']

ization)

conv3\_block2\_1\_relu (Activatio (None, 28, 28, 128) 0 ['conv3\_block2\_1\_bn[0][0]']

n)

conv3\_block2\_2\_conv (Conv2D) (None, 28, 28, 128) 147584 ['conv3\_block2\_1\_relu[0][0]']

conv3\_block2\_2\_bn (BatchNormal (None, 28, 28, 128) 512 ['conv3\_block2\_2\_conv[0][0]']

ization)

conv3\_block2\_2\_relu (Activatio (None, 28, 28, 128) 0 ['conv3\_block2\_2\_bn[0][0]']

n)

conv3\_block2\_3\_conv (Conv2D) (None, 28, 28, 512) 66048 ['conv3\_block2\_2\_relu[0][0]']

conv3\_block2\_3\_bn (BatchNormal (None, 28, 28, 512) 2048 ['conv3\_block2\_3\_conv[0][0]']

ization)

conv3\_block2\_add (Add) (None, 28, 28, 512) 0 ['conv3\_block1\_out[0][0]',

'conv3\_block2\_3\_bn[0][0]']

conv3\_block2\_out (Activation) (None, 28, 28, 512) 0 ['conv3\_block2\_add[0][0]']

conv3\_block3\_1\_conv (Conv2D) (None, 28, 28, 128) 65664 ['conv3\_block2\_out[0][0]']

conv3\_block3\_1\_bn (BatchNormal (None, 28, 28, 128) 512 ['conv3\_block3\_1\_conv[0][0]']

ization)

conv3\_block3\_1\_relu (Activatio (None, 28, 28, 128) 0 ['conv3\_block3\_1\_bn[0][0]']

n)

conv3\_block3\_2\_conv (Conv2D) (None, 28, 28, 128) 147584 ['conv3\_block3\_1\_relu[0][0]']

conv3\_block3\_2\_bn (BatchNormal (None, 28, 28, 128) 512 ['conv3\_block3\_2\_conv[0][0]']

ization)

conv3\_block3\_2\_relu (Activatio (None, 28, 28, 128) 0 ['conv3\_block3\_2\_bn[0][0]']

n)

conv3\_block3\_3\_conv (Conv2D) (None, 28, 28, 512) 66048 ['conv3\_block3\_2\_relu[0][0]']

conv3\_block3\_3\_bn (BatchNormal (None, 28, 28, 512) 2048 ['conv3\_block3\_3\_conv[0][0]']

ization)

conv3\_block3\_add (Add) (None, 28, 28, 512) 0 ['conv3\_block2\_out[0][0]',

'conv3\_block3\_3\_bn[0][0]']

conv3\_block3\_out (Activation) (None, 28, 28, 512) 0 ['conv3\_block3\_add[0][0]']

conv3\_block4\_1\_conv (Conv2D) (None, 28, 28, 128) 65664 ['conv3\_block3\_out[0][0]']

conv3\_block4\_1\_bn (BatchNormal (None, 28, 28, 128) 512 ['conv3\_block4\_1\_conv[0][0]']

ization)

conv3\_block4\_1\_relu (Activatio (None, 28, 28, 128) 0 ['conv3\_block4\_1\_bn[0][0]']

n)

conv3\_block4\_2\_conv (Conv2D) (None, 28, 28, 128) 147584 ['conv3\_block4\_1\_relu[0][0]']

conv3\_block4\_2\_bn (BatchNormal (None, 28, 28, 128) 512 ['conv3\_block4\_2\_conv[0][0]']

ization)

conv3\_block4\_2\_relu (Activatio (None, 28, 28, 128) 0 ['conv3\_block4\_2\_bn[0][0]']

n)

conv3\_block4\_3\_conv (Conv2D) (None, 28, 28, 512) 66048 ['conv3\_block4\_2\_relu[0][0]']

conv3\_block4\_3\_bn (BatchNormal (None, 28, 28, 512) 2048 ['conv3\_block4\_3\_conv[0][0]']

ization)

conv3\_block4\_add (Add) (None, 28, 28, 512) 0 ['conv3\_block3\_out[0][0]',

'conv3\_block4\_3\_bn[0][0]']

conv3\_block4\_out (Activation) (None, 28, 28, 512) 0 ['conv3\_block4\_add[0][0]']

conv4\_block1\_1\_conv (Conv2D) (None, 14, 14, 256) 131328 ['conv3\_block4\_out[0][0]']

conv4\_block1\_1\_bn (BatchNormal (None, 14, 14, 256) 1024 ['conv4\_block1\_1\_conv[0][0]']

ization)

conv4\_block1\_1\_relu (Activatio (None, 14, 14, 256) 0 ['conv4\_block1\_1\_bn[0][0]']

n)

conv4\_block1\_2\_conv (Conv2D) (None, 14, 14, 256) 590080 ['conv4\_block1\_1\_relu[0][0]']

conv4\_block1\_2\_bn (BatchNormal (None, 14, 14, 256) 1024 ['conv4\_block1\_2\_conv[0][0]']

ization)

conv4\_block1\_2\_relu (Activatio (None, 14, 14, 256) 0 ['conv4\_block1\_2\_bn[0][0]']

n)

conv4\_block1\_0\_conv (Conv2D) (None, 14, 14, 1024 525312 ['conv3\_block4\_out[0][0]']

)

conv4\_block1\_3\_conv (Conv2D) (None, 14, 14, 1024 263168 ['conv4\_block1\_2\_relu[0][0]']

)

conv4\_block1\_0\_bn (BatchNormal (None, 14, 14, 1024 4096 ['conv4\_block1\_0\_conv[0][0]']

ization) )

conv4\_block1\_3\_bn (BatchNormal (None, 14, 14, 1024 4096 ['conv4\_block1\_3\_conv[0][0]']

ization) )

conv4\_block1\_add (Add) (None, 14, 14, 1024 0 ['conv4\_block1\_0\_bn[0][0]',

) 'conv4\_block1\_3\_bn[0][0]']

conv4\_block1\_out (Activation) (None, 14, 14, 1024 0 ['conv4\_block1\_add[0][0]']

)

conv4\_block2\_1\_conv (Conv2D) (None, 14, 14, 256) 262400 ['conv4\_block1\_out[0][0]']

conv4\_block2\_1\_bn (BatchNormal (None, 14, 14, 256) 1024 ['conv4\_block2\_1\_conv[0][0]']

ization)

conv4\_block2\_1\_relu (Activatio (None, 14, 14, 256) 0 ['conv4\_block2\_1\_bn[0][0]']

n)

conv4\_block2\_2\_conv (Conv2D) (None, 14, 14, 256) 590080 ['conv4\_block2\_1\_relu[0][0]']

conv4\_block2\_2\_bn (BatchNormal (None, 14, 14, 256) 1024 ['conv4\_block2\_2\_conv[0][0]']

ization)

conv4\_block2\_2\_relu (Activatio (None, 14, 14, 256) 0 ['conv4\_block2\_2\_bn[0][0]']

n)

conv4\_block2\_3\_conv (Conv2D) (None, 14, 14, 1024 263168 ['conv4\_block2\_2\_relu[0][0]']

)

conv4\_block2\_3\_bn (BatchNormal (None, 14, 14, 1024 4096 ['conv4\_block2\_3\_conv[0][0]']

ization) )

conv4\_block2\_add (Add) (None, 14, 14, 1024 0 ['conv4\_block1\_out[0][0]',

) 'conv4\_block2\_3\_bn[0][0]']

conv4\_block2\_out (Activation) (None, 14, 14, 1024 0 ['conv4\_block2\_add[0][0]']

)

conv4\_block3\_1\_conv (Conv2D) (None, 14, 14, 256) 262400 ['conv4\_block2\_out[0][0]']

conv4\_block3\_1\_bn (BatchNormal (None, 14, 14, 256) 1024 ['conv4\_block3\_1\_conv[0][0]']

ization)

conv4\_block3\_1\_relu (Activatio (None, 14, 14, 256) 0 ['conv4\_block3\_1\_bn[0][0]']

n)

conv4\_block3\_2\_conv (Conv2D) (None, 14, 14, 256) 590080 ['conv4\_block3\_1\_relu[0][0]']

conv4\_block3\_2\_bn (BatchNormal (None, 14, 14, 256) 1024 ['conv4\_block3\_2\_conv[0][0]']

ization)

conv4\_block3\_2\_relu (Activatio (None, 14, 14, 256) 0 ['conv4\_block3\_2\_bn[0][0]']

n)

conv4\_block3\_3\_conv (Conv2D) (None, 14, 14, 1024 263168 ['conv4\_block3\_2\_relu[0][0]']

)

conv4\_block3\_3\_bn (BatchNormal (None, 14, 14, 1024 4096 ['conv4\_block3\_3\_conv[0][0]']

ization) )

conv4\_block3\_add (Add) (None, 14, 14, 1024 0 ['conv4\_block2\_out[0][0]',

) 'conv4\_block3\_3\_bn[0][0]']

conv4\_block3\_out (Activation) (None, 14, 14, 1024 0 ['conv4\_block3\_add[0][0]']

)

conv4\_block4\_1\_conv (Conv2D) (None, 14, 14, 256) 262400 ['conv4\_block3\_out[0][0]']

conv4\_block4\_1\_bn (BatchNormal (None, 14, 14, 256) 1024 ['conv4\_block4\_1\_conv[0][0]']

ization)

conv4\_block4\_1\_relu (Activatio (None, 14, 14, 256) 0 ['conv4\_block4\_1\_bn[0][0]']

n)

conv4\_block4\_2\_conv (Conv2D) (None, 14, 14, 256) 590080 ['conv4\_block4\_1\_relu[0][0]']

conv4\_block4\_2\_bn (BatchNormal (None, 14, 14, 256) 1024 ['conv4\_block4\_2\_conv[0][0]']

ization)

conv4\_block4\_2\_relu (Activatio (None, 14, 14, 256) 0 ['conv4\_block4\_2\_bn[0][0]']

n)

conv4\_block4\_3\_conv (Conv2D) (None, 14, 14, 1024 263168 ['conv4\_block4\_2\_relu[0][0]']

)

conv4\_block4\_3\_bn (BatchNormal (None, 14, 14, 1024 4096 ['conv4\_block4\_3\_conv[0][0]']

ization) )

conv4\_block4\_add (Add) (None, 14, 14, 1024 0 ['conv4\_block3\_out[0][0]',

) 'conv4\_block4\_3\_bn[0][0]']

conv4\_block4\_out (Activation) (None, 14, 14, 1024 0 ['conv4\_block4\_add[0][0]']

)

conv4\_block5\_1\_conv (Conv2D) (None, 14, 14, 256) 262400 ['conv4\_block4\_out[0][0]']

conv4\_block5\_1\_bn (BatchNormal (None, 14, 14, 256) 1024 ['conv4\_block5\_1\_conv[0][0]']

ization)

conv4\_block5\_1\_relu (Activatio (None, 14, 14, 256) 0 ['conv4\_block5\_1\_bn[0][0]']

n)

conv4\_block5\_2\_conv (Conv2D) (None, 14, 14, 256) 590080 ['conv4\_block5\_1\_relu[0][0]']

conv4\_block5\_2\_bn (BatchNormal (None, 14, 14, 256) 1024 ['conv4\_block5\_2\_conv[0][0]']

ization)

conv4\_block5\_2\_relu (Activatio (None, 14, 14, 256) 0 ['conv4\_block5\_2\_bn[0][0]']

n)

conv4\_block5\_3\_conv (Conv2D) (None, 14, 14, 1024 263168 ['conv4\_block5\_2\_relu[0][0]']

)

conv4\_block5\_3\_bn (BatchNormal (None, 14, 14, 1024 4096 ['conv4\_block5\_3\_conv[0][0]']

ization) )

conv4\_block5\_add (Add) (None, 14, 14, 1024 0 ['conv4\_block4\_out[0][0]',

) 'conv4\_block5\_3\_bn[0][0]']

conv4\_block5\_out (Activation) (None, 14, 14, 1024 0 ['conv4\_block5\_add[0][0]']

)

conv4\_block6\_1\_conv (Conv2D) (None, 14, 14, 256) 262400 ['conv4\_block5\_out[0][0]']

conv4\_block6\_1\_bn (BatchNormal (None, 14, 14, 256) 1024 ['conv4\_block6\_1\_conv[0][0]']

ization)

conv4\_block6\_1\_relu (Activatio (None, 14, 14, 256) 0 ['conv4\_block6\_1\_bn[0][0]']

n)

conv4\_block6\_2\_conv (Conv2D) (None, 14, 14, 256) 590080 ['conv4\_block6\_1\_relu[0][0]']

conv4\_block6\_2\_bn (BatchNormal (None, 14, 14, 256) 1024 ['conv4\_block6\_2\_conv[0][0]']

ization)

conv4\_block6\_2\_relu (Activatio (None, 14, 14, 256) 0 ['conv4\_block6\_2\_bn[0][0]']

n)

conv4\_block6\_3\_conv (Conv2D) (None, 14, 14, 1024 263168 ['conv4\_block6\_2\_relu[0][0]']

)

conv4\_block6\_3\_bn (BatchNormal (None, 14, 14, 1024 4096 ['conv4\_block6\_3\_conv[0][0]']

ization) )

conv4\_block6\_add (Add) (None, 14, 14, 1024 0 ['conv4\_block5\_out[0][0]',

) 'conv4\_block6\_3\_bn[0][0]']

conv4\_block6\_out (Activation) (None, 14, 14, 1024 0 ['conv4\_block6\_add[0][0]']

)

conv5\_block1\_1\_conv (Conv2D) (None, 7, 7, 512) 524800 ['conv4\_block6\_out[0][0]']

conv5\_block1\_1\_bn (BatchNormal (None, 7, 7, 512) 2048 ['conv5\_block1\_1\_conv[0][0]']

ization)

conv5\_block1\_1\_relu (Activatio (None, 7, 7, 512) 0 ['conv5\_block1\_1\_bn[0][0]']

n)

conv5\_block1\_2\_conv (Conv2D) (None, 7, 7, 512) 2359808 ['conv5\_block1\_1\_relu[0][0]']

conv5\_block1\_2\_bn (BatchNormal (None, 7, 7, 512) 2048 ['conv5\_block1\_2\_conv[0][0]']

ization)

conv5\_block1\_2\_relu (Activatio (None, 7, 7, 512) 0 ['conv5\_block1\_2\_bn[0][0]']

n)

conv5\_block1\_0\_conv (Conv2D) (None, 7, 7, 2048) 2099200 ['conv4\_block6\_out[0][0]']

conv5\_block1\_3\_conv (Conv2D) (None, 7, 7, 2048) 1050624 ['conv5\_block1\_2\_relu[0][0]']

conv5\_block1\_0\_bn (BatchNormal (None, 7, 7, 2048) 8192 ['conv5\_block1\_0\_conv[0][0]']

ization)

conv5\_block1\_3\_bn (BatchNormal (None, 7, 7, 2048) 8192 ['conv5\_block1\_3\_conv[0][0]']

ization)

conv5\_block1\_add (Add) (None, 7, 7, 2048) 0 ['conv5\_block1\_0\_bn[0][0]',

'conv5\_block1\_3\_bn[0][0]']

conv5\_block1\_out (Activation) (None, 7, 7, 2048) 0 ['conv5\_block1\_add[0][0]']

conv5\_block2\_1\_conv (Conv2D) (None, 7, 7, 512) 1049088 ['conv5\_block1\_out[0][0]']

conv5\_block2\_1\_bn (BatchNormal (None, 7, 7, 512) 2048 ['conv5\_block2\_1\_conv[0][0]']

ization)

conv5\_block2\_1\_relu (Activatio (None, 7, 7, 512) 0 ['conv5\_block2\_1\_bn[0][0]']

n)

conv5\_block2\_2\_conv (Conv2D) (None, 7, 7, 512) 2359808 ['conv5\_block2\_1\_relu[0][0]']

conv5\_block2\_2\_bn (BatchNormal (None, 7, 7, 512) 2048 ['conv5\_block2\_2\_conv[0][0]']

ization)

conv5\_block2\_2\_relu (Activatio (None, 7, 7, 512) 0 ['conv5\_block2\_2\_bn[0][0]']

n)

conv5\_block2\_3\_conv (Conv2D) (None, 7, 7, 2048) 1050624 ['conv5\_block2\_2\_relu[0][0]']

conv5\_block2\_3\_bn (BatchNormal (None, 7, 7, 2048) 8192 ['conv5\_block2\_3\_conv[0][0]']

ization)

conv5\_block2\_add (Add) (None, 7, 7, 2048) 0 ['conv5\_block1\_out[0][0]',

'conv5\_block2\_3\_bn[0][0]']

conv5\_block2\_out (Activation) (None, 7, 7, 2048) 0 ['conv5\_block2\_add[0][0]']

conv5\_block3\_1\_conv (Conv2D) (None, 7, 7, 512) 1049088 ['conv5\_block2\_out[0][0]']

conv5\_block3\_1\_bn (BatchNormal (None, 7, 7, 512) 2048 ['conv5\_block3\_1\_conv[0][0]']

ization)

conv5\_block3\_1\_relu (Activatio (None, 7, 7, 512) 0 ['conv5\_block3\_1\_bn[0][0]']

n)

conv5\_block3\_2\_conv (Conv2D) (None, 7, 7, 512) 2359808 ['conv5\_block3\_1\_relu[0][0]']

conv5\_block3\_2\_bn (BatchNormal (None, 7, 7, 512) 2048 ['conv5\_block3\_2\_conv[0][0]']

ization)

conv5\_block3\_2\_relu (Activatio (None, 7, 7, 512) 0 ['conv5\_block3\_2\_bn[0][0]']

n)

conv5\_block3\_3\_conv (Conv2D) (None, 7, 7, 2048) 1050624 ['conv5\_block3\_2\_relu[0][0]']

conv5\_block3\_3\_bn (BatchNormal (None, 7, 7, 2048) 8192 ['conv5\_block3\_3\_conv[0][0]']

ization)

conv5\_block3\_add (Add) (None, 7, 7, 2048) 0 ['conv5\_block2\_out[0][0]',

'conv5\_block3\_3\_bn[0][0]']

conv5\_block3\_out (Activation) (None, 7, 7, 2048) 0 ['conv5\_block3\_add[0][0]']

flatten\_4 (Flatten) (None, 100352) 0 ['conv5\_block3\_out[0][0]']

dense\_4 (Dense) (None, 1) 100353 ['flatten\_4[0][0]']

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

Total params: 23,688,065

Trainable params: 100,353

Non-trainable params: 23,587,712

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Epoch 1/100

17/17 [==============================] - 14s 563ms/step - loss: 1.3777 - accuracy: 0.5363 - val\_loss: 0.8924 - val\_accuracy: 0.4478 - lr: 0.0010

Epoch 2/100

17/17 [==============================] - 6s 357ms/step - loss: 0.8128 - accuracy: 0.5475 - val\_loss: 0.6386 - val\_accuracy: 0.6567 - lr: 0.0010

Epoch 3/100

17/17 [==============================] - 6s 360ms/step - loss: 0.5184 - accuracy: 0.7225 - val\_loss: 0.5252 - val\_accuracy: 0.7164 - lr: 0.0010

Epoch 4/100

17/17 [==============================] - 6s 352ms/step - loss: 0.4479 - accuracy: 0.8250 - val\_loss: 0.5307 - val\_accuracy: 0.7612 - lr: 0.0010

Epoch 5/100

17/17 [==============================] - 6s 356ms/step - loss: 0.4578 - accuracy: 0.7858 - val\_loss: 0.4750 - val\_accuracy: 0.7910 - lr: 0.0010

Epoch 6/100

17/17 [==============================] - 6s 356ms/step - loss: 0.4428 - accuracy: 0.7691 - val\_loss: 0.4823 - val\_accuracy: 0.7836 - lr: 0.0010

Epoch 7/100

17/17 [==============================] - 6s 362ms/step - loss: 0.4468 - accuracy: 0.7728 - val\_loss: 0.4612 - val\_accuracy: 0.7687 - lr: 0.0010

Epoch 8/100

17/17 [==============================] - 6s 342ms/step - loss: 0.3537 - accuracy: 0.8492 - val\_loss: 0.5151 - val\_accuracy: 0.7612 - lr: 0.0010

Epoch 9/100

17/17 [==============================] - 6s 344ms/step - loss: 0.5140 - accuracy: 0.7244 - val\_loss: 0.4909 - val\_accuracy: 0.7761 - lr: 0.0010

Epoch 10/100

17/17 [==============================] - 6s 345ms/step - loss: 0.5349 - accuracy: 0.7598 - val\_loss: 0.6354 - val\_accuracy: 0.7015 - lr: 0.0010

Epoch 11/100

17/17 [==============================] - 6s 355ms/step - loss: 0.3260 - accuracy: 0.8566 - val\_loss: 0.4375 - val\_accuracy: 0.8060 - lr: 1.0000e-04

Epoch 12/100

17/17 [==============================] - 6s 357ms/step - loss: 0.2934 - accuracy: 0.8883 - val\_loss: 0.4336 - val\_accuracy: 0.8060 - lr: 1.0000e-04

Epoch 13/100

17/17 [==============================] - 6s 351ms/step - loss: 0.2859 - accuracy: 0.8976 - val\_loss: 0.4327 - val\_accuracy: 0.7910 - lr: 1.0000e-04

Epoch 14/100

17/17 [==============================] - 6s 357ms/step - loss: 0.2829 - accuracy: 0.9013 - val\_loss: 0.4293 - val\_accuracy: 0.8060 - lr: 1.0000e-04

Epoch 15/100

17/17 [==============================] - 6s 342ms/step - loss: 0.2851 - accuracy: 0.8939 - val\_loss: 0.4353 - val\_accuracy: 0.8209 - lr: 1.0000e-04

Epoch 16/100

17/17 [==============================] - 6s 339ms/step - loss: 0.2875 - accuracy: 0.8790 - val\_loss: 0.4400 - val\_accuracy: 0.8209 - lr: 1.0000e-04

Epoch 17/100

17/17 [==============================] - 6s 357ms/step - loss: 0.2867 - accuracy: 0.8957 - val\_loss: 0.4265 - val\_accuracy: 0.8060 - lr: 1.0000e-04

Epoch 18/100

17/17 [==============================] - 6s 356ms/step - loss: 0.2751 - accuracy: 0.9088 - val\_loss: 0.4270 - val\_accuracy: 0.7985 - lr: 1.0000e-04

Epoch 19/100

17/17 [==============================] - 6s 349ms/step - loss: 0.2703 - accuracy: 0.9125 - val\_loss: 0.4410 - val\_accuracy: 0.7761 - lr: 1.0000e-04

Epoch 20/100

17/17 [==============================] - 6s 356ms/step - loss: 0.2738 - accuracy: 0.9199 - val\_loss: 0.4238 - val\_accuracy: 0.8060 - lr: 1.0000e-04

Epoch 21/100

17/17 [==============================] - 6s 353ms/step - loss: 0.2694 - accuracy: 0.9088 - val\_loss: 0.4231 - val\_accuracy: 0.8060 - lr: 1.0000e-04

Epoch 22/100

17/17 [==============================] - 6s 350ms/step - loss: 0.2760 - accuracy: 0.9088 - val\_loss: 0.4219 - val\_accuracy: 0.7985 - lr: 1.0000e-04

Epoch 23/100

17/17 [==============================] - 6s 350ms/step - loss: 0.2680 - accuracy: 0.9106 - val\_loss: 0.4209 - val\_accuracy: 0.7985 - lr: 1.0000e-04

Epoch 24/100

17/17 [==============================] - 6s 345ms/step - loss: 0.2648 - accuracy: 0.9143 - val\_loss: 0.4296 - val\_accuracy: 0.7985 - lr: 1.0000e-04

Epoch 25/100

17/17 [==============================] - 6s 351ms/step - loss: 0.2625 - accuracy: 0.9199 - val\_loss: 0.4193 - val\_accuracy: 0.7985 - lr: 1.0000e-04

Epoch 26/100

17/17 [==============================] - 6s 341ms/step - loss: 0.2633 - accuracy: 0.9143 - val\_loss: 0.4213 - val\_accuracy: 0.8134 - lr: 1.0000e-04

Epoch 27/100

17/17 [==============================] - 6s 355ms/step - loss: 0.2609 - accuracy: 0.9218 - val\_loss: 0.4192 - val\_accuracy: 0.8134 - lr: 1.0000e-04

Epoch 28/100

17/17 [==============================] - 6s 349ms/step - loss: 0.2634 - accuracy: 0.9181 - val\_loss: 0.4237 - val\_accuracy: 0.8060 - lr: 1.0000e-04

Epoch 29/100

17/17 [==============================] - 6s 357ms/step - loss: 0.2564 - accuracy: 0.9236 - val\_loss: 0.4169 - val\_accuracy: 0.8209 - lr: 1.0000e-04

Epoch 30/100

17/17 [==============================] - 6s 335ms/step - loss: 0.2550 - accuracy: 0.9143 - val\_loss: 0.4285 - val\_accuracy: 0.8060 - lr: 1.0000e-04

Epoch 31/100

17/17 [==============================] - 6s 349ms/step - loss: 0.2542 - accuracy: 0.9236 - val\_loss: 0.4161 - val\_accuracy: 0.8209 - lr: 1.0000e-04

Epoch 32/100

17/17 [==============================] - 6s 354ms/step - loss: 0.2527 - accuracy: 0.9255 - val\_loss: 0.4148 - val\_accuracy: 0.8134 - lr: 1.0000e-04

Epoch 33/100

17/17 [==============================] - 6s 339ms/step - loss: 0.2523 - accuracy: 0.9348 - val\_loss: 0.4185 - val\_accuracy: 0.8209 - lr: 1.0000e-04

Epoch 34/100

17/17 [==============================] - 6s 340ms/step - loss: 0.2532 - accuracy: 0.9274 - val\_loss: 0.4168 - val\_accuracy: 0.8209 - lr: 1.0000e-04

Epoch 35/100

17/17 [==============================] - 6s 340ms/step - loss: 0.2527 - accuracy: 0.9236 - val\_loss: 0.4175 - val\_accuracy: 0.8209 - lr: 1.0000e-04

Epoch 36/100

17/17 [==============================] - 6s 350ms/step - loss: 0.2507 - accuracy: 0.9255 - val\_loss: 0.4136 - val\_accuracy: 0.8209 - lr: 1.0000e-05

Epoch 37/100

17/17 [==============================] - 6s 330ms/step - loss: 0.2456 - accuracy: 0.9292 - val\_loss: 0.4142 - val\_accuracy: 0.8134 - lr: 1.0000e-05

Epoch 38/100

17/17 [==============================] - 6s 338ms/step - loss: 0.2447 - accuracy: 0.9292 - val\_loss: 0.4136 - val\_accuracy: 0.8209 - lr: 1.0000e-05

Epoch 39/100

17/17 [==============================] - 6s 354ms/step - loss: 0.2445 - accuracy: 0.9311 - val\_loss: 0.4126 - val\_accuracy: 0.8209 - lr: 1.0000e-05

Epoch 40/100

17/17 [==============================] - 6s 339ms/step - loss: 0.2446 - accuracy: 0.9292 - val\_loss: 0.4137 - val\_accuracy: 0.8209 - lr: 1.0000e-05

Epoch 41/100

17/17 [==============================] - 6s 342ms/step - loss: 0.2441 - accuracy: 0.9311 - val\_loss: 0.4131 - val\_accuracy: 0.8209 - lr: 1.0000e-05

Epoch 42/100

17/17 [==============================] - 6s 339ms/step - loss: 0.2444 - accuracy: 0.9311 - val\_loss: 0.4132 - val\_accuracy: 0.8209 - lr: 1.0000e-05

Epoch 43/100

17/17 [==============================] - 6s 342ms/step - loss: 0.2437 - accuracy: 0.9311 - val\_loss: 0.4134 - val\_accuracy: 0.8209 - lr: 1.0000e-06

Epoch 44/100

17/17 [==============================] - 6s 355ms/step - loss: 0.2437 - accuracy: 0.9311 - val\_loss: 0.4135 - val\_accuracy: 0.8209 - lr: 1.0000e-06

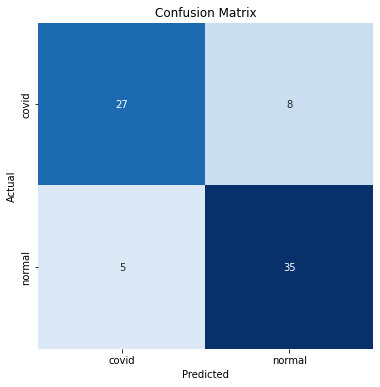
INFO:tensorflow:Assets written to: /content/drive/MyDrive/CTresnet50Split0.9noAug/assets

Test Loss: 0.44049

Test Accuracy: 82.67%

/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 0.84 0.77 0.81 35

normal 0.81 0.88 0.84 40

accuracy 0.83 75

macro avg 0.83 0.82 0.82 75

weighted avg 0.83 0.83 0.83 75

