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

Layer (type) Output Shape Param # Connected to

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

input\_12 (InputLayer) [(None, 224, 224, 3 0 []

)]

conv1\_pad (ZeroPadding2D) (None, 230, 230, 3) 0 ['input\_12[0][0]']

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

)

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

)

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

conv2\_block1\_preact\_bn (BatchN (None, 56, 56, 64) 256 ['pool1\_pool[0][0]']

ormalization)

conv2\_block1\_preact\_relu (Acti (None, 56, 56, 64) 0 ['conv2\_block1\_preact\_bn[0][0]']

vation)

conv2\_block1\_1\_conv (Conv2D) (None, 56, 56, 64) 4096 ['conv2\_block1\_preact\_relu[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\_pad (ZeroPaddin (None, 58, 58, 64) 0 ['conv2\_block1\_1\_relu[0][0]']

g2D)

conv2\_block1\_2\_conv (Conv2D) (None, 56, 56, 64) 36864 ['conv2\_block1\_2\_pad[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 ['conv2\_block1\_preact\_relu[0][0]'

]

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

conv2\_block1\_out (Add) (None, 56, 56, 256) 0 ['conv2\_block1\_0\_conv[0][0]',

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

conv2\_block2\_preact\_bn (BatchN (None, 56, 56, 256) 1024 ['conv2\_block1\_out[0][0]']

ormalization)

conv2\_block2\_preact\_relu (Acti (None, 56, 56, 256) 0 ['conv2\_block2\_preact\_bn[0][0]']

vation)

conv2\_block2\_1\_conv (Conv2D) (None, 56, 56, 64) 16384 ['conv2\_block2\_preact\_relu[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\_pad (ZeroPaddin (None, 58, 58, 64) 0 ['conv2\_block2\_1\_relu[0][0]']

g2D)

conv2\_block2\_2\_conv (Conv2D) (None, 56, 56, 64) 36864 ['conv2\_block2\_2\_pad[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\_out (Add) (None, 56, 56, 256) 0 ['conv2\_block1\_out[0][0]',

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

conv2\_block3\_preact\_bn (BatchN (None, 56, 56, 256) 1024 ['conv2\_block2\_out[0][0]']

ormalization)

conv2\_block3\_preact\_relu (Acti (None, 56, 56, 256) 0 ['conv2\_block3\_preact\_bn[0][0]']

vation)

conv2\_block3\_1\_conv (Conv2D) (None, 56, 56, 64) 16384 ['conv2\_block3\_preact\_relu[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\_pad (ZeroPaddin (None, 58, 58, 64) 0 ['conv2\_block3\_1\_relu[0][0]']

g2D)

conv2\_block3\_2\_conv (Conv2D) (None, 28, 28, 64) 36864 ['conv2\_block3\_2\_pad[0][0]']

conv2\_block3\_2\_bn (BatchNormal (None, 28, 28, 64) 256 ['conv2\_block3\_2\_conv[0][0]']

ization)

conv2\_block3\_2\_relu (Activatio (None, 28, 28, 64) 0 ['conv2\_block3\_2\_bn[0][0]']

n)

max\_pooling2d\_3 (MaxPooling2D) (None, 28, 28, 256) 0 ['conv2\_block2\_out[0][0]']

conv2\_block3\_3\_conv (Conv2D) (None, 28, 28, 256) 16640 ['conv2\_block3\_2\_relu[0][0]']

conv2\_block3\_out (Add) (None, 28, 28, 256) 0 ['max\_pooling2d\_3[0][0]',

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

conv3\_block1\_preact\_bn (BatchN (None, 28, 28, 256) 1024 ['conv2\_block3\_out[0][0]']

ormalization)

conv3\_block1\_preact\_relu (Acti (None, 28, 28, 256) 0 ['conv3\_block1\_preact\_bn[0][0]']

vation)

conv3\_block1\_1\_conv (Conv2D) (None, 28, 28, 128) 32768 ['conv3\_block1\_preact\_relu[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\_pad (ZeroPaddin (None, 30, 30, 128) 0 ['conv3\_block1\_1\_relu[0][0]']

g2D)

conv3\_block1\_2\_conv (Conv2D) (None, 28, 28, 128) 147456 ['conv3\_block1\_2\_pad[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 ['conv3\_block1\_preact\_relu[0][0]'

]

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

conv3\_block1\_out (Add) (None, 28, 28, 512) 0 ['conv3\_block1\_0\_conv[0][0]',

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

conv3\_block2\_preact\_bn (BatchN (None, 28, 28, 512) 2048 ['conv3\_block1\_out[0][0]']

ormalization)

conv3\_block2\_preact\_relu (Acti (None, 28, 28, 512) 0 ['conv3\_block2\_preact\_bn[0][0]']

vation)

conv3\_block2\_1\_conv (Conv2D) (None, 28, 28, 128) 65536 ['conv3\_block2\_preact\_relu[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\_pad (ZeroPaddin (None, 30, 30, 128) 0 ['conv3\_block2\_1\_relu[0][0]']

g2D)

conv3\_block2\_2\_conv (Conv2D) (None, 28, 28, 128) 147456 ['conv3\_block2\_2\_pad[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\_out (Add) (None, 28, 28, 512) 0 ['conv3\_block1\_out[0][0]',

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

conv3\_block3\_preact\_bn (BatchN (None, 28, 28, 512) 2048 ['conv3\_block2\_out[0][0]']

ormalization)

conv3\_block3\_preact\_relu (Acti (None, 28, 28, 512) 0 ['conv3\_block3\_preact\_bn[0][0]']

vation)

conv3\_block3\_1\_conv (Conv2D) (None, 28, 28, 128) 65536 ['conv3\_block3\_preact\_relu[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\_pad (ZeroPaddin (None, 30, 30, 128) 0 ['conv3\_block3\_1\_relu[0][0]']

g2D)

conv3\_block3\_2\_conv (Conv2D) (None, 28, 28, 128) 147456 ['conv3\_block3\_2\_pad[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\_out (Add) (None, 28, 28, 512) 0 ['conv3\_block2\_out[0][0]',

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

conv3\_block4\_preact\_bn (BatchN (None, 28, 28, 512) 2048 ['conv3\_block3\_out[0][0]']

ormalization)

conv3\_block4\_preact\_relu (Acti (None, 28, 28, 512) 0 ['conv3\_block4\_preact\_bn[0][0]']

vation)

conv3\_block4\_1\_conv (Conv2D) (None, 28, 28, 128) 65536 ['conv3\_block4\_preact\_relu[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\_pad (ZeroPaddin (None, 30, 30, 128) 0 ['conv3\_block4\_1\_relu[0][0]']

g2D)

conv3\_block4\_2\_conv (Conv2D) (None, 14, 14, 128) 147456 ['conv3\_block4\_2\_pad[0][0]']

conv3\_block4\_2\_bn (BatchNormal (None, 14, 14, 128) 512 ['conv3\_block4\_2\_conv[0][0]']

ization)

conv3\_block4\_2\_relu (Activatio (None, 14, 14, 128) 0 ['conv3\_block4\_2\_bn[0][0]']

n)

max\_pooling2d\_4 (MaxPooling2D) (None, 14, 14, 512) 0 ['conv3\_block3\_out[0][0]']

conv3\_block4\_3\_conv (Conv2D) (None, 14, 14, 512) 66048 ['conv3\_block4\_2\_relu[0][0]']

conv3\_block4\_out (Add) (None, 14, 14, 512) 0 ['max\_pooling2d\_4[0][0]',

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

conv4\_block1\_preact\_bn (BatchN (None, 14, 14, 512) 2048 ['conv3\_block4\_out[0][0]']

ormalization)

conv4\_block1\_preact\_relu (Acti (None, 14, 14, 512) 0 ['conv4\_block1\_preact\_bn[0][0]']

vation)

conv4\_block1\_1\_conv (Conv2D) (None, 14, 14, 256) 131072 ['conv4\_block1\_preact\_relu[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\_pad (ZeroPaddin (None, 16, 16, 256) 0 ['conv4\_block1\_1\_relu[0][0]']

g2D)

conv4\_block1\_2\_conv (Conv2D) (None, 14, 14, 256) 589824 ['conv4\_block1\_2\_pad[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 ['conv4\_block1\_preact\_relu[0][0]'

) ]

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

)

conv4\_block1\_out (Add) (None, 14, 14, 1024 0 ['conv4\_block1\_0\_conv[0][0]',

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

conv4\_block2\_preact\_bn (BatchN (None, 14, 14, 1024 4096 ['conv4\_block1\_out[0][0]']

ormalization) )

conv4\_block2\_preact\_relu (Acti (None, 14, 14, 1024 0 ['conv4\_block2\_preact\_bn[0][0]']

vation) )

conv4\_block2\_1\_conv (Conv2D) (None, 14, 14, 256) 262144 ['conv4\_block2\_preact\_relu[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\_pad (ZeroPaddin (None, 16, 16, 256) 0 ['conv4\_block2\_1\_relu[0][0]']

g2D)

conv4\_block2\_2\_conv (Conv2D) (None, 14, 14, 256) 589824 ['conv4\_block2\_2\_pad[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\_out (Add) (None, 14, 14, 1024 0 ['conv4\_block1\_out[0][0]',

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

conv4\_block3\_preact\_bn (BatchN (None, 14, 14, 1024 4096 ['conv4\_block2\_out[0][0]']

ormalization) )

conv4\_block3\_preact\_relu (Acti (None, 14, 14, 1024 0 ['conv4\_block3\_preact\_bn[0][0]']

vation) )

conv4\_block3\_1\_conv (Conv2D) (None, 14, 14, 256) 262144 ['conv4\_block3\_preact\_relu[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\_pad (ZeroPaddin (None, 16, 16, 256) 0 ['conv4\_block3\_1\_relu[0][0]']

g2D)

conv4\_block3\_2\_conv (Conv2D) (None, 14, 14, 256) 589824 ['conv4\_block3\_2\_pad[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\_out (Add) (None, 14, 14, 1024 0 ['conv4\_block2\_out[0][0]',

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

conv4\_block4\_preact\_bn (BatchN (None, 14, 14, 1024 4096 ['conv4\_block3\_out[0][0]']

ormalization) )

conv4\_block4\_preact\_relu (Acti (None, 14, 14, 1024 0 ['conv4\_block4\_preact\_bn[0][0]']

vation) )

conv4\_block4\_1\_conv (Conv2D) (None, 14, 14, 256) 262144 ['conv4\_block4\_preact\_relu[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\_pad (ZeroPaddin (None, 16, 16, 256) 0 ['conv4\_block4\_1\_relu[0][0]']

g2D)

conv4\_block4\_2\_conv (Conv2D) (None, 14, 14, 256) 589824 ['conv4\_block4\_2\_pad[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\_out (Add) (None, 14, 14, 1024 0 ['conv4\_block3\_out[0][0]',

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

conv4\_block5\_preact\_bn (BatchN (None, 14, 14, 1024 4096 ['conv4\_block4\_out[0][0]']

ormalization) )

conv4\_block5\_preact\_relu (Acti (None, 14, 14, 1024 0 ['conv4\_block5\_preact\_bn[0][0]']

vation) )

conv4\_block5\_1\_conv (Conv2D) (None, 14, 14, 256) 262144 ['conv4\_block5\_preact\_relu[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\_pad (ZeroPaddin (None, 16, 16, 256) 0 ['conv4\_block5\_1\_relu[0][0]']

g2D)

conv4\_block5\_2\_conv (Conv2D) (None, 14, 14, 256) 589824 ['conv4\_block5\_2\_pad[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\_out (Add) (None, 14, 14, 1024 0 ['conv4\_block4\_out[0][0]',

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

conv4\_block6\_preact\_bn (BatchN (None, 14, 14, 1024 4096 ['conv4\_block5\_out[0][0]']

ormalization) )

conv4\_block6\_preact\_relu (Acti (None, 14, 14, 1024 0 ['conv4\_block6\_preact\_bn[0][0]']

vation) )

conv4\_block6\_1\_conv (Conv2D) (None, 14, 14, 256) 262144 ['conv4\_block6\_preact\_relu[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\_pad (ZeroPaddin (None, 16, 16, 256) 0 ['conv4\_block6\_1\_relu[0][0]']

g2D)

conv4\_block6\_2\_conv (Conv2D) (None, 7, 7, 256) 589824 ['conv4\_block6\_2\_pad[0][0]']

conv4\_block6\_2\_bn (BatchNormal (None, 7, 7, 256) 1024 ['conv4\_block6\_2\_conv[0][0]']

ization)

conv4\_block6\_2\_relu (Activatio (None, 7, 7, 256) 0 ['conv4\_block6\_2\_bn[0][0]']

n)

max\_pooling2d\_5 (MaxPooling2D) (None, 7, 7, 1024) 0 ['conv4\_block5\_out[0][0]']

conv4\_block6\_3\_conv (Conv2D) (None, 7, 7, 1024) 263168 ['conv4\_block6\_2\_relu[0][0]']

conv4\_block6\_out (Add) (None, 7, 7, 1024) 0 ['max\_pooling2d\_5[0][0]',

'conv4\_block6\_3\_conv[0][0]']

conv5\_block1\_preact\_bn (BatchN (None, 7, 7, 1024) 4096 ['conv4\_block6\_out[0][0]']

ormalization)

conv5\_block1\_preact\_relu (Acti (None, 7, 7, 1024) 0 ['conv5\_block1\_preact\_bn[0][0]']

vation)

conv5\_block1\_1\_conv (Conv2D) (None, 7, 7, 512) 524288 ['conv5\_block1\_preact\_relu[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\_pad (ZeroPaddin (None, 9, 9, 512) 0 ['conv5\_block1\_1\_relu[0][0]']

g2D)

conv5\_block1\_2\_conv (Conv2D) (None, 7, 7, 512) 2359296 ['conv5\_block1\_2\_pad[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 ['conv5\_block1\_preact\_relu[0][0]'

]

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

conv5\_block1\_out (Add) (None, 7, 7, 2048) 0 ['conv5\_block1\_0\_conv[0][0]',

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

conv5\_block2\_preact\_bn (BatchN (None, 7, 7, 2048) 8192 ['conv5\_block1\_out[0][0]']

ormalization)

conv5\_block2\_preact\_relu (Acti (None, 7, 7, 2048) 0 ['conv5\_block2\_preact\_bn[0][0]']

vation)

conv5\_block2\_1\_conv (Conv2D) (None, 7, 7, 512) 1048576 ['conv5\_block2\_preact\_relu[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\_pad (ZeroPaddin (None, 9, 9, 512) 0 ['conv5\_block2\_1\_relu[0][0]']

g2D)

conv5\_block2\_2\_conv (Conv2D) (None, 7, 7, 512) 2359296 ['conv5\_block2\_2\_pad[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\_out (Add) (None, 7, 7, 2048) 0 ['conv5\_block1\_out[0][0]',

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

conv5\_block3\_preact\_bn (BatchN (None, 7, 7, 2048) 8192 ['conv5\_block2\_out[0][0]']

ormalization)

conv5\_block3\_preact\_relu (Acti (None, 7, 7, 2048) 0 ['conv5\_block3\_preact\_bn[0][0]']

vation)

conv5\_block3\_1\_conv (Conv2D) (None, 7, 7, 512) 1048576 ['conv5\_block3\_preact\_relu[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\_pad (ZeroPaddin (None, 9, 9, 512) 0 ['conv5\_block3\_1\_relu[0][0]']

g2D)

conv5\_block3\_2\_conv (Conv2D) (None, 7, 7, 512) 2359296 ['conv5\_block3\_2\_pad[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\_out (Add) (None, 7, 7, 2048) 0 ['conv5\_block2\_out[0][0]',

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

post\_bn (BatchNormalization) (None, 7, 7, 2048) 8192 ['conv5\_block3\_out[0][0]']

post\_relu (Activation) (None, 7, 7, 2048) 0 ['post\_bn[0][0]']

flatten\_5 (Flatten) (None, 100352) 0 ['post\_relu[0][0]']

dense\_5 (Dense) (None, 1) 100353 ['flatten\_5[0][0]']

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

Total params: 23,665,153

Trainable params: 100,353

Non-trainable params: 23,564,800

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Epoch 1/100

17/17 [==============================] - 13s 507ms/step - loss: 1.5682 - accuracy: 0.6909 - val\_loss: 0.7635 - val\_accuracy: 0.8134 - lr: 0.0010

Epoch 2/100

17/17 [==============================] - 6s 330ms/step - loss: 0.3406 - accuracy: 0.9162 - val\_loss: 1.0136 - val\_accuracy: 0.7910 - lr: 0.0010

Epoch 3/100

17/17 [==============================] - 6s 329ms/step - loss: 0.0372 - accuracy: 0.9851 - val\_loss: 1.0379 - val\_accuracy: 0.8284 - lr: 0.0010

Epoch 4/100

17/17 [==============================] - 6s 327ms/step - loss: 0.0058 - accuracy: 0.9963 - val\_loss: 1.0549 - val\_accuracy: 0.8284 - lr: 0.0010

Epoch 5/100

17/17 [==============================] - 6s 328ms/step - loss: 5.0399e-04 - accuracy: 1.0000 - val\_loss: 1.0643 - val\_accuracy: 0.8284 - lr: 1.0000e-04

Epoch 6/100

17/17 [==============================] - 6s 338ms/step - loss: 4.0978e-04 - accuracy: 1.0000 - val\_loss: 1.0665 - val\_accuracy: 0.8284 - lr: 1.0000e-04

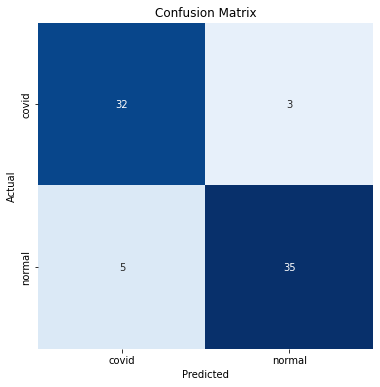
INFO:tensorflow:Assets written to: /content/drive/MyDrive/CTresnet50V2Split0.9noAug/assets

Test Loss: 0.55365

Test Accuracy: 89.33%

/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 0.86 0.91 0.89 35

normal 0.92 0.88 0.90 40

accuracy 0.89 75

macro avg 0.89 0.89 0.89 75

weighted avg 0.89 0.89 0.89 75

