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

Layer (type) Output Shape Param # Connected to

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

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

)]

zero\_padding2d\_6 (ZeroPadding2 (None, 230, 230, 3) 0 ['input\_12[0][0]']

D)

conv1/conv (Conv2D) (None, 112, 112, 64 9408 ['zero\_padding2d\_6[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]']

)

zero\_padding2d\_7 (ZeroPadding2 (None, 114, 114, 64 0 ['conv1/relu[0][0]']

D) )

pool1 (MaxPooling2D) (None, 56, 56, 64) 0 ['zero\_padding2d\_7[0][0]']

conv2\_block1\_0\_bn (BatchNormal (None, 56, 56, 64) 256 ['pool1[0][0]']

ization)

conv2\_block1\_0\_relu (Activatio (None, 56, 56, 64) 0 ['conv2\_block1\_0\_bn[0][0]']

n)

conv2\_block1\_1\_conv (Conv2D) (None, 56, 56, 128) 8192 ['conv2\_block1\_0\_relu[0][0]']

conv2\_block1\_1\_bn (BatchNormal (None, 56, 56, 128) 512 ['conv2\_block1\_1\_conv[0][0]']

ization)

conv2\_block1\_1\_relu (Activatio (None, 56, 56, 128) 0 ['conv2\_block1\_1\_bn[0][0]']

n)

conv2\_block1\_2\_conv (Conv2D) (None, 56, 56, 32) 36864 ['conv2\_block1\_1\_relu[0][0]']

conv2\_block1\_concat (Concatena (None, 56, 56, 96) 0 ['pool1[0][0]',

te) 'conv2\_block1\_2\_conv[0][0]']

conv2\_block2\_0\_bn (BatchNormal (None, 56, 56, 96) 384 ['conv2\_block1\_concat[0][0]']

ization)

conv2\_block2\_0\_relu (Activatio (None, 56, 56, 96) 0 ['conv2\_block2\_0\_bn[0][0]']

n)

conv2\_block2\_1\_conv (Conv2D) (None, 56, 56, 128) 12288 ['conv2\_block2\_0\_relu[0][0]']

conv2\_block2\_1\_bn (BatchNormal (None, 56, 56, 128) 512 ['conv2\_block2\_1\_conv[0][0]']

ization)

conv2\_block2\_1\_relu (Activatio (None, 56, 56, 128) 0 ['conv2\_block2\_1\_bn[0][0]']

n)

conv2\_block2\_2\_conv (Conv2D) (None, 56, 56, 32) 36864 ['conv2\_block2\_1\_relu[0][0]']

conv2\_block2\_concat (Concatena (None, 56, 56, 128) 0 ['conv2\_block1\_concat[0][0]',

te) 'conv2\_block2\_2\_conv[0][0]']

conv2\_block3\_0\_bn (BatchNormal (None, 56, 56, 128) 512 ['conv2\_block2\_concat[0][0]']

ization)

conv2\_block3\_0\_relu (Activatio (None, 56, 56, 128) 0 ['conv2\_block3\_0\_bn[0][0]']

n)

conv2\_block3\_1\_conv (Conv2D) (None, 56, 56, 128) 16384 ['conv2\_block3\_0\_relu[0][0]']

conv2\_block3\_1\_bn (BatchNormal (None, 56, 56, 128) 512 ['conv2\_block3\_1\_conv[0][0]']

ization)

conv2\_block3\_1\_relu (Activatio (None, 56, 56, 128) 0 ['conv2\_block3\_1\_bn[0][0]']

n)

conv2\_block3\_2\_conv (Conv2D) (None, 56, 56, 32) 36864 ['conv2\_block3\_1\_relu[0][0]']

conv2\_block3\_concat (Concatena (None, 56, 56, 160) 0 ['conv2\_block2\_concat[0][0]',

te) 'conv2\_block3\_2\_conv[0][0]']

conv2\_block4\_0\_bn (BatchNormal (None, 56, 56, 160) 640 ['conv2\_block3\_concat[0][0]']

ization)

conv2\_block4\_0\_relu (Activatio (None, 56, 56, 160) 0 ['conv2\_block4\_0\_bn[0][0]']

n)

conv2\_block4\_1\_conv (Conv2D) (None, 56, 56, 128) 20480 ['conv2\_block4\_0\_relu[0][0]']

conv2\_block4\_1\_bn (BatchNormal (None, 56, 56, 128) 512 ['conv2\_block4\_1\_conv[0][0]']

ization)

conv2\_block4\_1\_relu (Activatio (None, 56, 56, 128) 0 ['conv2\_block4\_1\_bn[0][0]']

n)

conv2\_block4\_2\_conv (Conv2D) (None, 56, 56, 32) 36864 ['conv2\_block4\_1\_relu[0][0]']

conv2\_block4\_concat (Concatena (None, 56, 56, 192) 0 ['conv2\_block3\_concat[0][0]',

te) 'conv2\_block4\_2\_conv[0][0]']

conv2\_block5\_0\_bn (BatchNormal (None, 56, 56, 192) 768 ['conv2\_block4\_concat[0][0]']

ization)

conv2\_block5\_0\_relu (Activatio (None, 56, 56, 192) 0 ['conv2\_block5\_0\_bn[0][0]']

n)

conv2\_block5\_1\_conv (Conv2D) (None, 56, 56, 128) 24576 ['conv2\_block5\_0\_relu[0][0]']

conv2\_block5\_1\_bn (BatchNormal (None, 56, 56, 128) 512 ['conv2\_block5\_1\_conv[0][0]']

ization)

conv2\_block5\_1\_relu (Activatio (None, 56, 56, 128) 0 ['conv2\_block5\_1\_bn[0][0]']

n)

conv2\_block5\_2\_conv (Conv2D) (None, 56, 56, 32) 36864 ['conv2\_block5\_1\_relu[0][0]']

conv2\_block5\_concat (Concatena (None, 56, 56, 224) 0 ['conv2\_block4\_concat[0][0]',

te) 'conv2\_block5\_2\_conv[0][0]']

conv2\_block6\_0\_bn (BatchNormal (None, 56, 56, 224) 896 ['conv2\_block5\_concat[0][0]']

ization)

conv2\_block6\_0\_relu (Activatio (None, 56, 56, 224) 0 ['conv2\_block6\_0\_bn[0][0]']

n)

conv2\_block6\_1\_conv (Conv2D) (None, 56, 56, 128) 28672 ['conv2\_block6\_0\_relu[0][0]']

conv2\_block6\_1\_bn (BatchNormal (None, 56, 56, 128) 512 ['conv2\_block6\_1\_conv[0][0]']

ization)

conv2\_block6\_1\_relu (Activatio (None, 56, 56, 128) 0 ['conv2\_block6\_1\_bn[0][0]']

n)

conv2\_block6\_2\_conv (Conv2D) (None, 56, 56, 32) 36864 ['conv2\_block6\_1\_relu[0][0]']

conv2\_block6\_concat (Concatena (None, 56, 56, 256) 0 ['conv2\_block5\_concat[0][0]',

te) 'conv2\_block6\_2\_conv[0][0]']

pool2\_bn (BatchNormalization) (None, 56, 56, 256) 1024 ['conv2\_block6\_concat[0][0]']

pool2\_relu (Activation) (None, 56, 56, 256) 0 ['pool2\_bn[0][0]']

pool2\_conv (Conv2D) (None, 56, 56, 128) 32768 ['pool2\_relu[0][0]']

pool2\_pool (AveragePooling2D) (None, 28, 28, 128) 0 ['pool2\_conv[0][0]']

conv3\_block1\_0\_bn (BatchNormal (None, 28, 28, 128) 512 ['pool2\_pool[0][0]']

ization)

conv3\_block1\_0\_relu (Activatio (None, 28, 28, 128) 0 ['conv3\_block1\_0\_bn[0][0]']

n)

conv3\_block1\_1\_conv (Conv2D) (None, 28, 28, 128) 16384 ['conv3\_block1\_0\_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\_conv (Conv2D) (None, 28, 28, 32) 36864 ['conv3\_block1\_1\_relu[0][0]']

conv3\_block1\_concat (Concatena (None, 28, 28, 160) 0 ['pool2\_pool[0][0]',

te) 'conv3\_block1\_2\_conv[0][0]']

conv3\_block2\_0\_bn (BatchNormal (None, 28, 28, 160) 640 ['conv3\_block1\_concat[0][0]']

ization)

conv3\_block2\_0\_relu (Activatio (None, 28, 28, 160) 0 ['conv3\_block2\_0\_bn[0][0]']

n)

conv3\_block2\_1\_conv (Conv2D) (None, 28, 28, 128) 20480 ['conv3\_block2\_0\_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\_conv (Conv2D) (None, 28, 28, 32) 36864 ['conv3\_block2\_1\_relu[0][0]']

conv3\_block2\_concat (Concatena (None, 28, 28, 192) 0 ['conv3\_block1\_concat[0][0]',

te) 'conv3\_block2\_2\_conv[0][0]']

conv3\_block3\_0\_bn (BatchNormal (None, 28, 28, 192) 768 ['conv3\_block2\_concat[0][0]']

ization)

conv3\_block3\_0\_relu (Activatio (None, 28, 28, 192) 0 ['conv3\_block3\_0\_bn[0][0]']

n)

conv3\_block3\_1\_conv (Conv2D) (None, 28, 28, 128) 24576 ['conv3\_block3\_0\_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\_conv (Conv2D) (None, 28, 28, 32) 36864 ['conv3\_block3\_1\_relu[0][0]']

conv3\_block3\_concat (Concatena (None, 28, 28, 224) 0 ['conv3\_block2\_concat[0][0]',

te) 'conv3\_block3\_2\_conv[0][0]']

conv3\_block4\_0\_bn (BatchNormal (None, 28, 28, 224) 896 ['conv3\_block3\_concat[0][0]']

ization)

conv3\_block4\_0\_relu (Activatio (None, 28, 28, 224) 0 ['conv3\_block4\_0\_bn[0][0]']

n)

conv3\_block4\_1\_conv (Conv2D) (None, 28, 28, 128) 28672 ['conv3\_block4\_0\_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\_conv (Conv2D) (None, 28, 28, 32) 36864 ['conv3\_block4\_1\_relu[0][0]']

conv3\_block4\_concat (Concatena (None, 28, 28, 256) 0 ['conv3\_block3\_concat[0][0]',

te) 'conv3\_block4\_2\_conv[0][0]']

conv3\_block5\_0\_bn (BatchNormal (None, 28, 28, 256) 1024 ['conv3\_block4\_concat[0][0]']

ization)

conv3\_block5\_0\_relu (Activatio (None, 28, 28, 256) 0 ['conv3\_block5\_0\_bn[0][0]']

n)

conv3\_block5\_1\_conv (Conv2D) (None, 28, 28, 128) 32768 ['conv3\_block5\_0\_relu[0][0]']

conv3\_block5\_1\_bn (BatchNormal (None, 28, 28, 128) 512 ['conv3\_block5\_1\_conv[0][0]']

ization)

conv3\_block5\_1\_relu (Activatio (None, 28, 28, 128) 0 ['conv3\_block5\_1\_bn[0][0]']

n)

conv3\_block5\_2\_conv (Conv2D) (None, 28, 28, 32) 36864 ['conv3\_block5\_1\_relu[0][0]']

conv3\_block5\_concat (Concatena (None, 28, 28, 288) 0 ['conv3\_block4\_concat[0][0]',

te) 'conv3\_block5\_2\_conv[0][0]']

conv3\_block6\_0\_bn (BatchNormal (None, 28, 28, 288) 1152 ['conv3\_block5\_concat[0][0]']

ization)

conv3\_block6\_0\_relu (Activatio (None, 28, 28, 288) 0 ['conv3\_block6\_0\_bn[0][0]']

n)

conv3\_block6\_1\_conv (Conv2D) (None, 28, 28, 128) 36864 ['conv3\_block6\_0\_relu[0][0]']

conv3\_block6\_1\_bn (BatchNormal (None, 28, 28, 128) 512 ['conv3\_block6\_1\_conv[0][0]']

ization)

conv3\_block6\_1\_relu (Activatio (None, 28, 28, 128) 0 ['conv3\_block6\_1\_bn[0][0]']

n)

conv3\_block6\_2\_conv (Conv2D) (None, 28, 28, 32) 36864 ['conv3\_block6\_1\_relu[0][0]']

conv3\_block6\_concat (Concatena (None, 28, 28, 320) 0 ['conv3\_block5\_concat[0][0]',

te) 'conv3\_block6\_2\_conv[0][0]']

conv3\_block7\_0\_bn (BatchNormal (None, 28, 28, 320) 1280 ['conv3\_block6\_concat[0][0]']

ization)

conv3\_block7\_0\_relu (Activatio (None, 28, 28, 320) 0 ['conv3\_block7\_0\_bn[0][0]']

n)

conv3\_block7\_1\_conv (Conv2D) (None, 28, 28, 128) 40960 ['conv3\_block7\_0\_relu[0][0]']

conv3\_block7\_1\_bn (BatchNormal (None, 28, 28, 128) 512 ['conv3\_block7\_1\_conv[0][0]']

ization)

conv3\_block7\_1\_relu (Activatio (None, 28, 28, 128) 0 ['conv3\_block7\_1\_bn[0][0]']

n)

conv3\_block7\_2\_conv (Conv2D) (None, 28, 28, 32) 36864 ['conv3\_block7\_1\_relu[0][0]']

conv3\_block7\_concat (Concatena (None, 28, 28, 352) 0 ['conv3\_block6\_concat[0][0]',

te) 'conv3\_block7\_2\_conv[0][0]']

conv3\_block8\_0\_bn (BatchNormal (None, 28, 28, 352) 1408 ['conv3\_block7\_concat[0][0]']

ization)

conv3\_block8\_0\_relu (Activatio (None, 28, 28, 352) 0 ['conv3\_block8\_0\_bn[0][0]']

n)

conv3\_block8\_1\_conv (Conv2D) (None, 28, 28, 128) 45056 ['conv3\_block8\_0\_relu[0][0]']

conv3\_block8\_1\_bn (BatchNormal (None, 28, 28, 128) 512 ['conv3\_block8\_1\_conv[0][0]']

ization)

conv3\_block8\_1\_relu (Activatio (None, 28, 28, 128) 0 ['conv3\_block8\_1\_bn[0][0]']

n)

conv3\_block8\_2\_conv (Conv2D) (None, 28, 28, 32) 36864 ['conv3\_block8\_1\_relu[0][0]']

conv3\_block8\_concat (Concatena (None, 28, 28, 384) 0 ['conv3\_block7\_concat[0][0]',

te) 'conv3\_block8\_2\_conv[0][0]']

conv3\_block9\_0\_bn (BatchNormal (None, 28, 28, 384) 1536 ['conv3\_block8\_concat[0][0]']

ization)

conv3\_block9\_0\_relu (Activatio (None, 28, 28, 384) 0 ['conv3\_block9\_0\_bn[0][0]']

n)

conv3\_block9\_1\_conv (Conv2D) (None, 28, 28, 128) 49152 ['conv3\_block9\_0\_relu[0][0]']

conv3\_block9\_1\_bn (BatchNormal (None, 28, 28, 128) 512 ['conv3\_block9\_1\_conv[0][0]']

ization)

conv3\_block9\_1\_relu (Activatio (None, 28, 28, 128) 0 ['conv3\_block9\_1\_bn[0][0]']

n)

conv3\_block9\_2\_conv (Conv2D) (None, 28, 28, 32) 36864 ['conv3\_block9\_1\_relu[0][0]']

conv3\_block9\_concat (Concatena (None, 28, 28, 416) 0 ['conv3\_block8\_concat[0][0]',

te) 'conv3\_block9\_2\_conv[0][0]']

conv3\_block10\_0\_bn (BatchNorma (None, 28, 28, 416) 1664 ['conv3\_block9\_concat[0][0]']

lization)

conv3\_block10\_0\_relu (Activati (None, 28, 28, 416) 0 ['conv3\_block10\_0\_bn[0][0]']

on)

conv3\_block10\_1\_conv (Conv2D) (None, 28, 28, 128) 53248 ['conv3\_block10\_0\_relu[0][0]']

conv3\_block10\_1\_bn (BatchNorma (None, 28, 28, 128) 512 ['conv3\_block10\_1\_conv[0][0]']

lization)

conv3\_block10\_1\_relu (Activati (None, 28, 28, 128) 0 ['conv3\_block10\_1\_bn[0][0]']

on)

conv3\_block10\_2\_conv (Conv2D) (None, 28, 28, 32) 36864 ['conv3\_block10\_1\_relu[0][0]']

conv3\_block10\_concat (Concaten (None, 28, 28, 448) 0 ['conv3\_block9\_concat[0][0]',

ate) 'conv3\_block10\_2\_conv[0][0]']

conv3\_block11\_0\_bn (BatchNorma (None, 28, 28, 448) 1792 ['conv3\_block10\_concat[0][0]']

lization)

conv3\_block11\_0\_relu (Activati (None, 28, 28, 448) 0 ['conv3\_block11\_0\_bn[0][0]']

on)

conv3\_block11\_1\_conv (Conv2D) (None, 28, 28, 128) 57344 ['conv3\_block11\_0\_relu[0][0]']

conv3\_block11\_1\_bn (BatchNorma (None, 28, 28, 128) 512 ['conv3\_block11\_1\_conv[0][0]']

lization)

conv3\_block11\_1\_relu (Activati (None, 28, 28, 128) 0 ['conv3\_block11\_1\_bn[0][0]']

on)

conv3\_block11\_2\_conv (Conv2D) (None, 28, 28, 32) 36864 ['conv3\_block11\_1\_relu[0][0]']

conv3\_block11\_concat (Concaten (None, 28, 28, 480) 0 ['conv3\_block10\_concat[0][0]',

ate) 'conv3\_block11\_2\_conv[0][0]']

conv3\_block12\_0\_bn (BatchNorma (None, 28, 28, 480) 1920 ['conv3\_block11\_concat[0][0]']

lization)

conv3\_block12\_0\_relu (Activati (None, 28, 28, 480) 0 ['conv3\_block12\_0\_bn[0][0]']

on)

conv3\_block12\_1\_conv (Conv2D) (None, 28, 28, 128) 61440 ['conv3\_block12\_0\_relu[0][0]']

conv3\_block12\_1\_bn (BatchNorma (None, 28, 28, 128) 512 ['conv3\_block12\_1\_conv[0][0]']

lization)

conv3\_block12\_1\_relu (Activati (None, 28, 28, 128) 0 ['conv3\_block12\_1\_bn[0][0]']

on)

conv3\_block12\_2\_conv (Conv2D) (None, 28, 28, 32) 36864 ['conv3\_block12\_1\_relu[0][0]']

conv3\_block12\_concat (Concaten (None, 28, 28, 512) 0 ['conv3\_block11\_concat[0][0]',

ate) 'conv3\_block12\_2\_conv[0][0]']

pool3\_bn (BatchNormalization) (None, 28, 28, 512) 2048 ['conv3\_block12\_concat[0][0]']

pool3\_relu (Activation) (None, 28, 28, 512) 0 ['pool3\_bn[0][0]']

pool3\_conv (Conv2D) (None, 28, 28, 256) 131072 ['pool3\_relu[0][0]']

pool3\_pool (AveragePooling2D) (None, 14, 14, 256) 0 ['pool3\_conv[0][0]']

conv4\_block1\_0\_bn (BatchNormal (None, 14, 14, 256) 1024 ['pool3\_pool[0][0]']

ization)

conv4\_block1\_0\_relu (Activatio (None, 14, 14, 256) 0 ['conv4\_block1\_0\_bn[0][0]']

n)

conv4\_block1\_1\_conv (Conv2D) (None, 14, 14, 128) 32768 ['conv4\_block1\_0\_relu[0][0]']

conv4\_block1\_1\_bn (BatchNormal (None, 14, 14, 128) 512 ['conv4\_block1\_1\_conv[0][0]']

ization)

conv4\_block1\_1\_relu (Activatio (None, 14, 14, 128) 0 ['conv4\_block1\_1\_bn[0][0]']

n)

conv4\_block1\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block1\_1\_relu[0][0]']

conv4\_block1\_concat (Concatena (None, 14, 14, 288) 0 ['pool3\_pool[0][0]',

te) 'conv4\_block1\_2\_conv[0][0]']

conv4\_block2\_0\_bn (BatchNormal (None, 14, 14, 288) 1152 ['conv4\_block1\_concat[0][0]']

ization)

conv4\_block2\_0\_relu (Activatio (None, 14, 14, 288) 0 ['conv4\_block2\_0\_bn[0][0]']

n)

conv4\_block2\_1\_conv (Conv2D) (None, 14, 14, 128) 36864 ['conv4\_block2\_0\_relu[0][0]']

conv4\_block2\_1\_bn (BatchNormal (None, 14, 14, 128) 512 ['conv4\_block2\_1\_conv[0][0]']

ization)

conv4\_block2\_1\_relu (Activatio (None, 14, 14, 128) 0 ['conv4\_block2\_1\_bn[0][0]']

n)

conv4\_block2\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block2\_1\_relu[0][0]']

conv4\_block2\_concat (Concatena (None, 14, 14, 320) 0 ['conv4\_block1\_concat[0][0]',

te) 'conv4\_block2\_2\_conv[0][0]']

conv4\_block3\_0\_bn (BatchNormal (None, 14, 14, 320) 1280 ['conv4\_block2\_concat[0][0]']

ization)

conv4\_block3\_0\_relu (Activatio (None, 14, 14, 320) 0 ['conv4\_block3\_0\_bn[0][0]']

n)

conv4\_block3\_1\_conv (Conv2D) (None, 14, 14, 128) 40960 ['conv4\_block3\_0\_relu[0][0]']

conv4\_block3\_1\_bn (BatchNormal (None, 14, 14, 128) 512 ['conv4\_block3\_1\_conv[0][0]']

ization)

conv4\_block3\_1\_relu (Activatio (None, 14, 14, 128) 0 ['conv4\_block3\_1\_bn[0][0]']

n)

conv4\_block3\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block3\_1\_relu[0][0]']

conv4\_block3\_concat (Concatena (None, 14, 14, 352) 0 ['conv4\_block2\_concat[0][0]',

te) 'conv4\_block3\_2\_conv[0][0]']

conv4\_block4\_0\_bn (BatchNormal (None, 14, 14, 352) 1408 ['conv4\_block3\_concat[0][0]']

ization)

conv4\_block4\_0\_relu (Activatio (None, 14, 14, 352) 0 ['conv4\_block4\_0\_bn[0][0]']

n)

conv4\_block4\_1\_conv (Conv2D) (None, 14, 14, 128) 45056 ['conv4\_block4\_0\_relu[0][0]']

conv4\_block4\_1\_bn (BatchNormal (None, 14, 14, 128) 512 ['conv4\_block4\_1\_conv[0][0]']

ization)

conv4\_block4\_1\_relu (Activatio (None, 14, 14, 128) 0 ['conv4\_block4\_1\_bn[0][0]']

n)

conv4\_block4\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block4\_1\_relu[0][0]']

conv4\_block4\_concat (Concatena (None, 14, 14, 384) 0 ['conv4\_block3\_concat[0][0]',

te) 'conv4\_block4\_2\_conv[0][0]']

conv4\_block5\_0\_bn (BatchNormal (None, 14, 14, 384) 1536 ['conv4\_block4\_concat[0][0]']

ization)

conv4\_block5\_0\_relu (Activatio (None, 14, 14, 384) 0 ['conv4\_block5\_0\_bn[0][0]']

n)

conv4\_block5\_1\_conv (Conv2D) (None, 14, 14, 128) 49152 ['conv4\_block5\_0\_relu[0][0]']

conv4\_block5\_1\_bn (BatchNormal (None, 14, 14, 128) 512 ['conv4\_block5\_1\_conv[0][0]']

ization)

conv4\_block5\_1\_relu (Activatio (None, 14, 14, 128) 0 ['conv4\_block5\_1\_bn[0][0]']

n)

conv4\_block5\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block5\_1\_relu[0][0]']

conv4\_block5\_concat (Concatena (None, 14, 14, 416) 0 ['conv4\_block4\_concat[0][0]',

te) 'conv4\_block5\_2\_conv[0][0]']

conv4\_block6\_0\_bn (BatchNormal (None, 14, 14, 416) 1664 ['conv4\_block5\_concat[0][0]']

ization)

conv4\_block6\_0\_relu (Activatio (None, 14, 14, 416) 0 ['conv4\_block6\_0\_bn[0][0]']

n)

conv4\_block6\_1\_conv (Conv2D) (None, 14, 14, 128) 53248 ['conv4\_block6\_0\_relu[0][0]']

conv4\_block6\_1\_bn (BatchNormal (None, 14, 14, 128) 512 ['conv4\_block6\_1\_conv[0][0]']

ization)

conv4\_block6\_1\_relu (Activatio (None, 14, 14, 128) 0 ['conv4\_block6\_1\_bn[0][0]']

n)

conv4\_block6\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block6\_1\_relu[0][0]']

conv4\_block6\_concat (Concatena (None, 14, 14, 448) 0 ['conv4\_block5\_concat[0][0]',

te) 'conv4\_block6\_2\_conv[0][0]']

conv4\_block7\_0\_bn (BatchNormal (None, 14, 14, 448) 1792 ['conv4\_block6\_concat[0][0]']

ization)

conv4\_block7\_0\_relu (Activatio (None, 14, 14, 448) 0 ['conv4\_block7\_0\_bn[0][0]']

n)

conv4\_block7\_1\_conv (Conv2D) (None, 14, 14, 128) 57344 ['conv4\_block7\_0\_relu[0][0]']

conv4\_block7\_1\_bn (BatchNormal (None, 14, 14, 128) 512 ['conv4\_block7\_1\_conv[0][0]']

ization)

conv4\_block7\_1\_relu (Activatio (None, 14, 14, 128) 0 ['conv4\_block7\_1\_bn[0][0]']

n)

conv4\_block7\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block7\_1\_relu[0][0]']

conv4\_block7\_concat (Concatena (None, 14, 14, 480) 0 ['conv4\_block6\_concat[0][0]',

te) 'conv4\_block7\_2\_conv[0][0]']

conv4\_block8\_0\_bn (BatchNormal (None, 14, 14, 480) 1920 ['conv4\_block7\_concat[0][0]']

ization)

conv4\_block8\_0\_relu (Activatio (None, 14, 14, 480) 0 ['conv4\_block8\_0\_bn[0][0]']

n)

conv4\_block8\_1\_conv (Conv2D) (None, 14, 14, 128) 61440 ['conv4\_block8\_0\_relu[0][0]']

conv4\_block8\_1\_bn (BatchNormal (None, 14, 14, 128) 512 ['conv4\_block8\_1\_conv[0][0]']

ization)

conv4\_block8\_1\_relu (Activatio (None, 14, 14, 128) 0 ['conv4\_block8\_1\_bn[0][0]']

n)

conv4\_block8\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block8\_1\_relu[0][0]']

conv4\_block8\_concat (Concatena (None, 14, 14, 512) 0 ['conv4\_block7\_concat[0][0]',

te) 'conv4\_block8\_2\_conv[0][0]']

conv4\_block9\_0\_bn (BatchNormal (None, 14, 14, 512) 2048 ['conv4\_block8\_concat[0][0]']

ization)

conv4\_block9\_0\_relu (Activatio (None, 14, 14, 512) 0 ['conv4\_block9\_0\_bn[0][0]']

n)

conv4\_block9\_1\_conv (Conv2D) (None, 14, 14, 128) 65536 ['conv4\_block9\_0\_relu[0][0]']

conv4\_block9\_1\_bn (BatchNormal (None, 14, 14, 128) 512 ['conv4\_block9\_1\_conv[0][0]']

ization)

conv4\_block9\_1\_relu (Activatio (None, 14, 14, 128) 0 ['conv4\_block9\_1\_bn[0][0]']

n)

conv4\_block9\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block9\_1\_relu[0][0]']

conv4\_block9\_concat (Concatena (None, 14, 14, 544) 0 ['conv4\_block8\_concat[0][0]',

te) 'conv4\_block9\_2\_conv[0][0]']

conv4\_block10\_0\_bn (BatchNorma (None, 14, 14, 544) 2176 ['conv4\_block9\_concat[0][0]']

lization)

conv4\_block10\_0\_relu (Activati (None, 14, 14, 544) 0 ['conv4\_block10\_0\_bn[0][0]']

on)

conv4\_block10\_1\_conv (Conv2D) (None, 14, 14, 128) 69632 ['conv4\_block10\_0\_relu[0][0]']

conv4\_block10\_1\_bn (BatchNorma (None, 14, 14, 128) 512 ['conv4\_block10\_1\_conv[0][0]']

lization)

conv4\_block10\_1\_relu (Activati (None, 14, 14, 128) 0 ['conv4\_block10\_1\_bn[0][0]']

on)

conv4\_block10\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block10\_1\_relu[0][0]']

conv4\_block10\_concat (Concaten (None, 14, 14, 576) 0 ['conv4\_block9\_concat[0][0]',

ate) 'conv4\_block10\_2\_conv[0][0]']

conv4\_block11\_0\_bn (BatchNorma (None, 14, 14, 576) 2304 ['conv4\_block10\_concat[0][0]']

lization)

conv4\_block11\_0\_relu (Activati (None, 14, 14, 576) 0 ['conv4\_block11\_0\_bn[0][0]']

on)

conv4\_block11\_1\_conv (Conv2D) (None, 14, 14, 128) 73728 ['conv4\_block11\_0\_relu[0][0]']

conv4\_block11\_1\_bn (BatchNorma (None, 14, 14, 128) 512 ['conv4\_block11\_1\_conv[0][0]']

lization)

conv4\_block11\_1\_relu (Activati (None, 14, 14, 128) 0 ['conv4\_block11\_1\_bn[0][0]']

on)

conv4\_block11\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block11\_1\_relu[0][0]']

conv4\_block11\_concat (Concaten (None, 14, 14, 608) 0 ['conv4\_block10\_concat[0][0]',

ate) 'conv4\_block11\_2\_conv[0][0]']

conv4\_block12\_0\_bn (BatchNorma (None, 14, 14, 608) 2432 ['conv4\_block11\_concat[0][0]']

lization)

conv4\_block12\_0\_relu (Activati (None, 14, 14, 608) 0 ['conv4\_block12\_0\_bn[0][0]']

on)

conv4\_block12\_1\_conv (Conv2D) (None, 14, 14, 128) 77824 ['conv4\_block12\_0\_relu[0][0]']

conv4\_block12\_1\_bn (BatchNorma (None, 14, 14, 128) 512 ['conv4\_block12\_1\_conv[0][0]']

lization)

conv4\_block12\_1\_relu (Activati (None, 14, 14, 128) 0 ['conv4\_block12\_1\_bn[0][0]']

on)

conv4\_block12\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block12\_1\_relu[0][0]']

conv4\_block12\_concat (Concaten (None, 14, 14, 640) 0 ['conv4\_block11\_concat[0][0]',

ate) 'conv4\_block12\_2\_conv[0][0]']

conv4\_block13\_0\_bn (BatchNorma (None, 14, 14, 640) 2560 ['conv4\_block12\_concat[0][0]']

lization)

conv4\_block13\_0\_relu (Activati (None, 14, 14, 640) 0 ['conv4\_block13\_0\_bn[0][0]']

on)

conv4\_block13\_1\_conv (Conv2D) (None, 14, 14, 128) 81920 ['conv4\_block13\_0\_relu[0][0]']

conv4\_block13\_1\_bn (BatchNorma (None, 14, 14, 128) 512 ['conv4\_block13\_1\_conv[0][0]']

lization)

conv4\_block13\_1\_relu (Activati (None, 14, 14, 128) 0 ['conv4\_block13\_1\_bn[0][0]']

on)

conv4\_block13\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block13\_1\_relu[0][0]']

conv4\_block13\_concat (Concaten (None, 14, 14, 672) 0 ['conv4\_block12\_concat[0][0]',

ate) 'conv4\_block13\_2\_conv[0][0]']

conv4\_block14\_0\_bn (BatchNorma (None, 14, 14, 672) 2688 ['conv4\_block13\_concat[0][0]']

lization)

conv4\_block14\_0\_relu (Activati (None, 14, 14, 672) 0 ['conv4\_block14\_0\_bn[0][0]']

on)

conv4\_block14\_1\_conv (Conv2D) (None, 14, 14, 128) 86016 ['conv4\_block14\_0\_relu[0][0]']

conv4\_block14\_1\_bn (BatchNorma (None, 14, 14, 128) 512 ['conv4\_block14\_1\_conv[0][0]']

lization)

conv4\_block14\_1\_relu (Activati (None, 14, 14, 128) 0 ['conv4\_block14\_1\_bn[0][0]']

on)

conv4\_block14\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block14\_1\_relu[0][0]']

conv4\_block14\_concat (Concaten (None, 14, 14, 704) 0 ['conv4\_block13\_concat[0][0]',

ate) 'conv4\_block14\_2\_conv[0][0]']

conv4\_block15\_0\_bn (BatchNorma (None, 14, 14, 704) 2816 ['conv4\_block14\_concat[0][0]']

lization)

conv4\_block15\_0\_relu (Activati (None, 14, 14, 704) 0 ['conv4\_block15\_0\_bn[0][0]']

on)

conv4\_block15\_1\_conv (Conv2D) (None, 14, 14, 128) 90112 ['conv4\_block15\_0\_relu[0][0]']

conv4\_block15\_1\_bn (BatchNorma (None, 14, 14, 128) 512 ['conv4\_block15\_1\_conv[0][0]']

lization)

conv4\_block15\_1\_relu (Activati (None, 14, 14, 128) 0 ['conv4\_block15\_1\_bn[0][0]']

on)

conv4\_block15\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block15\_1\_relu[0][0]']

conv4\_block15\_concat (Concaten (None, 14, 14, 736) 0 ['conv4\_block14\_concat[0][0]',

ate) 'conv4\_block15\_2\_conv[0][0]']

conv4\_block16\_0\_bn (BatchNorma (None, 14, 14, 736) 2944 ['conv4\_block15\_concat[0][0]']

lization)

conv4\_block16\_0\_relu (Activati (None, 14, 14, 736) 0 ['conv4\_block16\_0\_bn[0][0]']

on)

conv4\_block16\_1\_conv (Conv2D) (None, 14, 14, 128) 94208 ['conv4\_block16\_0\_relu[0][0]']

conv4\_block16\_1\_bn (BatchNorma (None, 14, 14, 128) 512 ['conv4\_block16\_1\_conv[0][0]']

lization)

conv4\_block16\_1\_relu (Activati (None, 14, 14, 128) 0 ['conv4\_block16\_1\_bn[0][0]']

on)

conv4\_block16\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block16\_1\_relu[0][0]']

conv4\_block16\_concat (Concaten (None, 14, 14, 768) 0 ['conv4\_block15\_concat[0][0]',

ate) 'conv4\_block16\_2\_conv[0][0]']

conv4\_block17\_0\_bn (BatchNorma (None, 14, 14, 768) 3072 ['conv4\_block16\_concat[0][0]']

lization)

conv4\_block17\_0\_relu (Activati (None, 14, 14, 768) 0 ['conv4\_block17\_0\_bn[0][0]']

on)

conv4\_block17\_1\_conv (Conv2D) (None, 14, 14, 128) 98304 ['conv4\_block17\_0\_relu[0][0]']

conv4\_block17\_1\_bn (BatchNorma (None, 14, 14, 128) 512 ['conv4\_block17\_1\_conv[0][0]']

lization)

conv4\_block17\_1\_relu (Activati (None, 14, 14, 128) 0 ['conv4\_block17\_1\_bn[0][0]']

on)

conv4\_block17\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block17\_1\_relu[0][0]']

conv4\_block17\_concat (Concaten (None, 14, 14, 800) 0 ['conv4\_block16\_concat[0][0]',

ate) 'conv4\_block17\_2\_conv[0][0]']

conv4\_block18\_0\_bn (BatchNorma (None, 14, 14, 800) 3200 ['conv4\_block17\_concat[0][0]']

lization)

conv4\_block18\_0\_relu (Activati (None, 14, 14, 800) 0 ['conv4\_block18\_0\_bn[0][0]']

on)

conv4\_block18\_1\_conv (Conv2D) (None, 14, 14, 128) 102400 ['conv4\_block18\_0\_relu[0][0]']

conv4\_block18\_1\_bn (BatchNorma (None, 14, 14, 128) 512 ['conv4\_block18\_1\_conv[0][0]']

lization)

conv4\_block18\_1\_relu (Activati (None, 14, 14, 128) 0 ['conv4\_block18\_1\_bn[0][0]']

on)

conv4\_block18\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block18\_1\_relu[0][0]']

conv4\_block18\_concat (Concaten (None, 14, 14, 832) 0 ['conv4\_block17\_concat[0][0]',

ate) 'conv4\_block18\_2\_conv[0][0]']

conv4\_block19\_0\_bn (BatchNorma (None, 14, 14, 832) 3328 ['conv4\_block18\_concat[0][0]']

lization)

conv4\_block19\_0\_relu (Activati (None, 14, 14, 832) 0 ['conv4\_block19\_0\_bn[0][0]']

on)

conv4\_block19\_1\_conv (Conv2D) (None, 14, 14, 128) 106496 ['conv4\_block19\_0\_relu[0][0]']

conv4\_block19\_1\_bn (BatchNorma (None, 14, 14, 128) 512 ['conv4\_block19\_1\_conv[0][0]']

lization)

conv4\_block19\_1\_relu (Activati (None, 14, 14, 128) 0 ['conv4\_block19\_1\_bn[0][0]']

on)

conv4\_block19\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block19\_1\_relu[0][0]']

conv4\_block19\_concat (Concaten (None, 14, 14, 864) 0 ['conv4\_block18\_concat[0][0]',

ate) 'conv4\_block19\_2\_conv[0][0]']

conv4\_block20\_0\_bn (BatchNorma (None, 14, 14, 864) 3456 ['conv4\_block19\_concat[0][0]']

lization)

conv4\_block20\_0\_relu (Activati (None, 14, 14, 864) 0 ['conv4\_block20\_0\_bn[0][0]']

on)

conv4\_block20\_1\_conv (Conv2D) (None, 14, 14, 128) 110592 ['conv4\_block20\_0\_relu[0][0]']

conv4\_block20\_1\_bn (BatchNorma (None, 14, 14, 128) 512 ['conv4\_block20\_1\_conv[0][0]']

lization)

conv4\_block20\_1\_relu (Activati (None, 14, 14, 128) 0 ['conv4\_block20\_1\_bn[0][0]']

on)

conv4\_block20\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block20\_1\_relu[0][0]']

conv4\_block20\_concat (Concaten (None, 14, 14, 896) 0 ['conv4\_block19\_concat[0][0]',

ate) 'conv4\_block20\_2\_conv[0][0]']

conv4\_block21\_0\_bn (BatchNorma (None, 14, 14, 896) 3584 ['conv4\_block20\_concat[0][0]']

lization)

conv4\_block21\_0\_relu (Activati (None, 14, 14, 896) 0 ['conv4\_block21\_0\_bn[0][0]']

on)

conv4\_block21\_1\_conv (Conv2D) (None, 14, 14, 128) 114688 ['conv4\_block21\_0\_relu[0][0]']

conv4\_block21\_1\_bn (BatchNorma (None, 14, 14, 128) 512 ['conv4\_block21\_1\_conv[0][0]']

lization)

conv4\_block21\_1\_relu (Activati (None, 14, 14, 128) 0 ['conv4\_block21\_1\_bn[0][0]']

on)

conv4\_block21\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block21\_1\_relu[0][0]']

conv4\_block21\_concat (Concaten (None, 14, 14, 928) 0 ['conv4\_block20\_concat[0][0]',

ate) 'conv4\_block21\_2\_conv[0][0]']

conv4\_block22\_0\_bn (BatchNorma (None, 14, 14, 928) 3712 ['conv4\_block21\_concat[0][0]']

lization)

conv4\_block22\_0\_relu (Activati (None, 14, 14, 928) 0 ['conv4\_block22\_0\_bn[0][0]']

on)

conv4\_block22\_1\_conv (Conv2D) (None, 14, 14, 128) 118784 ['conv4\_block22\_0\_relu[0][0]']

conv4\_block22\_1\_bn (BatchNorma (None, 14, 14, 128) 512 ['conv4\_block22\_1\_conv[0][0]']

lization)

conv4\_block22\_1\_relu (Activati (None, 14, 14, 128) 0 ['conv4\_block22\_1\_bn[0][0]']

on)

conv4\_block22\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block22\_1\_relu[0][0]']

conv4\_block22\_concat (Concaten (None, 14, 14, 960) 0 ['conv4\_block21\_concat[0][0]',

ate) 'conv4\_block22\_2\_conv[0][0]']

conv4\_block23\_0\_bn (BatchNorma (None, 14, 14, 960) 3840 ['conv4\_block22\_concat[0][0]']

lization)

conv4\_block23\_0\_relu (Activati (None, 14, 14, 960) 0 ['conv4\_block23\_0\_bn[0][0]']

on)

conv4\_block23\_1\_conv (Conv2D) (None, 14, 14, 128) 122880 ['conv4\_block23\_0\_relu[0][0]']

conv4\_block23\_1\_bn (BatchNorma (None, 14, 14, 128) 512 ['conv4\_block23\_1\_conv[0][0]']

lization)

conv4\_block23\_1\_relu (Activati (None, 14, 14, 128) 0 ['conv4\_block23\_1\_bn[0][0]']

on)

conv4\_block23\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block23\_1\_relu[0][0]']

conv4\_block23\_concat (Concaten (None, 14, 14, 992) 0 ['conv4\_block22\_concat[0][0]',

ate) 'conv4\_block23\_2\_conv[0][0]']

conv4\_block24\_0\_bn (BatchNorma (None, 14, 14, 992) 3968 ['conv4\_block23\_concat[0][0]']

lization)

conv4\_block24\_0\_relu (Activati (None, 14, 14, 992) 0 ['conv4\_block24\_0\_bn[0][0]']

on)

conv4\_block24\_1\_conv (Conv2D) (None, 14, 14, 128) 126976 ['conv4\_block24\_0\_relu[0][0]']

conv4\_block24\_1\_bn (BatchNorma (None, 14, 14, 128) 512 ['conv4\_block24\_1\_conv[0][0]']

lization)

conv4\_block24\_1\_relu (Activati (None, 14, 14, 128) 0 ['conv4\_block24\_1\_bn[0][0]']

on)

conv4\_block24\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block24\_1\_relu[0][0]']

conv4\_block24\_concat (Concaten (None, 14, 14, 1024 0 ['conv4\_block23\_concat[0][0]',

ate) ) 'conv4\_block24\_2\_conv[0][0]']

conv4\_block25\_0\_bn (BatchNorma (None, 14, 14, 1024 4096 ['conv4\_block24\_concat[0][0]']

lization) )

conv4\_block25\_0\_relu (Activati (None, 14, 14, 1024 0 ['conv4\_block25\_0\_bn[0][0]']

on) )

conv4\_block25\_1\_conv (Conv2D) (None, 14, 14, 128) 131072 ['conv4\_block25\_0\_relu[0][0]']

conv4\_block25\_1\_bn (BatchNorma (None, 14, 14, 128) 512 ['conv4\_block25\_1\_conv[0][0]']

lization)

conv4\_block25\_1\_relu (Activati (None, 14, 14, 128) 0 ['conv4\_block25\_1\_bn[0][0]']

on)

conv4\_block25\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block25\_1\_relu[0][0]']

conv4\_block25\_concat (Concaten (None, 14, 14, 1056 0 ['conv4\_block24\_concat[0][0]',

ate) ) 'conv4\_block25\_2\_conv[0][0]']

conv4\_block26\_0\_bn (BatchNorma (None, 14, 14, 1056 4224 ['conv4\_block25\_concat[0][0]']

lization) )

conv4\_block26\_0\_relu (Activati (None, 14, 14, 1056 0 ['conv4\_block26\_0\_bn[0][0]']

on) )

conv4\_block26\_1\_conv (Conv2D) (None, 14, 14, 128) 135168 ['conv4\_block26\_0\_relu[0][0]']

conv4\_block26\_1\_bn (BatchNorma (None, 14, 14, 128) 512 ['conv4\_block26\_1\_conv[0][0]']

lization)

conv4\_block26\_1\_relu (Activati (None, 14, 14, 128) 0 ['conv4\_block26\_1\_bn[0][0]']

on)

conv4\_block26\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block26\_1\_relu[0][0]']

conv4\_block26\_concat (Concaten (None, 14, 14, 1088 0 ['conv4\_block25\_concat[0][0]',

ate) ) 'conv4\_block26\_2\_conv[0][0]']

conv4\_block27\_0\_bn (BatchNorma (None, 14, 14, 1088 4352 ['conv4\_block26\_concat[0][0]']

lization) )

conv4\_block27\_0\_relu (Activati (None, 14, 14, 1088 0 ['conv4\_block27\_0\_bn[0][0]']

on) )

conv4\_block27\_1\_conv (Conv2D) (None, 14, 14, 128) 139264 ['conv4\_block27\_0\_relu[0][0]']

conv4\_block27\_1\_bn (BatchNorma (None, 14, 14, 128) 512 ['conv4\_block27\_1\_conv[0][0]']

lization)

conv4\_block27\_1\_relu (Activati (None, 14, 14, 128) 0 ['conv4\_block27\_1\_bn[0][0]']

on)

conv4\_block27\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block27\_1\_relu[0][0]']

conv4\_block27\_concat (Concaten (None, 14, 14, 1120 0 ['conv4\_block26\_concat[0][0]',

ate) ) 'conv4\_block27\_2\_conv[0][0]']

conv4\_block28\_0\_bn (BatchNorma (None, 14, 14, 1120 4480 ['conv4\_block27\_concat[0][0]']

lization) )

conv4\_block28\_0\_relu (Activati (None, 14, 14, 1120 0 ['conv4\_block28\_0\_bn[0][0]']

on) )

conv4\_block28\_1\_conv (Conv2D) (None, 14, 14, 128) 143360 ['conv4\_block28\_0\_relu[0][0]']

conv4\_block28\_1\_bn (BatchNorma (None, 14, 14, 128) 512 ['conv4\_block28\_1\_conv[0][0]']

lization)

conv4\_block28\_1\_relu (Activati (None, 14, 14, 128) 0 ['conv4\_block28\_1\_bn[0][0]']

on)

conv4\_block28\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block28\_1\_relu[0][0]']

conv4\_block28\_concat (Concaten (None, 14, 14, 1152 0 ['conv4\_block27\_concat[0][0]',

ate) ) 'conv4\_block28\_2\_conv[0][0]']

conv4\_block29\_0\_bn (BatchNorma (None, 14, 14, 1152 4608 ['conv4\_block28\_concat[0][0]']

lization) )

conv4\_block29\_0\_relu (Activati (None, 14, 14, 1152 0 ['conv4\_block29\_0\_bn[0][0]']

on) )

conv4\_block29\_1\_conv (Conv2D) (None, 14, 14, 128) 147456 ['conv4\_block29\_0\_relu[0][0]']

conv4\_block29\_1\_bn (BatchNorma (None, 14, 14, 128) 512 ['conv4\_block29\_1\_conv[0][0]']

lization)

conv4\_block29\_1\_relu (Activati (None, 14, 14, 128) 0 ['conv4\_block29\_1\_bn[0][0]']

on)

conv4\_block29\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block29\_1\_relu[0][0]']

conv4\_block29\_concat (Concaten (None, 14, 14, 1184 0 ['conv4\_block28\_concat[0][0]',

ate) ) 'conv4\_block29\_2\_conv[0][0]']

conv4\_block30\_0\_bn (BatchNorma (None, 14, 14, 1184 4736 ['conv4\_block29\_concat[0][0]']

lization) )

conv4\_block30\_0\_relu (Activati (None, 14, 14, 1184 0 ['conv4\_block30\_0\_bn[0][0]']

on) )

conv4\_block30\_1\_conv (Conv2D) (None, 14, 14, 128) 151552 ['conv4\_block30\_0\_relu[0][0]']

conv4\_block30\_1\_bn (BatchNorma (None, 14, 14, 128) 512 ['conv4\_block30\_1\_conv[0][0]']

lization)

conv4\_block30\_1\_relu (Activati (None, 14, 14, 128) 0 ['conv4\_block30\_1\_bn[0][0]']

on)

conv4\_block30\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block30\_1\_relu[0][0]']

conv4\_block30\_concat (Concaten (None, 14, 14, 1216 0 ['conv4\_block29\_concat[0][0]',

ate) ) 'conv4\_block30\_2\_conv[0][0]']

conv4\_block31\_0\_bn (BatchNorma (None, 14, 14, 1216 4864 ['conv4\_block30\_concat[0][0]']

lization) )

conv4\_block31\_0\_relu (Activati (None, 14, 14, 1216 0 ['conv4\_block31\_0\_bn[0][0]']

on) )

conv4\_block31\_1\_conv (Conv2D) (None, 14, 14, 128) 155648 ['conv4\_block31\_0\_relu[0][0]']

conv4\_block31\_1\_bn (BatchNorma (None, 14, 14, 128) 512 ['conv4\_block31\_1\_conv[0][0]']

lization)

conv4\_block31\_1\_relu (Activati (None, 14, 14, 128) 0 ['conv4\_block31\_1\_bn[0][0]']

on)

conv4\_block31\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block31\_1\_relu[0][0]']

conv4\_block31\_concat (Concaten (None, 14, 14, 1248 0 ['conv4\_block30\_concat[0][0]',

ate) ) 'conv4\_block31\_2\_conv[0][0]']

conv4\_block32\_0\_bn (BatchNorma (None, 14, 14, 1248 4992 ['conv4\_block31\_concat[0][0]']

lization) )

conv4\_block32\_0\_relu (Activati (None, 14, 14, 1248 0 ['conv4\_block32\_0\_bn[0][0]']

on) )

conv4\_block32\_1\_conv (Conv2D) (None, 14, 14, 128) 159744 ['conv4\_block32\_0\_relu[0][0]']

conv4\_block32\_1\_bn (BatchNorma (None, 14, 14, 128) 512 ['conv4\_block32\_1\_conv[0][0]']

lization)

conv4\_block32\_1\_relu (Activati (None, 14, 14, 128) 0 ['conv4\_block32\_1\_bn[0][0]']

on)

conv4\_block32\_2\_conv (Conv2D) (None, 14, 14, 32) 36864 ['conv4\_block32\_1\_relu[0][0]']

conv4\_block32\_concat (Concaten (None, 14, 14, 1280 0 ['conv4\_block31\_concat[0][0]',

ate) ) 'conv4\_block32\_2\_conv[0][0]']

pool4\_bn (BatchNormalization) (None, 14, 14, 1280 5120 ['conv4\_block32\_concat[0][0]']

)

pool4\_relu (Activation) (None, 14, 14, 1280 0 ['pool4\_bn[0][0]']

)

pool4\_conv (Conv2D) (None, 14, 14, 640) 819200 ['pool4\_relu[0][0]']

pool4\_pool (AveragePooling2D) (None, 7, 7, 640) 0 ['pool4\_conv[0][0]']

conv5\_block1\_0\_bn (BatchNormal (None, 7, 7, 640) 2560 ['pool4\_pool[0][0]']

ization)

conv5\_block1\_0\_relu (Activatio (None, 7, 7, 640) 0 ['conv5\_block1\_0\_bn[0][0]']

n)

conv5\_block1\_1\_conv (Conv2D) (None, 7, 7, 128) 81920 ['conv5\_block1\_0\_relu[0][0]']

conv5\_block1\_1\_bn (BatchNormal (None, 7, 7, 128) 512 ['conv5\_block1\_1\_conv[0][0]']

ization)

conv5\_block1\_1\_relu (Activatio (None, 7, 7, 128) 0 ['conv5\_block1\_1\_bn[0][0]']

n)

conv5\_block1\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block1\_1\_relu[0][0]']

conv5\_block1\_concat (Concatena (None, 7, 7, 672) 0 ['pool4\_pool[0][0]',

te) 'conv5\_block1\_2\_conv[0][0]']

conv5\_block2\_0\_bn (BatchNormal (None, 7, 7, 672) 2688 ['conv5\_block1\_concat[0][0]']

ization)

conv5\_block2\_0\_relu (Activatio (None, 7, 7, 672) 0 ['conv5\_block2\_0\_bn[0][0]']

n)

conv5\_block2\_1\_conv (Conv2D) (None, 7, 7, 128) 86016 ['conv5\_block2\_0\_relu[0][0]']

conv5\_block2\_1\_bn (BatchNormal (None, 7, 7, 128) 512 ['conv5\_block2\_1\_conv[0][0]']

ization)

conv5\_block2\_1\_relu (Activatio (None, 7, 7, 128) 0 ['conv5\_block2\_1\_bn[0][0]']

n)

conv5\_block2\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block2\_1\_relu[0][0]']

conv5\_block2\_concat (Concatena (None, 7, 7, 704) 0 ['conv5\_block1\_concat[0][0]',

te) 'conv5\_block2\_2\_conv[0][0]']

conv5\_block3\_0\_bn (BatchNormal (None, 7, 7, 704) 2816 ['conv5\_block2\_concat[0][0]']

ization)

conv5\_block3\_0\_relu (Activatio (None, 7, 7, 704) 0 ['conv5\_block3\_0\_bn[0][0]']

n)

conv5\_block3\_1\_conv (Conv2D) (None, 7, 7, 128) 90112 ['conv5\_block3\_0\_relu[0][0]']

conv5\_block3\_1\_bn (BatchNormal (None, 7, 7, 128) 512 ['conv5\_block3\_1\_conv[0][0]']

ization)

conv5\_block3\_1\_relu (Activatio (None, 7, 7, 128) 0 ['conv5\_block3\_1\_bn[0][0]']

n)

conv5\_block3\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block3\_1\_relu[0][0]']

conv5\_block3\_concat (Concatena (None, 7, 7, 736) 0 ['conv5\_block2\_concat[0][0]',

te) 'conv5\_block3\_2\_conv[0][0]']

conv5\_block4\_0\_bn (BatchNormal (None, 7, 7, 736) 2944 ['conv5\_block3\_concat[0][0]']

ization)

conv5\_block4\_0\_relu (Activatio (None, 7, 7, 736) 0 ['conv5\_block4\_0\_bn[0][0]']

n)

conv5\_block4\_1\_conv (Conv2D) (None, 7, 7, 128) 94208 ['conv5\_block4\_0\_relu[0][0]']

conv5\_block4\_1\_bn (BatchNormal (None, 7, 7, 128) 512 ['conv5\_block4\_1\_conv[0][0]']

ization)

conv5\_block4\_1\_relu (Activatio (None, 7, 7, 128) 0 ['conv5\_block4\_1\_bn[0][0]']

n)

conv5\_block4\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block4\_1\_relu[0][0]']

conv5\_block4\_concat (Concatena (None, 7, 7, 768) 0 ['conv5\_block3\_concat[0][0]',

te) 'conv5\_block4\_2\_conv[0][0]']

conv5\_block5\_0\_bn (BatchNormal (None, 7, 7, 768) 3072 ['conv5\_block4\_concat[0][0]']

ization)

conv5\_block5\_0\_relu (Activatio (None, 7, 7, 768) 0 ['conv5\_block5\_0\_bn[0][0]']

n)

conv5\_block5\_1\_conv (Conv2D) (None, 7, 7, 128) 98304 ['conv5\_block5\_0\_relu[0][0]']

conv5\_block5\_1\_bn (BatchNormal (None, 7, 7, 128) 512 ['conv5\_block5\_1\_conv[0][0]']

ization)

conv5\_block5\_1\_relu (Activatio (None, 7, 7, 128) 0 ['conv5\_block5\_1\_bn[0][0]']

n)

conv5\_block5\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block5\_1\_relu[0][0]']

conv5\_block5\_concat (Concatena (None, 7, 7, 800) 0 ['conv5\_block4\_concat[0][0]',

te) 'conv5\_block5\_2\_conv[0][0]']

conv5\_block6\_0\_bn (BatchNormal (None, 7, 7, 800) 3200 ['conv5\_block5\_concat[0][0]']

ization)

conv5\_block6\_0\_relu (Activatio (None, 7, 7, 800) 0 ['conv5\_block6\_0\_bn[0][0]']

n)

conv5\_block6\_1\_conv (Conv2D) (None, 7, 7, 128) 102400 ['conv5\_block6\_0\_relu[0][0]']

conv5\_block6\_1\_bn (BatchNormal (None, 7, 7, 128) 512 ['conv5\_block6\_1\_conv[0][0]']

ization)

conv5\_block6\_1\_relu (Activatio (None, 7, 7, 128) 0 ['conv5\_block6\_1\_bn[0][0]']

n)

conv5\_block6\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block6\_1\_relu[0][0]']

conv5\_block6\_concat (Concatena (None, 7, 7, 832) 0 ['conv5\_block5\_concat[0][0]',

te) 'conv5\_block6\_2\_conv[0][0]']

conv5\_block7\_0\_bn (BatchNormal (None, 7, 7, 832) 3328 ['conv5\_block6\_concat[0][0]']

ization)

conv5\_block7\_0\_relu (Activatio (None, 7, 7, 832) 0 ['conv5\_block7\_0\_bn[0][0]']

n)

conv5\_block7\_1\_conv (Conv2D) (None, 7, 7, 128) 106496 ['conv5\_block7\_0\_relu[0][0]']

conv5\_block7\_1\_bn (BatchNormal (None, 7, 7, 128) 512 ['conv5\_block7\_1\_conv[0][0]']

ization)

conv5\_block7\_1\_relu (Activatio (None, 7, 7, 128) 0 ['conv5\_block7\_1\_bn[0][0]']

n)

conv5\_block7\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block7\_1\_relu[0][0]']

conv5\_block7\_concat (Concatena (None, 7, 7, 864) 0 ['conv5\_block6\_concat[0][0]',

te) 'conv5\_block7\_2\_conv[0][0]']

conv5\_block8\_0\_bn (BatchNormal (None, 7, 7, 864) 3456 ['conv5\_block7\_concat[0][0]']

ization)

conv5\_block8\_0\_relu (Activatio (None, 7, 7, 864) 0 ['conv5\_block8\_0\_bn[0][0]']

n)

conv5\_block8\_1\_conv (Conv2D) (None, 7, 7, 128) 110592 ['conv5\_block8\_0\_relu[0][0]']

conv5\_block8\_1\_bn (BatchNormal (None, 7, 7, 128) 512 ['conv5\_block8\_1\_conv[0][0]']

ization)

conv5\_block8\_1\_relu (Activatio (None, 7, 7, 128) 0 ['conv5\_block8\_1\_bn[0][0]']

n)

conv5\_block8\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block8\_1\_relu[0][0]']

conv5\_block8\_concat (Concatena (None, 7, 7, 896) 0 ['conv5\_block7\_concat[0][0]',

te) 'conv5\_block8\_2\_conv[0][0]']

conv5\_block9\_0\_bn (BatchNormal (None, 7, 7, 896) 3584 ['conv5\_block8\_concat[0][0]']

ization)

conv5\_block9\_0\_relu (Activatio (None, 7, 7, 896) 0 ['conv5\_block9\_0\_bn[0][0]']

n)

conv5\_block9\_1\_conv (Conv2D) (None, 7, 7, 128) 114688 ['conv5\_block9\_0\_relu[0][0]']

conv5\_block9\_1\_bn (BatchNormal (None, 7, 7, 128) 512 ['conv5\_block9\_1\_conv[0][0]']

ization)

conv5\_block9\_1\_relu (Activatio (None, 7, 7, 128) 0 ['conv5\_block9\_1\_bn[0][0]']

n)

conv5\_block9\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block9\_1\_relu[0][0]']

conv5\_block9\_concat (Concatena (None, 7, 7, 928) 0 ['conv5\_block8\_concat[0][0]',

te) 'conv5\_block9\_2\_conv[0][0]']

conv5\_block10\_0\_bn (BatchNorma (None, 7, 7, 928) 3712 ['conv5\_block9\_concat[0][0]']

lization)

conv5\_block10\_0\_relu (Activati (None, 7, 7, 928) 0 ['conv5\_block10\_0\_bn[0][0]']

on)

conv5\_block10\_1\_conv (Conv2D) (None, 7, 7, 128) 118784 ['conv5\_block10\_0\_relu[0][0]']

conv5\_block10\_1\_bn (BatchNorma (None, 7, 7, 128) 512 ['conv5\_block10\_1\_conv[0][0]']

lization)

conv5\_block10\_1\_relu (Activati (None, 7, 7, 128) 0 ['conv5\_block10\_1\_bn[0][0]']

on)

conv5\_block10\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block10\_1\_relu[0][0]']

conv5\_block10\_concat (Concaten (None, 7, 7, 960) 0 ['conv5\_block9\_concat[0][0]',

ate) 'conv5\_block10\_2\_conv[0][0]']

conv5\_block11\_0\_bn (BatchNorma (None, 7, 7, 960) 3840 ['conv5\_block10\_concat[0][0]']

lization)

conv5\_block11\_0\_relu (Activati (None, 7, 7, 960) 0 ['conv5\_block11\_0\_bn[0][0]']

on)

conv5\_block11\_1\_conv (Conv2D) (None, 7, 7, 128) 122880 ['conv5\_block11\_0\_relu[0][0]']

conv5\_block11\_1\_bn (BatchNorma (None, 7, 7, 128) 512 ['conv5\_block11\_1\_conv[0][0]']

lization)

conv5\_block11\_1\_relu (Activati (None, 7, 7, 128) 0 ['conv5\_block11\_1\_bn[0][0]']

on)

conv5\_block11\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block11\_1\_relu[0][0]']

conv5\_block11\_concat (Concaten (None, 7, 7, 992) 0 ['conv5\_block10\_concat[0][0]',

ate) 'conv5\_block11\_2\_conv[0][0]']

conv5\_block12\_0\_bn (BatchNorma (None, 7, 7, 992) 3968 ['conv5\_block11\_concat[0][0]']

lization)

conv5\_block12\_0\_relu (Activati (None, 7, 7, 992) 0 ['conv5\_block12\_0\_bn[0][0]']

on)

conv5\_block12\_1\_conv (Conv2D) (None, 7, 7, 128) 126976 ['conv5\_block12\_0\_relu[0][0]']

conv5\_block12\_1\_bn (BatchNorma (None, 7, 7, 128) 512 ['conv5\_block12\_1\_conv[0][0]']

lization)

conv5\_block12\_1\_relu (Activati (None, 7, 7, 128) 0 ['conv5\_block12\_1\_bn[0][0]']

on)

conv5\_block12\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block12\_1\_relu[0][0]']

conv5\_block12\_concat (Concaten (None, 7, 7, 1024) 0 ['conv5\_block11\_concat[0][0]',

ate) 'conv5\_block12\_2\_conv[0][0]']

conv5\_block13\_0\_bn (BatchNorma (None, 7, 7, 1024) 4096 ['conv5\_block12\_concat[0][0]']

lization)

conv5\_block13\_0\_relu (Activati (None, 7, 7, 1024) 0 ['conv5\_block13\_0\_bn[0][0]']

on)

conv5\_block13\_1\_conv (Conv2D) (None, 7, 7, 128) 131072 ['conv5\_block13\_0\_relu[0][0]']

conv5\_block13\_1\_bn (BatchNorma (None, 7, 7, 128) 512 ['conv5\_block13\_1\_conv[0][0]']

lization)

conv5\_block13\_1\_relu (Activati (None, 7, 7, 128) 0 ['conv5\_block13\_1\_bn[0][0]']

on)

conv5\_block13\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block13\_1\_relu[0][0]']

conv5\_block13\_concat (Concaten (None, 7, 7, 1056) 0 ['conv5\_block12\_concat[0][0]',

ate) 'conv5\_block13\_2\_conv[0][0]']

conv5\_block14\_0\_bn (BatchNorma (None, 7, 7, 1056) 4224 ['conv5\_block13\_concat[0][0]']

lization)

conv5\_block14\_0\_relu (Activati (None, 7, 7, 1056) 0 ['conv5\_block14\_0\_bn[0][0]']

on)

conv5\_block14\_1\_conv (Conv2D) (None, 7, 7, 128) 135168 ['conv5\_block14\_0\_relu[0][0]']

conv5\_block14\_1\_bn (BatchNorma (None, 7, 7, 128) 512 ['conv5\_block14\_1\_conv[0][0]']

lization)

conv5\_block14\_1\_relu (Activati (None, 7, 7, 128) 0 ['conv5\_block14\_1\_bn[0][0]']

on)

conv5\_block14\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block14\_1\_relu[0][0]']

conv5\_block14\_concat (Concaten (None, 7, 7, 1088) 0 ['conv5\_block13\_concat[0][0]',

ate) 'conv5\_block14\_2\_conv[0][0]']

conv5\_block15\_0\_bn (BatchNorma (None, 7, 7, 1088) 4352 ['conv5\_block14\_concat[0][0]']

lization)

conv5\_block15\_0\_relu (Activati (None, 7, 7, 1088) 0 ['conv5\_block15\_0\_bn[0][0]']

on)

conv5\_block15\_1\_conv (Conv2D) (None, 7, 7, 128) 139264 ['conv5\_block15\_0\_relu[0][0]']

conv5\_block15\_1\_bn (BatchNorma (None, 7, 7, 128) 512 ['conv5\_block15\_1\_conv[0][0]']

lization)

conv5\_block15\_1\_relu (Activati (None, 7, 7, 128) 0 ['conv5\_block15\_1\_bn[0][0]']

on)

conv5\_block15\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block15\_1\_relu[0][0]']

conv5\_block15\_concat (Concaten (None, 7, 7, 1120) 0 ['conv5\_block14\_concat[0][0]',

ate) 'conv5\_block15\_2\_conv[0][0]']

conv5\_block16\_0\_bn (BatchNorma (None, 7, 7, 1120) 4480 ['conv5\_block15\_concat[0][0]']

lization)

conv5\_block16\_0\_relu (Activati (None, 7, 7, 1120) 0 ['conv5\_block16\_0\_bn[0][0]']

on)

conv5\_block16\_1\_conv (Conv2D) (None, 7, 7, 128) 143360 ['conv5\_block16\_0\_relu[0][0]']

conv5\_block16\_1\_bn (BatchNorma (None, 7, 7, 128) 512 ['conv5\_block16\_1\_conv[0][0]']

lization)

conv5\_block16\_1\_relu (Activati (None, 7, 7, 128) 0 ['conv5\_block16\_1\_bn[0][0]']

on)

conv5\_block16\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block16\_1\_relu[0][0]']

conv5\_block16\_concat (Concaten (None, 7, 7, 1152) 0 ['conv5\_block15\_concat[0][0]',

ate) 'conv5\_block16\_2\_conv[0][0]']

conv5\_block17\_0\_bn (BatchNorma (None, 7, 7, 1152) 4608 ['conv5\_block16\_concat[0][0]']

lization)

conv5\_block17\_0\_relu (Activati (None, 7, 7, 1152) 0 ['conv5\_block17\_0\_bn[0][0]']

on)

conv5\_block17\_1\_conv (Conv2D) (None, 7, 7, 128) 147456 ['conv5\_block17\_0\_relu[0][0]']

conv5\_block17\_1\_bn (BatchNorma (None, 7, 7, 128) 512 ['conv5\_block17\_1\_conv[0][0]']

lization)

conv5\_block17\_1\_relu (Activati (None, 7, 7, 128) 0 ['conv5\_block17\_1\_bn[0][0]']

on)

conv5\_block17\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block17\_1\_relu[0][0]']

conv5\_block17\_concat (Concaten (None, 7, 7, 1184) 0 ['conv5\_block16\_concat[0][0]',

ate) 'conv5\_block17\_2\_conv[0][0]']

conv5\_block18\_0\_bn (BatchNorma (None, 7, 7, 1184) 4736 ['conv5\_block17\_concat[0][0]']

lization)

conv5\_block18\_0\_relu (Activati (None, 7, 7, 1184) 0 ['conv5\_block18\_0\_bn[0][0]']

on)

conv5\_block18\_1\_conv (Conv2D) (None, 7, 7, 128) 151552 ['conv5\_block18\_0\_relu[0][0]']

conv5\_block18\_1\_bn (BatchNorma (None, 7, 7, 128) 512 ['conv5\_block18\_1\_conv[0][0]']

lization)

conv5\_block18\_1\_relu (Activati (None, 7, 7, 128) 0 ['conv5\_block18\_1\_bn[0][0]']

on)

conv5\_block18\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block18\_1\_relu[0][0]']

conv5\_block18\_concat (Concaten (None, 7, 7, 1216) 0 ['conv5\_block17\_concat[0][0]',

ate) 'conv5\_block18\_2\_conv[0][0]']

conv5\_block19\_0\_bn (BatchNorma (None, 7, 7, 1216) 4864 ['conv5\_block18\_concat[0][0]']

lization)

conv5\_block19\_0\_relu (Activati (None, 7, 7, 1216) 0 ['conv5\_block19\_0\_bn[0][0]']

on)

conv5\_block19\_1\_conv (Conv2D) (None, 7, 7, 128) 155648 ['conv5\_block19\_0\_relu[0][0]']

conv5\_block19\_1\_bn (BatchNorma (None, 7, 7, 128) 512 ['conv5\_block19\_1\_conv[0][0]']

lization)

conv5\_block19\_1\_relu (Activati (None, 7, 7, 128) 0 ['conv5\_block19\_1\_bn[0][0]']

on)

conv5\_block19\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block19\_1\_relu[0][0]']

conv5\_block19\_concat (Concaten (None, 7, 7, 1248) 0 ['conv5\_block18\_concat[0][0]',

ate) 'conv5\_block19\_2\_conv[0][0]']

conv5\_block20\_0\_bn (BatchNorma (None, 7, 7, 1248) 4992 ['conv5\_block19\_concat[0][0]']

lization)

conv5\_block20\_0\_relu (Activati (None, 7, 7, 1248) 0 ['conv5\_block20\_0\_bn[0][0]']

on)

conv5\_block20\_1\_conv (Conv2D) (None, 7, 7, 128) 159744 ['conv5\_block20\_0\_relu[0][0]']

conv5\_block20\_1\_bn (BatchNorma (None, 7, 7, 128) 512 ['conv5\_block20\_1\_conv[0][0]']

lization)

conv5\_block20\_1\_relu (Activati (None, 7, 7, 128) 0 ['conv5\_block20\_1\_bn[0][0]']

on)

conv5\_block20\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block20\_1\_relu[0][0]']

conv5\_block20\_concat (Concaten (None, 7, 7, 1280) 0 ['conv5\_block19\_concat[0][0]',

ate) 'conv5\_block20\_2\_conv[0][0]']

conv5\_block21\_0\_bn (BatchNorma (None, 7, 7, 1280) 5120 ['conv5\_block20\_concat[0][0]']

lization)

conv5\_block21\_0\_relu (Activati (None, 7, 7, 1280) 0 ['conv5\_block21\_0\_bn[0][0]']

on)

conv5\_block21\_1\_conv (Conv2D) (None, 7, 7, 128) 163840 ['conv5\_block21\_0\_relu[0][0]']

conv5\_block21\_1\_bn (BatchNorma (None, 7, 7, 128) 512 ['conv5\_block21\_1\_conv[0][0]']

lization)

conv5\_block21\_1\_relu (Activati (None, 7, 7, 128) 0 ['conv5\_block21\_1\_bn[0][0]']

on)

conv5\_block21\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block21\_1\_relu[0][0]']

conv5\_block21\_concat (Concaten (None, 7, 7, 1312) 0 ['conv5\_block20\_concat[0][0]',

ate) 'conv5\_block21\_2\_conv[0][0]']

conv5\_block22\_0\_bn (BatchNorma (None, 7, 7, 1312) 5248 ['conv5\_block21\_concat[0][0]']

lization)

conv5\_block22\_0\_relu (Activati (None, 7, 7, 1312) 0 ['conv5\_block22\_0\_bn[0][0]']

on)

conv5\_block22\_1\_conv (Conv2D) (None, 7, 7, 128) 167936 ['conv5\_block22\_0\_relu[0][0]']

conv5\_block22\_1\_bn (BatchNorma (None, 7, 7, 128) 512 ['conv5\_block22\_1\_conv[0][0]']

lization)

conv5\_block22\_1\_relu (Activati (None, 7, 7, 128) 0 ['conv5\_block22\_1\_bn[0][0]']

on)

conv5\_block22\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block22\_1\_relu[0][0]']

conv5\_block22\_concat (Concaten (None, 7, 7, 1344) 0 ['conv5\_block21\_concat[0][0]',

ate) 'conv5\_block22\_2\_conv[0][0]']

conv5\_block23\_0\_bn (BatchNorma (None, 7, 7, 1344) 5376 ['conv5\_block22\_concat[0][0]']

lization)

conv5\_block23\_0\_relu (Activati (None, 7, 7, 1344) 0 ['conv5\_block23\_0\_bn[0][0]']

on)

conv5\_block23\_1\_conv (Conv2D) (None, 7, 7, 128) 172032 ['conv5\_block23\_0\_relu[0][0]']

conv5\_block23\_1\_bn (BatchNorma (None, 7, 7, 128) 512 ['conv5\_block23\_1\_conv[0][0]']

lization)

conv5\_block23\_1\_relu (Activati (None, 7, 7, 128) 0 ['conv5\_block23\_1\_bn[0][0]']

on)

conv5\_block23\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block23\_1\_relu[0][0]']

conv5\_block23\_concat (Concaten (None, 7, 7, 1376) 0 ['conv5\_block22\_concat[0][0]',

ate) 'conv5\_block23\_2\_conv[0][0]']

conv5\_block24\_0\_bn (BatchNorma (None, 7, 7, 1376) 5504 ['conv5\_block23\_concat[0][0]']

lization)

conv5\_block24\_0\_relu (Activati (None, 7, 7, 1376) 0 ['conv5\_block24\_0\_bn[0][0]']

on)

conv5\_block24\_1\_conv (Conv2D) (None, 7, 7, 128) 176128 ['conv5\_block24\_0\_relu[0][0]']

conv5\_block24\_1\_bn (BatchNorma (None, 7, 7, 128) 512 ['conv5\_block24\_1\_conv[0][0]']

lization)

conv5\_block24\_1\_relu (Activati (None, 7, 7, 128) 0 ['conv5\_block24\_1\_bn[0][0]']

on)

conv5\_block24\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block24\_1\_relu[0][0]']

conv5\_block24\_concat (Concaten (None, 7, 7, 1408) 0 ['conv5\_block23\_concat[0][0]',

ate) 'conv5\_block24\_2\_conv[0][0]']

conv5\_block25\_0\_bn (BatchNorma (None, 7, 7, 1408) 5632 ['conv5\_block24\_concat[0][0]']

lization)

conv5\_block25\_0\_relu (Activati (None, 7, 7, 1408) 0 ['conv5\_block25\_0\_bn[0][0]']

on)

conv5\_block25\_1\_conv (Conv2D) (None, 7, 7, 128) 180224 ['conv5\_block25\_0\_relu[0][0]']

conv5\_block25\_1\_bn (BatchNorma (None, 7, 7, 128) 512 ['conv5\_block25\_1\_conv[0][0]']

lization)

conv5\_block25\_1\_relu (Activati (None, 7, 7, 128) 0 ['conv5\_block25\_1\_bn[0][0]']

on)

conv5\_block25\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block25\_1\_relu[0][0]']

conv5\_block25\_concat (Concaten (None, 7, 7, 1440) 0 ['conv5\_block24\_concat[0][0]',

ate) 'conv5\_block25\_2\_conv[0][0]']

conv5\_block26\_0\_bn (BatchNorma (None, 7, 7, 1440) 5760 ['conv5\_block25\_concat[0][0]']

lization)

conv5\_block26\_0\_relu (Activati (None, 7, 7, 1440) 0 ['conv5\_block26\_0\_bn[0][0]']

on)

conv5\_block26\_1\_conv (Conv2D) (None, 7, 7, 128) 184320 ['conv5\_block26\_0\_relu[0][0]']

conv5\_block26\_1\_bn (BatchNorma (None, 7, 7, 128) 512 ['conv5\_block26\_1\_conv[0][0]']

lization)

conv5\_block26\_1\_relu (Activati (None, 7, 7, 128) 0 ['conv5\_block26\_1\_bn[0][0]']

on)

conv5\_block26\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block26\_1\_relu[0][0]']

conv5\_block26\_concat (Concaten (None, 7, 7, 1472) 0 ['conv5\_block25\_concat[0][0]',

ate) 'conv5\_block26\_2\_conv[0][0]']

conv5\_block27\_0\_bn (BatchNorma (None, 7, 7, 1472) 5888 ['conv5\_block26\_concat[0][0]']

lization)

conv5\_block27\_0\_relu (Activati (None, 7, 7, 1472) 0 ['conv5\_block27\_0\_bn[0][0]']

on)

conv5\_block27\_1\_conv (Conv2D) (None, 7, 7, 128) 188416 ['conv5\_block27\_0\_relu[0][0]']

conv5\_block27\_1\_bn (BatchNorma (None, 7, 7, 128) 512 ['conv5\_block27\_1\_conv[0][0]']

lization)

conv5\_block27\_1\_relu (Activati (None, 7, 7, 128) 0 ['conv5\_block27\_1\_bn[0][0]']

on)

conv5\_block27\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block27\_1\_relu[0][0]']

conv5\_block27\_concat (Concaten (None, 7, 7, 1504) 0 ['conv5\_block26\_concat[0][0]',

ate) 'conv5\_block27\_2\_conv[0][0]']

conv5\_block28\_0\_bn (BatchNorma (None, 7, 7, 1504) 6016 ['conv5\_block27\_concat[0][0]']

lization)

conv5\_block28\_0\_relu (Activati (None, 7, 7, 1504) 0 ['conv5\_block28\_0\_bn[0][0]']

on)

conv5\_block28\_1\_conv (Conv2D) (None, 7, 7, 128) 192512 ['conv5\_block28\_0\_relu[0][0]']

conv5\_block28\_1\_bn (BatchNorma (None, 7, 7, 128) 512 ['conv5\_block28\_1\_conv[0][0]']

lization)

conv5\_block28\_1\_relu (Activati (None, 7, 7, 128) 0 ['conv5\_block28\_1\_bn[0][0]']

on)

conv5\_block28\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block28\_1\_relu[0][0]']

conv5\_block28\_concat (Concaten (None, 7, 7, 1536) 0 ['conv5\_block27\_concat[0][0]',

ate) 'conv5\_block28\_2\_conv[0][0]']

conv5\_block29\_0\_bn (BatchNorma (None, 7, 7, 1536) 6144 ['conv5\_block28\_concat[0][0]']

lization)

conv5\_block29\_0\_relu (Activati (None, 7, 7, 1536) 0 ['conv5\_block29\_0\_bn[0][0]']

on)

conv5\_block29\_1\_conv (Conv2D) (None, 7, 7, 128) 196608 ['conv5\_block29\_0\_relu[0][0]']

conv5\_block29\_1\_bn (BatchNorma (None, 7, 7, 128) 512 ['conv5\_block29\_1\_conv[0][0]']

lization)

conv5\_block29\_1\_relu (Activati (None, 7, 7, 128) 0 ['conv5\_block29\_1\_bn[0][0]']

on)

conv5\_block29\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block29\_1\_relu[0][0]']

conv5\_block29\_concat (Concaten (None, 7, 7, 1568) 0 ['conv5\_block28\_concat[0][0]',

ate) 'conv5\_block29\_2\_conv[0][0]']

conv5\_block30\_0\_bn (BatchNorma (None, 7, 7, 1568) 6272 ['conv5\_block29\_concat[0][0]']

lization)

conv5\_block30\_0\_relu (Activati (None, 7, 7, 1568) 0 ['conv5\_block30\_0\_bn[0][0]']

on)

conv5\_block30\_1\_conv (Conv2D) (None, 7, 7, 128) 200704 ['conv5\_block30\_0\_relu[0][0]']

conv5\_block30\_1\_bn (BatchNorma (None, 7, 7, 128) 512 ['conv5\_block30\_1\_conv[0][0]']

lization)

conv5\_block30\_1\_relu (Activati (None, 7, 7, 128) 0 ['conv5\_block30\_1\_bn[0][0]']

on)

conv5\_block30\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block30\_1\_relu[0][0]']

conv5\_block30\_concat (Concaten (None, 7, 7, 1600) 0 ['conv5\_block29\_concat[0][0]',

ate) 'conv5\_block30\_2\_conv[0][0]']

conv5\_block31\_0\_bn (BatchNorma (None, 7, 7, 1600) 6400 ['conv5\_block30\_concat[0][0]']

lization)

conv5\_block31\_0\_relu (Activati (None, 7, 7, 1600) 0 ['conv5\_block31\_0\_bn[0][0]']

on)

conv5\_block31\_1\_conv (Conv2D) (None, 7, 7, 128) 204800 ['conv5\_block31\_0\_relu[0][0]']

conv5\_block31\_1\_bn (BatchNorma (None, 7, 7, 128) 512 ['conv5\_block31\_1\_conv[0][0]']

lization)

conv5\_block31\_1\_relu (Activati (None, 7, 7, 128) 0 ['conv5\_block31\_1\_bn[0][0]']

on)

conv5\_block31\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block31\_1\_relu[0][0]']

conv5\_block31\_concat (Concaten (None, 7, 7, 1632) 0 ['conv5\_block30\_concat[0][0]',

ate) 'conv5\_block31\_2\_conv[0][0]']

conv5\_block32\_0\_bn (BatchNorma (None, 7, 7, 1632) 6528 ['conv5\_block31\_concat[0][0]']

lization)

conv5\_block32\_0\_relu (Activati (None, 7, 7, 1632) 0 ['conv5\_block32\_0\_bn[0][0]']

on)

conv5\_block32\_1\_conv (Conv2D) (None, 7, 7, 128) 208896 ['conv5\_block32\_0\_relu[0][0]']

conv5\_block32\_1\_bn (BatchNorma (None, 7, 7, 128) 512 ['conv5\_block32\_1\_conv[0][0]']

lization)

conv5\_block32\_1\_relu (Activati (None, 7, 7, 128) 0 ['conv5\_block32\_1\_bn[0][0]']

on)

conv5\_block32\_2\_conv (Conv2D) (None, 7, 7, 32) 36864 ['conv5\_block32\_1\_relu[0][0]']

conv5\_block32\_concat (Concaten (None, 7, 7, 1664) 0 ['conv5\_block31\_concat[0][0]',

ate) 'conv5\_block32\_2\_conv[0][0]']

bn (BatchNormalization) (None, 7, 7, 1664) 6656 ['conv5\_block32\_concat[0][0]']

relu (Activation) (None, 7, 7, 1664) 0 ['bn[0][0]']

flatten\_5 (Flatten) (None, 81536) 0 ['relu[0][0]']

dense\_5 (Dense) (None, 1) 81537 ['flatten\_5[0][0]']

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

Total params: 12,724,417

Trainable params: 81,537

Non-trainable params: 12,642,880

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Epoch 1/100

17/17 [==============================] - 22s 550ms/step - loss: 3.6478 - accuracy: 0.5940 - val\_loss: 1.6109 - val\_accuracy: 0.6642 - lr: 0.0010

Epoch 2/100

17/17 [==============================] - 5s 312ms/step - loss: 1.0589 - accuracy: 0.7821 - val\_loss: 1.1455 - val\_accuracy: 0.7313 - lr: 0.0010

Epoch 3/100

17/17 [==============================] - 5s 286ms/step - loss: 0.3448 - accuracy: 0.8901 - val\_loss: 1.1991 - val\_accuracy: 0.7313 - lr: 0.0010

Epoch 4/100

17/17 [==============================] - 5s 302ms/step - loss: 0.1715 - accuracy: 0.9441 - val\_loss: 0.5913 - val\_accuracy: 0.8134 - lr: 0.0010

Epoch 5/100

17/17 [==============================] - 5s 299ms/step - loss: 0.0540 - accuracy: 0.9814 - val\_loss: 0.5296 - val\_accuracy: 0.8657 - lr: 0.0010

Epoch 6/100

17/17 [==============================] - 5s 297ms/step - loss: 0.0195 - accuracy: 0.9981 - val\_loss: 0.5097 - val\_accuracy: 0.8582 - lr: 0.0010

Epoch 7/100

17/17 [==============================] - 5s 283ms/step - loss: 0.0088 - accuracy: 1.0000 - val\_loss: 0.5154 - val\_accuracy: 0.8657 - lr: 0.0010

Epoch 8/100

17/17 [==============================] - 5s 283ms/step - loss: 0.0053 - accuracy: 1.0000 - val\_loss: 0.5118 - val\_accuracy: 0.8657 - lr: 0.0010

Epoch 9/100

17/17 [==============================] - 5s 293ms/step - loss: 0.0046 - accuracy: 1.0000 - val\_loss: 0.5281 - val\_accuracy: 0.8657 - lr: 0.0010

Epoch 10/100

17/17 [==============================] - 5s 283ms/step - loss: 0.0037 - accuracy: 1.0000 - val\_loss: 0.5180 - val\_accuracy: 0.8731 - lr: 1.0000e-04

Epoch 11/100

17/17 [==============================] - 5s 305ms/step - loss: 0.0034 - accuracy: 1.0000 - val\_loss: 0.5126 - val\_accuracy: 0.8657 - lr: 1.0000e-04

INFO:tensorflow:Assets written to: /content/drive/MyDrive/CTDenseNet169Split0.9noAug/assets

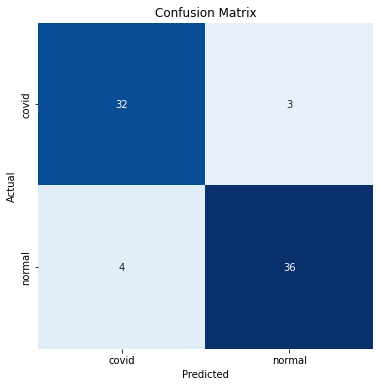
Test Loss: 0.28595

Test Accuracy: 90.67%

WARNING:tensorflow:5 out of the last 13 calls to <function Model.make\_predict\_function.<locals>.predict\_function at 0x7f26c59cde60> triggered tf.function retracing. Tracing is expensive and the excessive number of tracings could be due to (1) creating @tf.function repeatedly in a loop, (2) passing tensors with different shapes, (3) passing Python objects instead of tensors. For (1), please define your @tf.function outside of the loop. For (2), @tf.function has experimental\_relax\_shapes=True option that relaxes argument shapes that can avoid unnecessary retracing. For (3), please refer to <https://www.tensorflow.org/guide/function#controlling_retracing> and <https://www.tensorflow.org/api_docs/python/tf/function> for more details.

/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 0.89 0.91 0.90 35

normal 0.92 0.90 0.91 40

accuracy 0.91 75

macro avg 0.91 0.91 0.91 75

weighted avg 0.91 0.91 0.91 75

