precision recall f1-score support

under\_mask 0.97 0.88 0.92 289

with\_mask 0.85 0.95 0.90 296

without\_mask 0.94 0.90 0.92 282

accuracy 0.91 867

macro avg 0.92 0.91 0.91 867

weighted avg 0.92 0.91 0.91 867

katman artırılmış

precision recall f1-score support

under\_mask 0.97 0.88 0.92 289

with\_mask 0.85 0.95 0.90 296

without\_mask 0.94 0.90 0.92 282

accuracy 0.91 867

macro avg 0.92 0.91 0.91 867

weighted avg 0.92 0.91 0.91 867

ayıklanmış

precision recall f1-score support

under\_mask 0.97 0.93 0.95 289

with\_mask 0.85 0.96 0.90 296

without\_mask 0.96 0.87 0.91 282

accuracy 0.92 867

macro avg 0.93 0.92 0.92 867

weighted avg 0.92 0.92 0.92 867

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precision recall f1-score support

under\_mask 0.99 0.93 0.96 289

with\_mask 0.93 0.91 0.92 296

without\_mask 0.88 0.96 0.92 282

accuracy 0.93 867

macro avg 0.93 0.93 0.93 867

weighted avg 0.93 0.93 0.93 867

precision recall f1-score support

under\_mask 0.98 0.95 0.96 289

with\_mask 0.92 0.97 0.94 296

without\_mask 0.96 0.93 0.95 282

accuracy 0.95 867

macro avg 0.95 0.95 0.95 867

weighted avg 0.95 0.95 0.95 867

precision recall f1-score support

under\_mask 0.98 0.91 0.94 279

with\_mask 0.91 0.87 0.89 291

without\_mask 0.87 0.97 0.92 295

accuracy 0.92 865

macro avg 0.92 0.92 0.92 865

weighted avg 0.92 0.92 0.92 865

6

[INFO] evaluating network...

precision recall f1-score support

under\_mask 0.98 0.92 0.95 279

with\_mask 0.88 0.98 0.93 357

without\_mask 0.98 0.90 0.94 291

accuracy 0.94 927

macro avg 0.95 0.93 0.94 927

weighted avg 0.94 0.94 0.94 927

7

[INFO] evaluating network...

precision recall f1-score support

under\_mask 0.91 0.94 0.93 279

with\_mask 0.92 0.94 0.93 357

without\_mask 0.97 0.91 0.94 291

accuracy 0.93 927

macro avg 0.93 0.93 0.93 927

weighted avg 0.93 0.93 0.93 927

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

Layer (type) Output Shape Param # ================================================================

conv2d (Conv2D) (None, 64, 64, 32) 896 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

activation (Activation) (None, 64, 64, 32) 0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

batch\_normalization (BatchNo (None, 64, 64, 32) 128 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

max\_pooling2d (MaxPooling2D) (None, 32, 32, 32) 0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

dropout (Dropout) (None, 32, 32, 32) 0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

conv2d\_1 (Conv2D) (None, 32, 32, 64) 18496 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

activation\_1 (Activation) (None, 32, 32, 64) 0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

batch\_normalization\_1 (Batch (None, 32, 32, 64) 256 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

conv2d\_2 (Conv2D) (None, 32, 32, 64) 36928 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

activation\_2 (Activation) (None, 32, 32, 64) 0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

batch\_normalization\_2(Batch (None, 32, 32, 64) 256 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

max\_pooling2d\_1 (MaxPooling2 (None, 16, 16, 64) 0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

dropout\_1 (Dropout) (None, 16, 16, 64) 0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

conv2d\_3 (Conv2D) (None, 16, 16, 128) 73856 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

activation\_3 (Activation) (None, 16, 16, 128) 0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

batch\_normalization\_3 (Batch (None, 16, 16, 128) 512 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

conv2d\_4 (Conv2D) (None, 16, 16, 128) 147584 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

activation\_4 (Activation) (None, 16, 16, 128) 0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

batch\_normalization\_4 (Batch (None, 16, 16, 128) 512 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

conv2d\_5 (Conv2D) (None, 16, 16, 128) 147584 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

activation\_5 (Activation) (None, 16, 16, 128) 0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

batch\_normalization\_5 (Batch (None, 16, 16, 128) 512 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

max\_pooling2d\_2 (MaxPooling2 (None, 8, 8, 128) 0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

dropout\_2 (Dropout) (None, 8, 8, 128) 0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

conv2d\_6 (Conv2D) (None, 8, 8, 256) 295168 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

activation\_6 (Activation) (None, 8, 8, 256) 0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

batch\_normalization\_6 (Batch (None, 8, 8, 256) 1024 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

conv2d\_7 (Conv2D) (None, 8, 8, 256) 590080 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

activation\_7 (Activation) (None, 8, 8, 256) 0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

batch\_normalization\_7 (Batch (None, 8, 8, 256) 1024 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

conv2d\_8 (Conv2D) (None, 8, 8, 256) 590080 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

activation\_8 (Activation) (None, 8, 8, 256) 0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

batch\_normalization\_8 (Batch (None, 8, 8, 256) 1024 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

conv2d\_9 (Conv2D) (None, 8, 8, 256) 590080 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

activation\_9 (Activation) (None, 8, 8, 256) 0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

batch\_normalization\_9 (Batch (None, 8, 8, 256) 1024 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

max\_pooling2d\_3 (MaxPooling2 (None, 4, 4, 256) 0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

dropout\_3 (Dropout) (None, 4, 4, 256) 0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

flatten (Flatten) (None, 4096) 0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

dense (Dense) (None, 512) 2097664 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

activation\_10 (Activation) (None, 512) 0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

batch\_normalization\_10 (Batch (None, 512) 2048 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

dropout\_4 (Dropout) (None, 512) 0 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

dense\_1 (Dense) (None, 3) 1539 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

activation\_11 (Activation) (None, 3) 0

================================================================>

Total params: 4,598,275

Trainable params: 4,594,115

Non-trainable params: 4,160

Epoch 75/75

86/86 [==============================] - 149s 2s/step - loss: 0.1793 - accuracy: 0.9360 - val\_loss: 0.2203 - val\_accuracy: 0.9256

[INFO] evaluating network...

precision recall f1-score support

under\_mask 0.98 0.89 0.93 279

with\_mask 0.88 0.96 0.92 357

without\_mask 0.94 0.92 0.93 291

accuracy 0.93 927

macro avg 0.93 0.92 0.93 927

weighted avg 0.93 0.93 0.93 927

precision recall f1-score support

under\_mask 0.98 0.93 0.95 288

with\_mask 0.94 0.99 0.96 351

without\_mask 1.00 0.99 0.99 288

accuracy 0.97 927

macro avg 0.97 0.97 0.97 927

weighted avg 0.97 0.97 0.97 927

[INFO] loading images...

/usr/local/lib/python3.7/dist-packages/PIL/Image.py:960: UserWarning: Palette images with Transparency expressed in bytes should be converted to RGBA images

"Palette images with Transparency expressed in bytes should be "

tcmalloc: large alloc 2232631296 bytes == 0x8f41e000 @ 0x7fa348ff11e7 0x7fa3063ce0ce 0x7fa30642a715 0x7fa30642ad1b 0x7fa3064cb333 0x5936cc 0x548c51 0x5127f1 0x549576 0x604173 0x5f5506 0x5f8c6c 0x5f9206 0x64faf2 0x64fc4e 0x7fa348beec87 0x5b621a

tcmalloc: large alloc 1674477568 bytes == 0x114552000 @ 0x7fa348ff11e7 0x7fa3063ce0ce 0x7fa306424cf5 0x7fa306424e08 0x7fa3064b70b9 0x7fa3064b9a25 0x4d3969 0x512147 0x549576 0x593fce 0x548ae9 0x5127f1 0x549e0e 0x593fce 0x5118f8 0x598ef4 0x500d94 0x5a7284 0x5a9cf4 0x594a96 0x515600 0x549e0e 0x593fce 0x548ae9 0x5127f1 0x549576 0x604173 0x5f5506 0x5f8c6c 0x5f9206 0x64faf2

WARNING:tensorflow:`input\_shape` is undefined or non-square, or `rows` is not in [96, 128, 160, 192, 224]. Weights for input shape (224, 224) will be loaded as the default.

2022-05-24 07:58:50.382886: W tensorflow/core/common\_runtime/gpu/gpu\_bfc\_allocator.cc:39] Overriding allow\_growth setting because the TF\_FORCE\_GPU\_ALLOW\_GROWTH environment variable is set. Original config value was 0.

Downloading data from <https://storage.googleapis.com/tensorflow/keras-applications/mobilenet_v2/mobilenet_v2_weights_tf_dim_ordering_tf_kernels_1.0_224_no_top.h5>

9412608/9406464 [==============================] - 0s 0us/step

9420800/9406464 [==============================] - 0s 0us/step

[INFO] compiling model...

Model: "model"

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

Layer (type) Output Shape Param # Connected to

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

input\_1 (InputLayer) [(None, 224, 224, 3 0 []

)]

Conv1 (Conv2D) (None, 112, 112, 32 864 ['input\_1[0][0]']

)

bn\_Conv1 (BatchNormalization) (None, 112, 112, 32 128 ['Conv1[0][0]']

)

Conv1\_relu (ReLU) (None, 112, 112, 32 0 ['bn\_Conv1[0][0]']

)

expanded\_conv\_depthwise (Depth (None, 112, 112, 32 288 ['Conv1\_relu[0][0]']

wiseConv2D) )

expanded\_conv\_depthwise\_BN (Ba (None, 112, 112, 32 128 ['expanded\_conv\_depthwise[0][0]']

tchNormalization) )

expanded\_conv\_depthwise\_relu ( (None, 112, 112, 32 0 ['expanded\_conv\_depthwise\_BN[0][0

ReLU) ) ]']

expanded\_conv\_project (Conv2D) (None, 112, 112, 16 512 ['expanded\_conv\_depthwise\_relu[0]

) [0]']

expanded\_conv\_project\_BN (Batc (None, 112, 112, 16 64 ['expanded\_conv\_project[0][0]']

hNormalization) )

block\_1\_expand (Conv2D) (None, 112, 112, 96 1536 ['expanded\_conv\_project\_BN[0][0]'

) ]

block\_1\_expand\_BN (BatchNormal (None, 112, 112, 96 384 ['block\_1\_expand[0][0]']

ization) )

block\_1\_expand\_relu (ReLU) (None, 112, 112, 96 0 ['block\_1\_expand\_BN[0][0]']

)

block\_1\_pad (ZeroPadding2D) (None, 113, 113, 96 0 ['block\_1\_expand\_relu[0][0]']

)

block\_1\_depthwise (DepthwiseCo (None, 56, 56, 96) 864 ['block\_1\_pad[0][0]']

nv2D)

block\_1\_depthwise\_BN (BatchNor (None, 56, 56, 96) 384 ['block\_1\_depthwise[0][0]']

malization)

block\_1\_depthwise\_relu (ReLU) (None, 56, 56, 96) 0 ['block\_1\_depthwise\_BN[0][0]']

block\_1\_project (Conv2D) (None, 56, 56, 24) 2304 ['block\_1\_depthwise\_relu[0][0]']

block\_1\_project\_BN (BatchNorma (None, 56, 56, 24) 96 ['block\_1\_project[0][0]']

lization)

block\_2\_expand (Conv2D) (None, 56, 56, 144) 3456 ['block\_1\_project\_BN[0][0]']

block\_2\_expand\_BN (BatchNormal (None, 56, 56, 144) 576 ['block\_2\_expand[0][0]']

ization)

block\_2\_expand\_relu (ReLU) (None, 56, 56, 144) 0 ['block\_2\_expand\_BN[0][0]']

block\_2\_depthwise (DepthwiseCo (None, 56, 56, 144) 1296 ['block\_2\_expand\_relu[0][0]']

nv2D)

block\_2\_depthwise\_BN (BatchNor (None, 56, 56, 144) 576 ['block\_2\_depthwise[0][0]']

malization)

block\_2\_depthwise\_relu (ReLU) (None, 56, 56, 144) 0 ['block\_2\_depthwise\_BN[0][0]']

block\_2\_project (Conv2D) (None, 56, 56, 24) 3456 ['block\_2\_depthwise\_relu[0][0]']

block\_2\_project\_BN (BatchNorma (None, 56, 56, 24) 96 ['block\_2\_project[0][0]']

lization)

block\_2\_add (Add) (None, 56, 56, 24) 0 ['block\_1\_project\_BN[0][0]',

'block\_2\_project\_BN[0][0]']

block\_3\_expand (Conv2D) (None, 56, 56, 144) 3456 ['block\_2\_add[0][0]']

block\_3\_expand\_BN (BatchNormal (None, 56, 56, 144) 576 ['block\_3\_expand[0][0]']

ization)

block\_3\_expand\_relu (ReLU) (None, 56, 56, 144) 0 ['block\_3\_expand\_BN[0][0]']

block\_3\_pad (ZeroPadding2D) (None, 57, 57, 144) 0 ['block\_3\_expand\_relu[0][0]']

block\_3\_depthwise (DepthwiseCo (None, 28, 28, 144) 1296 ['block\_3\_pad[0][0]']

nv2D)

block\_3\_depthwise\_BN (BatchNor (None, 28, 28, 144) 576 ['block\_3\_depthwise[0][0]']

malization)

block\_3\_depthwise\_relu (ReLU) (None, 28, 28, 144) 0 ['block\_3\_depthwise\_BN[0][0]']

block\_3\_project (Conv2D) (None, 28, 28, 32) 4608 ['block\_3\_depthwise\_relu[0][0]']

block\_3\_project\_BN (BatchNorma (None, 28, 28, 32) 128 ['block\_3\_project[0][0]']

lization)

block\_4\_expand (Conv2D) (None, 28, 28, 192) 6144 ['block\_3\_project\_BN[0][0]']

block\_4\_expand\_BN (BatchNormal (None, 28, 28, 192) 768 ['block\_4\_expand[0][0]']

ization)

block\_4\_expand\_relu (ReLU) (None, 28, 28, 192) 0 ['block\_4\_expand\_BN[0][0]']

block\_4\_depthwise (DepthwiseCo (None, 28, 28, 192) 1728 ['block\_4\_expand\_relu[0][0]']

nv2D)

block\_4\_depthwise\_BN (BatchNor (None, 28, 28, 192) 768 ['block\_4\_depthwise[0][0]']

malization)

block\_4\_depthwise\_relu (ReLU) (None, 28, 28, 192) 0 ['block\_4\_depthwise\_BN[0][0]']

block\_4\_project (Conv2D) (None, 28, 28, 32) 6144 ['block\_4\_depthwise\_relu[0][0]']

block\_4\_project\_BN (BatchNorma (None, 28, 28, 32) 128 ['block\_4\_project[0][0]']

lization)

block\_4\_add (Add) (None, 28, 28, 32) 0 ['block\_3\_project\_BN[0][0]',

'block\_4\_project\_BN[0][0]']

block\_5\_expand (Conv2D) (None, 28, 28, 192) 6144 ['block\_4\_add[0][0]']

block\_5\_expand\_BN (BatchNormal (None, 28, 28, 192) 768 ['block\_5\_expand[0][0]']

ization)

block\_5\_expand\_relu (ReLU) (None, 28, 28, 192) 0 ['block\_5\_expand\_BN[0][0]']

block\_5\_depthwise (DepthwiseCo (None, 28, 28, 192) 1728 ['block\_5\_expand\_relu[0][0]']

nv2D)

block\_5\_depthwise\_BN (BatchNor (None, 28, 28, 192) 768 ['block\_5\_depthwise[0][0]']

malization)

block\_5\_depthwise\_relu (ReLU) (None, 28, 28, 192) 0 ['block\_5\_depthwise\_BN[0][0]']

block\_5\_project (Conv2D) (None, 28, 28, 32) 6144 ['block\_5\_depthwise\_relu[0][0]']

block\_5\_project\_BN (BatchNorma (None, 28, 28, 32) 128 ['block\_5\_project[0][0]']

lization)

block\_5\_add (Add) (None, 28, 28, 32) 0 ['block\_4\_add[0][0]',

'block\_5\_project\_BN[0][0]']

block\_6\_expand (Conv2D) (None, 28, 28, 192) 6144 ['block\_5\_add[0][0]']

block\_6\_expand\_BN (BatchNormal (None, 28, 28, 192) 768 ['block\_6\_expand[0][0]']

ization)

block\_6\_expand\_relu (ReLU) (None, 28, 28, 192) 0 ['block\_6\_expand\_BN[0][0]']

block\_6\_pad (ZeroPadding2D) (None, 29, 29, 192) 0 ['block\_6\_expand\_relu[0][0]']

block\_6\_depthwise (DepthwiseCo (None, 14, 14, 192) 1728 ['block\_6\_pad[0][0]']

nv2D)

block\_6\_depthwise\_BN (BatchNor (None, 14, 14, 192) 768 ['block\_6\_depthwise[0][0]']

malization)

block\_6\_depthwise\_relu (ReLU) (None, 14, 14, 192) 0 ['block\_6\_depthwise\_BN[0][0]']

block\_6\_project (Conv2D) (None, 14, 14, 64) 12288 ['block\_6\_depthwise\_relu[0][0]']

block\_6\_project\_BN (BatchNorma (None, 14, 14, 64) 256 ['block\_6\_project[0][0]']

lization)

block\_7\_expand (Conv2D) (None, 14, 14, 384) 24576 ['block\_6\_project\_BN[0][0]']

block\_7\_expand\_BN (BatchNormal (None, 14, 14, 384) 1536 ['block\_7\_expand[0][0]']

ization)

block\_7\_expand\_relu (ReLU) (None, 14, 14, 384) 0 ['block\_7\_expand\_BN[0][0]']

block\_7\_depthwise (DepthwiseCo (None, 14, 14, 384) 3456 ['block\_7\_expand\_relu[0][0]']

nv2D)

block\_7\_depthwise\_BN (BatchNor (None, 14, 14, 384) 1536 ['block\_7\_depthwise[0][0]']

malization)

block\_7\_depthwise\_relu (ReLU) (None, 14, 14, 384) 0 ['block\_7\_depthwise\_BN[0][0]']

block\_7\_project (Conv2D) (None, 14, 14, 64) 24576 ['block\_7\_depthwise\_relu[0][0]']

block\_7\_project\_BN (BatchNorma (None, 14, 14, 64) 256 ['block\_7\_project[0][0]']

lization)

block\_7\_add (Add) (None, 14, 14, 64) 0 ['block\_6\_project\_BN[0][0]',

'block\_7\_project\_BN[0][0]']

block\_8\_expand (Conv2D) (None, 14, 14, 384) 24576 ['block\_7\_add[0][0]']

block\_8\_expand\_BN (BatchNormal (None, 14, 14, 384) 1536 ['block\_8\_expand[0][0]']

ization)

block\_8\_expand\_relu (ReLU) (None, 14, 14, 384) 0 ['block\_8\_expand\_BN[0][0]']

block\_8\_depthwise (DepthwiseCo (None, 14, 14, 384) 3456 ['block\_8\_expand\_relu[0][0]']

nv2D)

block\_8\_depthwise\_BN (BatchNor (None, 14, 14, 384) 1536 ['block\_8\_depthwise[0][0]']

malization)

block\_8\_depthwise\_relu (ReLU) (None, 14, 14, 384) 0 ['block\_8\_depthwise\_BN[0][0]']

block\_8\_project (Conv2D) (None, 14, 14, 64) 24576 ['block\_8\_depthwise\_relu[0][0]']

block\_8\_project\_BN (BatchNorma (None, 14, 14, 64) 256 ['block\_8\_project[0][0]']

lization)

block\_8\_add (Add) (None, 14, 14, 64) 0 ['block\_7\_add[0][0]',

'block\_8\_project\_BN[0][0]']

block\_9\_expand (Conv2D) (None, 14, 14, 384) 24576 ['block\_8\_add[0][0]']

block\_9\_expand\_BN (BatchNormal (None, 14, 14, 384) 1536 ['block\_9\_expand[0][0]']

ization)

block\_9\_expand\_relu (ReLU) (None, 14, 14, 384) 0 ['block\_9\_expand\_BN[0][0]']

block\_9\_depthwise (DepthwiseCo (None, 14, 14, 384) 3456 ['block\_9\_expand\_relu[0][0]']

nv2D)

block\_9\_depthwise\_BN (BatchNor (None, 14, 14, 384) 1536 ['block\_9\_depthwise[0][0]']

malization)

block\_9\_depthwise\_relu (ReLU) (None, 14, 14, 384) 0 ['block\_9\_depthwise\_BN[0][0]']

block\_9\_project (Conv2D) (None, 14, 14, 64) 24576 ['block\_9\_depthwise\_relu[0][0]']

block\_9\_project\_BN (BatchNorma (None, 14, 14, 64) 256 ['block\_9\_project[0][0]']

lization)

block\_9\_add (Add) (None, 14, 14, 64) 0 ['block\_8\_add[0][0]',

'block\_9\_project\_BN[0][0]']

block\_10\_expand (Conv2D) (None, 14, 14, 384) 24576 ['block\_9\_add[0][0]']

block\_10\_expand\_BN (BatchNorma (None, 14, 14, 384) 1536 ['block\_10\_expand[0][0]']

lization)

block\_10\_expand\_relu (ReLU) (None, 14, 14, 384) 0 ['block\_10\_expand\_BN[0][0]']

block\_10\_depthwise (DepthwiseC (None, 14, 14, 384) 3456 ['block\_10\_expand\_relu[0][0]']

onv2D)

block\_10\_depthwise\_BN (BatchNo (None, 14, 14, 384) 1536 ['block\_10\_depthwise[0][0]']

rmalization)

block\_10\_depthwise\_relu (ReLU) (None, 14, 14, 384) 0 ['block\_10\_depthwise\_BN[0][0]']

block\_10\_project (Conv2D) (None, 14, 14, 96) 36864 ['block\_10\_depthwise\_relu[0][0]']

block\_10\_project\_BN (BatchNorm (None, 14, 14, 96) 384 ['block\_10\_project[0][0]']

alization)

block\_11\_expand (Conv2D) (None, 14, 14, 576) 55296 ['block\_10\_project\_BN[0][0]']

block\_11\_expand\_BN (BatchNorma (None, 14, 14, 576) 2304 ['block\_11\_expand[0][0]']

lization)

block\_11\_expand\_relu (ReLU) (None, 14, 14, 576) 0 ['block\_11\_expand\_BN[0][0]']

block\_11\_depthwise (DepthwiseC (None, 14, 14, 576) 5184 ['block\_11\_expand\_relu[0][0]']

onv2D)

block\_11\_depthwise\_BN (BatchNo (None, 14, 14, 576) 2304 ['block\_11\_depthwise[0][0]']

rmalization)

block\_11\_depthwise\_relu (ReLU) (None, 14, 14, 576) 0 ['block\_11\_depthwise\_BN[0][0]']

block\_11\_project (Conv2D) (None, 14, 14, 96) 55296 ['block\_11\_depthwise\_relu[0][0]']

block\_11\_project\_BN (BatchNorm (None, 14, 14, 96) 384 ['block\_11\_project[0][0]']

alization)

block\_11\_add (Add) (None, 14, 14, 96) 0 ['block\_10\_project\_BN[0][0]',

'block\_11\_project\_BN[0][0]']

block\_12\_expand (Conv2D) (None, 14, 14, 576) 55296 ['block\_11\_add[0][0]']

block\_12\_expand\_BN (BatchNorma (None, 14, 14, 576) 2304 ['block\_12\_expand[0][0]']

lization)

block\_12\_expand\_relu (ReLU) (None, 14, 14, 576) 0 ['block\_12\_expand\_BN[0][0]']

block\_12\_depthwise (DepthwiseC (None, 14, 14, 576) 5184 ['block\_12\_expand\_relu[0][0]']

onv2D)

block\_12\_depthwise\_BN (BatchNo (None, 14, 14, 576) 2304 ['block\_12\_depthwise[0][0]']

rmalization)

block\_12\_depthwise\_relu (ReLU) (None, 14, 14, 576) 0 ['block\_12\_depthwise\_BN[0][0]']

block\_12\_project (Conv2D) (None, 14, 14, 96) 55296 ['block\_12\_depthwise\_relu[0][0]']

block\_12\_project\_BN (BatchNorm (None, 14, 14, 96) 384 ['block\_12\_project[0][0]']

alization)

block\_12\_add (Add) (None, 14, 14, 96) 0 ['block\_11\_add[0][0]',

'block\_12\_project\_BN[0][0]']

block\_13\_expand (Conv2D) (None, 14, 14, 576) 55296 ['block\_12\_add[0][0]']

block\_13\_expand\_BN (BatchNorma (None, 14, 14, 576) 2304 ['block\_13\_expand[0][0]']

lization)

block\_13\_expand\_relu (ReLU) (None, 14, 14, 576) 0 ['block\_13\_expand\_BN[0][0]']

block\_13\_pad (ZeroPadding2D) (None, 15, 15, 576) 0 ['block\_13\_expand\_relu[0][0]']

block\_13\_depthwise (DepthwiseC (None, 7, 7, 576) 5184 ['block\_13\_pad[0][0]']

onv2D)

block\_13\_depthwise\_BN (BatchNo (None, 7, 7, 576) 2304 ['block\_13\_depthwise[0][0]']

rmalization)

block\_13\_depthwise\_relu (ReLU) (None, 7, 7, 576) 0 ['block\_13\_depthwise\_BN[0][0]']

block\_13\_project (Conv2D) (None, 7, 7, 160) 92160 ['block\_13\_depthwise\_relu[0][0]']

block\_13\_project\_BN (BatchNorm (None, 7, 7, 160) 640 ['block\_13\_project[0][0]']

alization)

block\_14\_expand (Conv2D) (None, 7, 7, 960) 153600 ['block\_13\_project\_BN[0][0]']

block\_14\_expand\_BN (BatchNorma (None, 7, 7, 960) 3840 ['block\_14\_expand[0][0]']

lization)

block\_14\_expand\_relu (ReLU) (None, 7, 7, 960) 0 ['block\_14\_expand\_BN[0][0]']

block\_14\_depthwise (DepthwiseC (None, 7, 7, 960) 8640 ['block\_14\_expand\_relu[0][0]']

onv2D)

block\_14\_depthwise\_BN (BatchNo (None, 7, 7, 960) 3840 ['block\_14\_depthwise[0][0]']

rmalization)

block\_14\_depthwise\_relu (ReLU) (None, 7, 7, 960) 0 ['block\_14\_depthwise\_BN[0][0]']

block\_14\_project (Conv2D) (None, 7, 7, 160) 153600 ['block\_14\_depthwise\_relu[0][0]']

block\_14\_project\_BN (BatchNorm (None, 7, 7, 160) 640 ['block\_14\_project[0][0]']

alization)

block\_14\_add (Add) (None, 7, 7, 160) 0 ['block\_13\_project\_BN[0][0]',

'block\_14\_project\_BN[0][0]']

block\_15\_expand (Conv2D) (None, 7, 7, 960) 153600 ['block\_14\_add[0][0]']

block\_15\_expand\_BN (BatchNorma (None, 7, 7, 960) 3840 ['block\_15\_expand[0][0]']

lization)

block\_15\_expand\_relu (ReLU) (None, 7, 7, 960) 0 ['block\_15\_expand\_BN[0][0]']

block\_15\_depthwise (DepthwiseC (None, 7, 7, 960) 8640 ['block\_15\_expand\_relu[0][0]']

onv2D)

block\_15\_depthwise\_BN (BatchNo (None, 7, 7, 960) 3840 ['block\_15\_depthwise[0][0]']

rmalization)

block\_15\_depthwise\_relu (ReLU) (None, 7, 7, 960) 0 ['block\_15\_depthwise\_BN[0][0]']

block\_15\_project (Conv2D) (None, 7, 7, 160) 153600 ['block\_15\_depthwise\_relu[0][0]']

block\_15\_project\_BN (BatchNorm (None, 7, 7, 160) 640 ['block\_15\_project[0][0]']

alization)

block\_15\_add (Add) (None, 7, 7, 160) 0 ['block\_14\_add[0][0]',

'block\_15\_project\_BN[0][0]']

block\_16\_expand (Conv2D) (None, 7, 7, 960) 153600 ['block\_15\_add[0][0]']

block\_16\_expand\_BN (BatchNorma (None, 7, 7, 960) 3840 ['block\_16\_expand[0][0]']

lization)

block\_16\_expand\_relu (ReLU) (None, 7, 7, 960) 0 ['block\_16\_expand\_BN[0][0]']

block\_16\_depthwise (DepthwiseC (None, 7, 7, 960) 8640 ['block\_16\_expand\_relu[0][0]']

onv2D)

block\_16\_depthwise\_BN (BatchNo (None, 7, 7, 960) 3840 ['block\_16\_depthwise[0][0]']

rmalization)

block\_16\_depthwise\_relu (ReLU) (None, 7, 7, 960) 0 ['block\_16\_depthwise\_BN[0][0]']

block\_16\_project (Conv2D) (None, 7, 7, 320) 307200 ['block\_16\_depthwise\_relu[0][0]']

block\_16\_project\_BN (BatchNorm (None, 7, 7, 320) 1280 ['block\_16\_project[0][0]']

alization)

Conv\_1 (Conv2D) (None, 7, 7, 1280) 409600 ['block\_16\_project\_BN[0][0]']

Conv\_1\_bn (BatchNormalization) (None, 7, 7, 1280) 5120 ['Conv\_1[0][0]']

out\_relu (ReLU) (None, 7, 7, 1280) 0 ['Conv\_1\_bn[0][0]']

average\_pooling2d (AveragePool (None, 1, 1, 1280) 0 ['out\_relu[0][0]']

ing2D)

flatten (Flatten) (None, 1280) 0 ['average\_pooling2d[0][0]']

dense (Dense) (None, 128) 163968 ['flatten[0][0]']

dropout (Dropout) (None, 128) 0 ['dense[0][0]']

dense\_1 (Dense) (None, 3) 387 ['dropout[0][0]']

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

Total params: 2,422,339

Trainable params: 164,355

Non-trainable params: 2,257,984

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[INFO] training head...

Epoch 1/75

43/43 [==============================] - ETA: 0s - loss: 0.9787 - accuracy: 0.80462022-05-24 07:59:34.718061: W tensorflow/core/framework/cpu\_allocator\_impl.cc:82] Allocation of 558157824 exceeds 10% of free system memory.

2022-05-24 07:59:36.206487: W

Input Layer