Model-1

```
Model: "model"

_____
 Layer (type)                Output Shape              Param #
=================================================================
 main_input_layer (InputLaye  [(None, 96, 96, 3)]      0
 r)

 separable_conv2d (Separable  (None, 96, 96, 256)      1051
 Conv2D)

 max_pooling2d (MaxPooling2D  (None, 48, 48, 256)      0
 )

 separable_conv2d_1 (Separab  (None, 48, 48, 256)      68096
 leConv2D)

 max_pooling2d_1 (MaxPooling  (None, 24, 24, 256)      0
 2D)

 flatten (Flatten)           (None, 147456)            0

 dense (Dense)               (None, 128)               18874496

 dense_1 (Dense)             (None, 400)               51600

=================================================================
Total params: 18,995,243
Trainable params: 18,995,243
Non-trainable params: 0
_____
```

```
main_input_layer | InputLayer
           │
           ▼
separable_conv2d | SeparableConv2D
           │
           ▼
max_pooling2d | MaxPooling2D
           │
           ▼
separable_conv2d_1 | SeparableConv2D
           │
           ▼
max_pooling2d_1 | MaxPooling2D
           │
           ▼
flatten | Flatten
           │
           ▼
dense | Dense
           │
           ▼
dense_1 | Dense
```
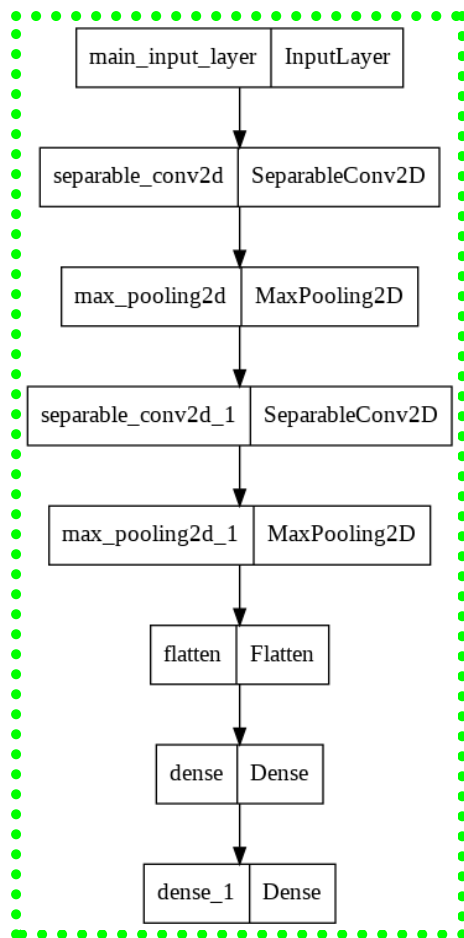
Model-2

Model: "model"

Layer (type)	Output Shape	Param #
main_input_layer (InputLayer)	[(None, 32, 32, 3)]	0
conv2d (Conv2D)	(None, 32, 32, 32)	896
conv2d_1 (Conv2D)	(None, 32, 32, 32)	9248
max_pooling2d (MaxPooling2D)	(None, 16, 16, 32)	0

```
conv2d_2 (Conv2D)              (None, 16, 16, 64)          18496

conv2d_3 (Conv2D)              (None, 16, 16, 64)          36928

global_max_pooling2d (Globa    (None, 64)                  0
lMaxPooling2D)

dense (Dense)                  (None, 128)                 8320

dense_1 (Dense)                (None, 400)                 51600

=================================================================
Total params: 125,488
Trainable params: 125,488
Non-trainable params: 0
_____
```
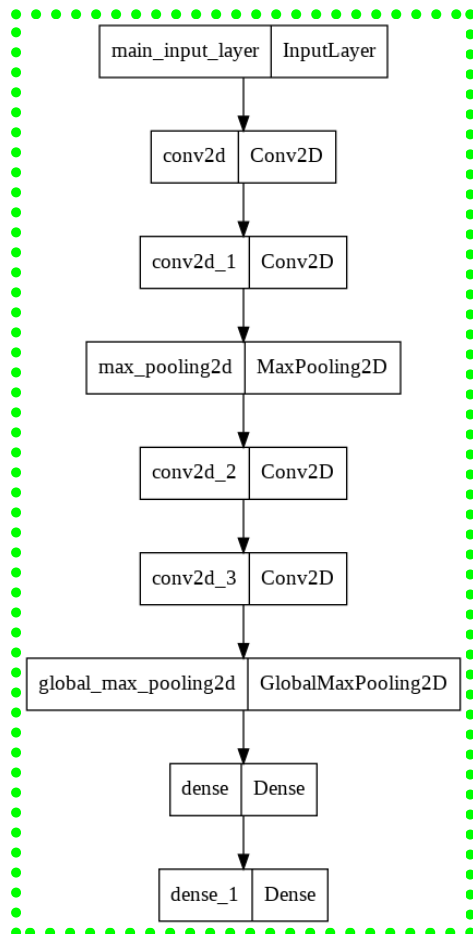
Model-3

Model: "model"

_____

Layer (type)	Output Shape	Param #
main_input_layer (InputLayer)	[(None, 128, 128, 3)]	0
conv2d (Conv2D)	(None, 128, 128, 64)	1792
conv2d_1 (Conv2D)	(None, 128, 128, 64)	36928
max_pooling2d (MaxPooling2D)	(None, 64, 64, 64)	0
dropout (Dropout)	(None, 64, 64, 64)	0
conv2d_2 (Conv2D)	(None, 64, 64, 64)	36928
conv2d_3 (Conv2D)	(None, 64, 64, 64)	36928
max_pooling2d_1 (MaxPooling2D)	(None, 32, 32, 64)	0
dropout_1 (Dropout)	(None, 32, 32, 64)	0
conv2d_4 (Conv2D)	(None, 32, 32, 64)	36928
conv2d_5 (Conv2D)	(None, 32, 32, 64)	36928
global_max_pooling2d (GlobalMaxPooling2D)	(None, 64)	0
dense (Dense)	(None, 64)	4160
dropout_2 (Dropout)	(None, 64)	0
dense_1 (Dense)	(None, 64)	4160
main_output_layer (Dense)	(None, 400)	26000

==
Total params: 220,752
Trainable params: 220,752
Non-trainable params: 0

_____

```
main_input_layer | InputLayer
        |
conv2d | Conv2D
        |
conv2d_1 | Conv2D
        |
max_pooling2d | MaxPooling2D
        |
dropout | Dropout
        |
conv2d_2 | Conv2D
        |
conv2d_3 | Conv2D
        |
max_pooling2d_1 | MaxPooling2D
        |
dropout_1 | Dropout
        |
conv2d_4 | Conv2D
        |
conv2d_5 | Conv2D
        |
global_max_pooling2d | GlobalMaxPooling2D
        |
dense | Dense
        |
dropout_2 | Dropout
        |
dense_1 | Dense
        |
main_output_layer | Dense
```
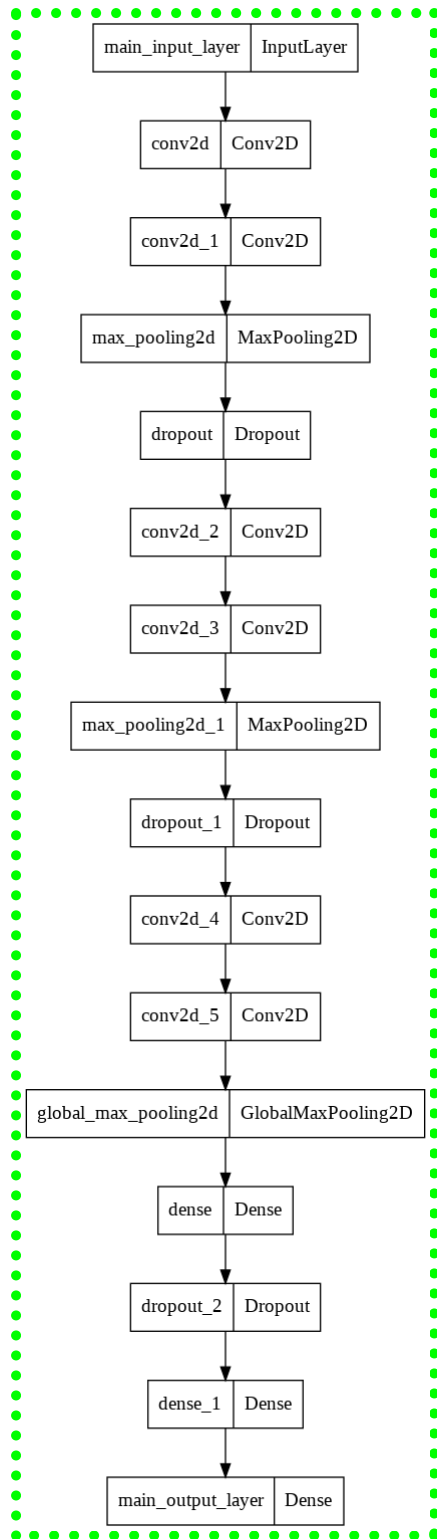
Model-4

Model: "model"

Layer (type)	Output Shape	Param #
input_1 (InputLayer)	[(None, 128, 128, 3)]	0
block1_conv1 (Conv2D)	(None, 128, 128, 64)	1792
block1_conv2 (Conv2D)	(None, 128, 128, 64)	36928
block1_pool (MaxPooling2D)	(None, 64, 64, 64)	0
block2_conv1 (Conv2D)	(None, 64, 64, 128)	73856
block2_conv2 (Conv2D)	(None, 64, 64, 128)	147584
block2_pool (MaxPooling2D)	(None, 32, 32, 128)	0
block3_conv1 (Conv2D)	(None, 32, 32, 256)	295168
block3_conv2 (Conv2D)	(None, 32, 32, 256)	590080
block3_conv3 (Conv2D)	(None, 32, 32, 256)	590080
block3_pool (MaxPooling2D)	(None, 16, 16, 256)	0
block4_conv1 (Conv2D)	(None, 16, 16, 512)	1180160
block4_conv2 (Conv2D)	(None, 16, 16, 512)	2359808
block4_conv3 (Conv2D)	(None, 16, 16, 512)	2359808
block4_pool (MaxPooling2D)	(None, 8, 8, 512)	0
block5_conv1 (Conv2D)	(None, 8, 8, 512)	2359808
block5_conv2 (Conv2D)	(None, 8, 8, 512)	2359808
block5_conv3 (Conv2D)	(None, 8, 8, 512)	2359808
block5_pool (MaxPooling2D)	(None, 4, 4, 512)	0
global_average_pooling2d (GlobalAveragePooling2D)	(None, 512)	0
dropout (Dropout)	(None, 512)	0

```
 dense (Dense)                  (None, 1024)               525312

 main_output_layer (Dense)    (None, 400)                 410000

=================================================================
Total params: 15,650,000
Trainable params: 935,312
Non-trainable params: 14,714,688
_____
```
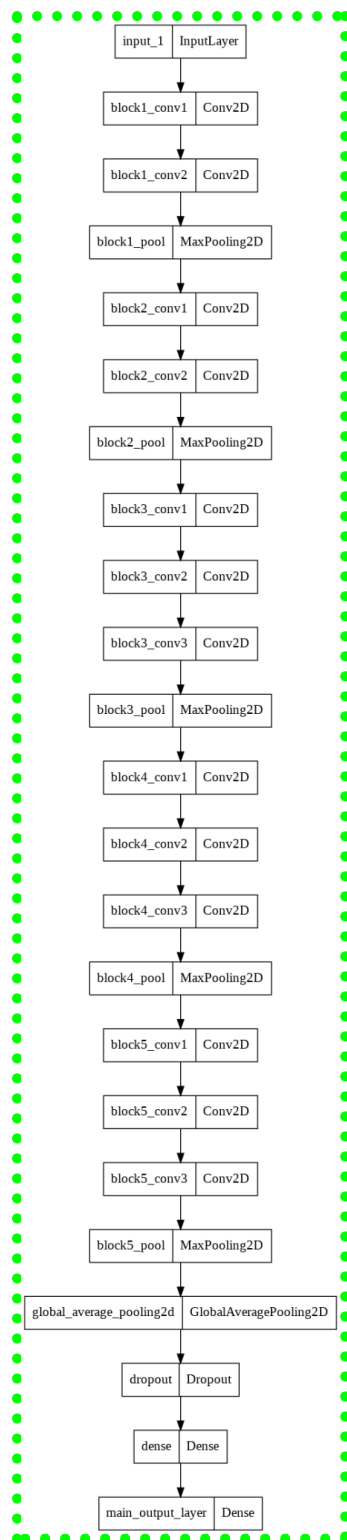
Model-5

Model: "model"

Layer (type)	Output Shape	Param #
===

```
 input_1 (InputLayer)          [(None, 224, 224, 3)]      0

 block1_conv1 (Conv2D)         (None, 224, 224, 64)       1792

 block1_conv2 (Conv2D)         (None, 224, 224, 64)       36928

 block1_pool (MaxPooling2D)    (None, 112, 112, 64)       0

 block2_conv1 (Conv2D)         (None, 112, 112, 128)      73856

 block2_conv2 (Conv2D)         (None, 112, 112, 128)      147584

 block2_pool (MaxPooling2D)    (None, 56, 56, 128)        0

 block3_conv1 (Conv2D)         (None, 56, 56, 256)        295168

 block3_conv2 (Conv2D)         (None, 56, 56, 256)        590080

 block3_conv3 (Conv2D)         (None, 56, 56, 256)        590080

 block3_pool (MaxPooling2D)    (None, 28, 28, 256)        0

 block4_conv1 (Conv2D)         (None, 28, 28, 512)        1180160

 block4_conv2 (Conv2D)         (None, 28, 28, 512)        2359808

 block4_conv3 (Conv2D)         (None, 28, 28, 512)        2359808

 block4_pool (MaxPooling2D)    (None, 14, 14, 512)        0

 block5_conv1 (Conv2D)         (None, 14, 14, 512)        2359808

 block5_conv2 (Conv2D)         (None, 14, 14, 512)        2359808

 block5_conv3 (Conv2D)         (None, 14, 14, 512)        2359808

 block5_pool (MaxPooling2D)    (None, 7, 7, 512)          0

 global_average_pooling2d (G   (None, 512)                0
 lobalAveragePooling2D)

 dense (Dense)                 (None, 1024)               525312

 main_output_layer (Dense)     (None, 400)                410000

=================================================================
Total params: 15,650,000
Trainable params: 935,312
Non-trainable params: 14,714,688
```

```
input_1          InputLayer

block1_conv1     Conv2D

block1_conv2     Conv2D

block1_pool      MaxPooling2D

block2_conv1     Conv2D

block2_conv2     Conv2D

block2_pool      MaxPooling2D

block3_conv1     Conv2D

block3_conv2     Conv2D

block3_conv3     Conv2D

block3_pool      MaxPooling2D

block4_conv1     Conv2D

block4_conv2     Conv2D

block4_conv3     Conv2D

block4_pool      MaxPooling2D

block5_conv1     Conv2D

block5_conv2     Conv2D

block5_conv3     Conv2D

block5_pool      MaxPooling2D

global_average_pooling2d    GlobalAveragePooling2D

dense    Dense

main_output_layer    Dense
```

Model-6

Model: "model"

_____

_____

| Layer (type) | Output Shape | Param # |
Connected to

==

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

| input_1 (InputLayer) | [(None, 224, 224, 3 | 0 | [] |
| |)] | | |

| conv1_pad (ZeroPadding2D) | (None, 230, 230, 3) | 0 |
['input_1[0][0]']

| conv1_conv (Conv2D) | (None, 112, 112, 64 | 9472 |
['conv1_pad[0][0]']
| |) | |

| conv1_bn (BatchNormalization) | (None, 112, 112, 64 | 256 |
['conv1_conv[0][0]']
| |) | |

| conv1_relu (Activation) | (None, 112, 112, 64 | 0 |
['conv1_bn[0][0]']
| |) | |

| pool1_pad (ZeroPadding2D) | (None, 114, 114, 64 | 0 |
['conv1_relu[0][0]']
| |) | |

| pool1_pool (MaxPooling2D) | (None, 56, 56, 64) | 0 |
['pool1_pad[0][0]']

| conv2_block1_1_conv (Conv2D) | (None, 56, 56, 64) | 4160 |
['pool1_pool[0][0]']

| conv2_block1_1_bn (BatchNormal | (None, 56, 56, 64) | 256 |
['conv2_block1_1_conv[0][0]']
 ization)

| conv2_block1_1_relu (Activatio | (None, 56, 56, 64) | 0 |
['conv2_block1_1_bn[0][0]']
 n)

| conv2_block1_2_conv (Conv2D) | (None, 56, 56, 64) | 36928 |
['conv2_block1_1_relu[0][0]']

```
 conv2_block1_2_bn (BatchNormal   (None, 56, 56, 64)    256
['conv2_block1_2_conv[0][0]']
 ization)

 conv2_block1_2_relu (Activatio   (None, 56, 56, 64)    0
['conv2_block1_2_bn[0][0]']
 n)

 conv2_block1_0_conv (Conv2D)     (None, 56, 56, 256)   16640
['pool1_pool[0][0]']

 conv2_block1_3_conv (Conv2D)     (None, 56, 56, 256)   16640
['conv2_block1_2_relu[0][0]']

 conv2_block1_0_bn (BatchNormal   (None, 56, 56, 256)   1024
['conv2_block1_0_conv[0][0]']
 ization)

 conv2_block1_3_bn (BatchNormal   (None, 56, 56, 256)   1024
['conv2_block1_3_conv[0][0]']
 ization)

 conv2_block1_add (Add)           (None, 56, 56, 256)   0
['conv2_block1_0_bn[0][0]',

'conv2_block1_3_bn[0][0]']

 conv2_block1_out (Activation)    (None, 56, 56, 256)   0
['conv2_block1_add[0][0]']

 conv2_block2_1_conv (Conv2D)     (None, 56, 56, 64)    16448
['conv2_block1_out[0][0]']

 conv2_block2_1_bn (BatchNormal   (None, 56, 56, 64)    256
['conv2_block2_1_conv[0][0]']
 ization)

 conv2_block2_1_relu (Activatio   (None, 56, 56, 64)    0
['conv2_block2_1_bn[0][0]']
 n)

 conv2_block2_2_conv (Conv2D)     (None, 56, 56, 64)    36928
['conv2_block2_1_relu[0][0]']

 conv2_block2_2_bn (BatchNormal   (None, 56, 56, 64)    256
['conv2_block2_2_conv[0][0]']
 ization)

 conv2_block2_2_relu (Activatio   (None, 56, 56, 64)    0
['conv2_block2_2_bn[0][0]']
 n)
```

```
conv2_block2_3_conv (Conv2D)     (None, 56, 56, 256)   16640
['conv2_block2_2_relu[0][0]']

conv2_block2_3_bn (BatchNormal   (None, 56, 56, 256)   1024
['conv2_block2_3_conv[0][0]']
 ization)

conv2_block2_add (Add)           (None, 56, 56, 256)   0
['conv2_block1_out[0][0]',

'conv2_block2_3_bn[0][0]']

conv2_block2_out (Activation)    (None, 56, 56, 256)   0
['conv2_block2_add[0][0]']

conv2_block3_1_conv (Conv2D)     (None, 56, 56, 64)    16448
['conv2_block2_out[0][0]']

conv2_block3_1_bn (BatchNormal   (None, 56, 56, 64)    256
['conv2_block3_1_conv[0][0]']
 ization)

conv2_block3_1_relu (Activatio   (None, 56, 56, 64)    0
['conv2_block3_1_bn[0][0]']
 n)

conv2_block3_2_conv (Conv2D)     (None, 56, 56, 64)    36928
['conv2_block3_1_relu[0][0]']

conv2_block3_2_bn (BatchNormal   (None, 56, 56, 64)    256
['conv2_block3_2_conv[0][0]']
 ization)

conv2_block3_2_relu (Activatio   (None, 56, 56, 64)    0
['conv2_block3_2_bn[0][0]']
 n)

conv2_block3_3_conv (Conv2D)     (None, 56, 56, 256)   16640
['conv2_block3_2_relu[0][0]']

conv2_block3_3_bn (BatchNormal   (None, 56, 56, 256)   1024
['conv2_block3_3_conv[0][0]']
 ization)

conv2_block3_add (Add)           (None, 56, 56, 256)   0
['conv2_block2_out[0][0]',

'conv2_block3_3_bn[0][0]']
```

```
 conv2_block3_out (Activation)   (None, 56, 56, 256)   0
['conv2_block3_add[0][0]']

 conv3_block1_1_conv (Conv2D)    (None, 28, 28, 128)   32896
['conv2_block3_out[0][0]']

 conv3_block1_1_bn (BatchNormal  (None, 28, 28, 128)   512
['conv3_block1_1_conv[0][0]']
 ization)

 conv3_block1_1_relu (Activatio  (None, 28, 28, 128)   0
['conv3_block1_1_bn[0][0]']
 n)

 conv3_block1_2_conv (Conv2D)    (None, 28, 28, 128)   147584
['conv3_block1_1_relu[0][0]']

 conv3_block1_2_bn (BatchNormal  (None, 28, 28, 128)   512
['conv3_block1_2_conv[0][0]']
 ization)

 conv3_block1_2_relu (Activatio  (None, 28, 28, 128)   0
['conv3_block1_2_bn[0][0]']
 n)

 conv3_block1_0_conv (Conv2D)    (None, 28, 28, 512)   131584
['conv2_block3_out[0][0]']

 conv3_block1_3_conv (Conv2D)    (None, 28, 28, 512)   66048
['conv3_block1_2_relu[0][0]']

 conv3_block1_0_bn (BatchNormal  (None, 28, 28, 512)   2048
['conv3_block1_0_conv[0][0]']
 ization)

 conv3_block1_3_bn (BatchNormal  (None, 28, 28, 512)   2048
['conv3_block1_3_conv[0][0]']
 ization)

 conv3_block1_add (Add)          (None, 28, 28, 512)   0
['conv3_block1_0_bn[0][0]',

'conv3_block1_3_bn[0][0]']

 conv3_block1_out (Activation)   (None, 28, 28, 512)   0
['conv3_block1_add[0][0]']

 conv3_block2_1_conv (Conv2D)    (None, 28, 28, 128)   65664
['conv3_block1_out[0][0]']
```

```
 conv3_block2_1_bn (BatchNormal   (None, 28, 28, 128)   512
['conv3_block2_1_conv[0][0]']
 ization)

 conv3_block2_1_relu (Activatio   (None, 28, 28, 128)   0
['conv3_block2_1_bn[0][0]']
 n)

 conv3_block2_2_conv (Conv2D)     (None, 28, 28, 128)   147584
['conv3_block2_1_relu[0][0]']

 conv3_block2_2_bn (BatchNormal   (None, 28, 28, 128)   512
['conv3_block2_2_conv[0][0]']
 ization)

 conv3_block2_2_relu (Activatio   (None, 28, 28, 128)   0
['conv3_block2_2_bn[0][0]']
 n)

 conv3_block2_3_conv (Conv2D)     (None, 28, 28, 512)   66048
['conv3_block2_2_relu[0][0]']

 conv3_block2_3_bn (BatchNormal   (None, 28, 28, 512)   2048
['conv3_block2_3_conv[0][0]']
 ization)

 conv3_block2_add (Add)           (None, 28, 28, 512)   0
['conv3_block1_out[0][0]',

'conv3_block2_3_bn[0][0]']

 conv3_block2_out (Activation)    (None, 28, 28, 512)   0
['conv3_block2_add[0][0]']

 conv3_block3_1_conv (Conv2D)     (None, 28, 28, 128)   65664
['conv3_block2_out[0][0]']

 conv3_block3_1_bn (BatchNormal   (None, 28, 28, 128)   512
['conv3_block3_1_conv[0][0]']
 ization)

 conv3_block3_1_relu (Activatio   (None, 28, 28, 128)   0
['conv3_block3_1_bn[0][0]']
 n)

 conv3_block3_2_conv (Conv2D)     (None, 28, 28, 128)   147584
['conv3_block3_1_relu[0][0]']

 conv3_block3_2_bn (BatchNormal   (None, 28, 28, 128)   512
['conv3_block3_2_conv[0][0]']
 ization)
```

```
 conv3_block3_2_relu (Activatio  (None, 28, 28, 128)  0
['conv3_block3_2_bn[0][0]']
 n)

 conv3_block3_3_conv (Conv2D)    (None, 28, 28, 512)  66048
['conv3_block3_2_relu[0][0]']

 conv3_block3_3_bn (BatchNormal  (None, 28, 28, 512)  2048
['conv3_block3_3_conv[0][0]']
 ization)

 conv3_block3_add (Add)          (None, 28, 28, 512)  0
['conv3_block2_out[0][0]',

'conv3_block3_3_bn[0][0]']

 conv3_block3_out (Activation)   (None, 28, 28, 512)  0
['conv3_block3_add[0][0]']

 conv3_block4_1_conv (Conv2D)    (None, 28, 28, 128)  65664
['conv3_block3_out[0][0]']

 conv3_block4_1_bn (BatchNormal  (None, 28, 28, 128)  512
['conv3_block4_1_conv[0][0]']
 ization)

 conv3_block4_1_relu (Activatio  (None, 28, 28, 128)  0
['conv3_block4_1_bn[0][0]']
 n)

 conv3_block4_2_conv (Conv2D)    (None, 28, 28, 128)  147584
['conv3_block4_1_relu[0][0]']

 conv3_block4_2_bn (BatchNormal  (None, 28, 28, 128)  512
['conv3_block4_2_conv[0][0]']
 ization)

 conv3_block4_2_relu (Activatio  (None, 28, 28, 128)  0
['conv3_block4_2_bn[0][0]']
 n)

 conv3_block4_3_conv (Conv2D)    (None, 28, 28, 512)  66048
['conv3_block4_2_relu[0][0]']

 conv3_block4_3_bn (BatchNormal  (None, 28, 28, 512)  2048
['conv3_block4_3_conv[0][0]']
 ization)

 conv3_block4_add (Add)          (None, 28, 28, 512)  0
['conv3_block3_out[0][0]',
```

```
                                  'conv3_block4_3_bn[0][0]']

 conv3_block4_out (Activation)   (None, 28, 28, 512)   0
['conv3_block4_add[0][0]']

 conv4_block1_1_conv (Conv2D)    (None, 14, 14, 256)   131328
['conv3_block4_out[0][0]']

 conv4_block1_1_bn (BatchNormal  (None, 14, 14, 256)   1024
['conv4_block1_1_conv[0][0]']
 ization)

 conv4_block1_1_relu (Activatio  (None, 14, 14, 256)   0
['conv4_block1_1_bn[0][0]']
 n)

 conv4_block1_2_conv (Conv2D)    (None, 14, 14, 256)   590080
['conv4_block1_1_relu[0][0]']

 conv4_block1_2_bn (BatchNormal  (None, 14, 14, 256)   1024
['conv4_block1_2_conv[0][0]']
 ization)

 conv4_block1_2_relu (Activatio  (None, 14, 14, 256)   0
['conv4_block1_2_bn[0][0]']
 n)

 conv4_block1_0_conv (Conv2D)    (None, 14, 14, 1024   525312
['conv3_block4_out[0][0]']
                                 )

 conv4_block1_3_conv (Conv2D)    (None, 14, 14, 1024   263168
['conv4_block1_2_relu[0][0]']
                                 )

 conv4_block1_0_bn (BatchNormal  (None, 14, 14, 1024   4096
['conv4_block1_0_conv[0][0]']
 ization)                        )

 conv4_block1_3_bn (BatchNormal  (None, 14, 14, 1024   4096
['conv4_block1_3_conv[0][0]']
 ization)                        )

 conv4_block1_add (Add)          (None, 14, 14, 1024   0
['conv4_block1_0_bn[0][0]',
                                 )
'conv4_block1_3_bn[0][0]']

 conv4_block1_out (Activation)   (None, 14, 14, 1024   0
['conv4_block1_add[0][0]']
```

```
                                    )

 conv4_block2_1_conv (Conv2D)    (None, 14, 14, 256)   262400
['conv4_block1_out[0][0]']

 conv4_block2_1_bn (BatchNormal  (None, 14, 14, 256)   1024
['conv4_block2_1_conv[0][0]']
 ization)

 conv4_block2_1_relu (Activatio  (None, 14, 14, 256)   0
['conv4_block2_1_bn[0][0]']
 n)

 conv4_block2_2_conv (Conv2D)    (None, 14, 14, 256)   590080
['conv4_block2_1_relu[0][0]']

 conv4_block2_2_bn (BatchNormal  (None, 14, 14, 256)   1024
['conv4_block2_2_conv[0][0]']
 ization)

 conv4_block2_2_relu (Activatio  (None, 14, 14, 256)   0
['conv4_block2_2_bn[0][0]']
 n)

 conv4_block2_3_conv (Conv2D)    (None, 14, 14, 1024   263168
['conv4_block2_2_relu[0][0]']
                                 )

 conv4_block2_3_bn (BatchNormal  (None, 14, 14, 1024   4096
['conv4_block2_3_conv[0][0]']
 ization)                        )

 conv4_block2_add (Add)          (None, 14, 14, 1024   0
['conv4_block1_out[0][0]',
                                 )
'conv4_block2_3_bn[0][0]']

 conv4_block2_out (Activation)   (None, 14, 14, 1024   0
['conv4_block2_add[0][0]']
                                 )

 conv4_block3_1_conv (Conv2D)    (None, 14, 14, 256)   262400
['conv4_block2_out[0][0]']

 conv4_block3_1_bn (BatchNormal  (None, 14, 14, 256)   1024
['conv4_block3_1_conv[0][0]']
 ization)

 conv4_block3_1_relu (Activatio  (None, 14, 14, 256)   0
['conv4_block3_1_bn[0][0]']
 n)
```

```
 conv4_block3_2_conv (Conv2D)    (None, 14, 14, 256)   590080
['conv4_block3_1_relu[0][0]']

 conv4_block3_2_bn (BatchNormal   (None, 14, 14, 256)   1024
['conv4_block3_2_conv[0][0]']
 ization)

 conv4_block3_2_relu (Activatio   (None, 14, 14, 256)   0
['conv4_block3_2_bn[0][0]']
 n)

 conv4_block3_3_conv (Conv2D)    (None, 14, 14, 1024   263168
['conv4_block3_2_relu[0][0]']
                                 )

 conv4_block3_3_bn (BatchNormal   (None, 14, 14, 1024   4096
['conv4_block3_3_conv[0][0]']
 ization)                        )

 conv4_block3_add (Add)          (None, 14, 14, 1024   0
['conv4_block2_out[0][0]',
                                 )
'conv4_block3_3_bn[0][0]']

 conv4_block3_out (Activation)   (None, 14, 14, 1024   0
['conv4_block3_add[0][0]']
                                 )

 conv4_block4_1_conv (Conv2D)    (None, 14, 14, 256)   262400
['conv4_block3_out[0][0]']

 conv4_block4_1_bn (BatchNormal   (None, 14, 14, 256)   1024
['conv4_block4_1_conv[0][0]']
 ization)

 conv4_block4_1_relu (Activatio   (None, 14, 14, 256)   0
['conv4_block4_1_bn[0][0]']
 n)

 conv4_block4_2_conv (Conv2D)    (None, 14, 14, 256)   590080
['conv4_block4_1_relu[0][0]']

 conv4_block4_2_bn (BatchNormal   (None, 14, 14, 256)   1024
['conv4_block4_2_conv[0][0]']
 ization)

 conv4_block4_2_relu (Activatio   (None, 14, 14, 256)   0
['conv4_block4_2_bn[0][0]']
 n)
```

```
 conv4_block4_3_conv (Conv2D)     (None, 14, 14, 1024   263168
['conv4_block4_2_relu[0][0]']
                                  )

 conv4_block4_3_bn (BatchNormal   (None, 14, 14, 1024   4096
['conv4_block4_3_conv[0][0]']
 ization)                         )

 conv4_block4_add (Add)           (None, 14, 14, 1024   0
['conv4_block3_out[0][0]',
                                  )

'conv4_block4_3_bn[0][0]']

 conv4_block4_out (Activation)    (None, 14, 14, 1024   0
['conv4_block4_add[0][0]']
                                  )

 conv4_block5_1_conv (Conv2D)     (None, 14, 14, 256)   262400
['conv4_block4_out[0][0]']

 conv4_block5_1_bn (BatchNormal   (None, 14, 14, 256)   1024
['conv4_block5_1_conv[0][0]']
 ization)

 conv4_block5_1_relu (Activatio   (None, 14, 14, 256)   0
['conv4_block5_1_bn[0][0]']
 n)

 conv4_block5_2_conv (Conv2D)     (None, 14, 14, 256)   590080
['conv4_block5_1_relu[0][0]']

 conv4_block5_2_bn (BatchNormal   (None, 14, 14, 256)   1024
['conv4_block5_2_conv[0][0]']
 ization)

 conv4_block5_2_relu (Activatio   (None, 14, 14, 256)   0
['conv4_block5_2_bn[0][0]']
 n)

 conv4_block5_3_conv (Conv2D)     (None, 14, 14, 1024   263168
['conv4_block5_2_relu[0][0]']
                                  )

 conv4_block5_3_bn (BatchNormal   (None, 14, 14, 1024   4096
['conv4_block5_3_conv[0][0]']
 ization)                         )

 conv4_block5_add (Add)           (None, 14, 14, 1024   0
['conv4_block4_out[0][0]',
                                  )

'conv4_block5_3_bn[0][0]']
```

```
 conv4_block5_out (Activation)   (None, 14, 14, 1024   0
['conv4_block5_add[0][0]']
                                  )

 conv4_block6_1_conv (Conv2D)    (None, 14, 14, 256)   262400
['conv4_block5_out[0][0]']

 conv4_block6_1_bn (BatchNormal  (None, 14, 14, 256)   1024
['conv4_block6_1_conv[0][0]']
 ization)

 conv4_block6_1_relu (Activatio  (None, 14, 14, 256)   0
['conv4_block6_1_bn[0][0]']
 n)

 conv4_block6_2_conv (Conv2D)    (None, 14, 14, 256)   590080
['conv4_block6_1_relu[0][0]']

 conv4_block6_2_bn (BatchNormal  (None, 14, 14, 256)   1024
['conv4_block6_2_conv[0][0]']
 ization)

 conv4_block6_2_relu (Activatio  (None, 14, 14, 256)   0
['conv4_block6_2_bn[0][0]']
 n)

 conv4_block6_3_conv (Conv2D)    (None, 14, 14, 1024   263168
['conv4_block6_2_relu[0][0]']
                                  )

 conv4_block6_3_bn (BatchNormal  (None, 14, 14, 1024   4096
['conv4_block6_3_conv[0][0]']
 ization)                         )

 conv4_block6_add (Add)          (None, 14, 14, 1024   0
['conv4_block5_out[0][0]',
                                  )
'conv4_block6_3_bn[0][0]']

 conv4_block6_out (Activation)   (None, 14, 14, 1024   0
['conv4_block6_add[0][0]']
                                  )

 conv5_block1_1_conv (Conv2D)    (None, 7, 7, 512)     524800
['conv4_block6_out[0][0]']

 conv5_block1_1_bn (BatchNormal  (None, 7, 7, 512)     2048
['conv5_block1_1_conv[0][0]']
 ization)
```

```
 conv5_block1_1_relu (Activatio   (None, 7, 7, 512)    0
['conv5_block1_1_bn[0][0]']
 n)

 conv5_block1_2_conv (Conv2D)     (None, 7, 7, 512)    2359808
['conv5_block1_1_relu[0][0]']

 conv5_block1_2_bn (BatchNormal   (None, 7, 7, 512)    2048
['conv5_block1_2_conv[0][0]']
 ization)

 conv5_block1_2_relu (Activatio   (None, 7, 7, 512)    0
['conv5_block1_2_bn[0][0]']
 n)

 conv5_block1_0_conv (Conv2D)     (None, 7, 7, 2048)   2099200
['conv4_block6_out[0][0]']

 conv5_block1_3_conv (Conv2D)     (None, 7, 7, 2048)   1050624
['conv5_block1_2_relu[0][0]']

 conv5_block1_0_bn (BatchNormal   (None, 7, 7, 2048)   8192
['conv5_block1_0_conv[0][0]']
 ization)

 conv5_block1_3_bn (BatchNormal   (None, 7, 7, 2048)   8192
['conv5_block1_3_conv[0][0]']
 ization)

 conv5_block1_add (Add)           (None, 7, 7, 2048)   0
['conv5_block1_0_bn[0][0]',

'conv5_block1_3_bn[0][0]']

 conv5_block1_out (Activation)    (None, 7, 7, 2048)   0
['conv5_block1_add[0][0]']

 conv5_block2_1_conv (Conv2D)     (None, 7, 7, 512)    1049088
['conv5_block1_out[0][0]']

 conv5_block2_1_bn (BatchNormal   (None, 7, 7, 512)    2048
['conv5_block2_1_conv[0][0]']
 ization)

 conv5_block2_1_relu (Activatio   (None, 7, 7, 512)    0
['conv5_block2_1_bn[0][0]']
 n)

 conv5_block2_2_conv (Conv2D)     (None, 7, 7, 512)    2359808
['conv5_block2_1_relu[0][0]']
```

```
 conv5_block2_2_bn (BatchNormal    (None, 7, 7, 512)    2048    ['conv5_block2_2_conv[0][0]']
 ization)

 conv5_block2_2_relu (Activatio    (None, 7, 7, 512)    0       ['conv5_block2_2_bn[0][0]']
 n)

 conv5_block2_3_conv (Conv2D)      (None, 7, 7, 2048)   1050624 ['conv5_block2_2_relu[0][0]']

 conv5_block2_3_bn (BatchNormal    (None, 7, 7, 2048)   8192    ['conv5_block2_3_conv[0][0]']
 ization)

 conv5_block2_add (Add)            (None, 7, 7, 2048)   0       ['conv5_block1_out[0][0]',

                                                                'conv5_block2_3_bn[0][0]']

 conv5_block2_out (Activation)     (None, 7, 7, 2048)   0       ['conv5_block2_add[0][0]']

 conv5_block3_1_conv (Conv2D)      (None, 7, 7, 512)    1049088 ['conv5_block2_out[0][0]']

 conv5_block3_1_bn (BatchNormal    (None, 7, 7, 512)    2048    ['conv5_block3_1_conv[0][0]']
 ization)

 conv5_block3_1_relu (Activatio    (None, 7, 7, 512)    0       ['conv5_block3_1_bn[0][0]']
 n)

 conv5_block3_2_conv (Conv2D)      (None, 7, 7, 512)    2359808 ['conv5_block3_1_relu[0][0]']

 conv5_block3_2_bn (BatchNormal    (None, 7, 7, 512)    2048    ['conv5_block3_2_conv[0][0]']
 ization)

 conv5_block3_2_relu (Activatio    (None, 7, 7, 512)    0       ['conv5_block3_2_bn[0][0]']
 n)

 conv5_block3_3_conv (Conv2D)      (None, 7, 7, 2048)   1050624 ['conv5_block3_2_relu[0][0]']

 conv5_block3_3_bn (BatchNormal    (None, 7, 7, 2048)   8192    ['conv5_block3_3_conv[0][0]']
 ization)
```

```
 conv5_block3_add (Add)          (None, 7, 7, 2048)   0
['conv5_block2_out[0][0]',

 'conv5_block3_3_bn[0][0]']


 conv5_block3_out (Activation)   (None, 7, 7, 2048)   0
['conv5_block3_add[0][0]']


 avg_pool (GlobalAveragePooling  (None, 2048)         0
['conv5_block3_out[0][0]']
 2D)


 dense (Dense)                   (None, 128)          262272
['avg_pool[0][0]']


 main_output_layer (Dense)       (None, 400)          51600
['dense[0][0]']


==================================================================
=========================
Total params: 23,901,584
Trainable params: 23,848,464
Non-trainable params: 53,120
_____
_____
```

Model-7

```
Model: "model"
_____
_____
 Layer (type)                    Output Shape         Param #
Connected to
==================================================================
=========================
 input_1 (InputLayer)            [(None, 224, 224, 3  0               []
                                 )]


 rescaling (Rescaling)           (None, 224, 224, 3)  0
['input_1[0][0]']


 normalization (Normalization)   (None, 224, 224, 3)  7
['rescaling[0][0]']


 stem_conv_pad (ZeroPadding2D)   (None, 225, 225, 3)  0
['normalization[0][0]']
```

```
 stem_conv (Conv2D)              (None, 112, 112, 32   864
['stem_conv_pad[0][0]']
                                 )

 stem_bn (BatchNormalization)    (None, 112, 112, 32   128
['stem_conv[0][0]']
                                 )

 stem_activation (Activation)    (None, 112, 112, 32   0
['stem_bn[0][0]']
                                 )

 block1a_dwconv (DepthwiseConv2  (None, 112, 112, 32   288
['stem_activation[0][0]']
 D)                              )

 block1a_bn (BatchNormalization  (None, 112, 112, 32   128
['block1a_dwconv[0][0]']
 )                               )

 block1a_activation (Activation  (None, 112, 112, 32   0
['block1a_bn[0][0]']
 )                               )

 block1a_se_squeeze (GlobalAver  (None, 32)            0
['block1a_activation[0][0]']
 agePooling2D)

 block1a_se_reshape (Reshape)    (None, 1, 1, 32)      0
['block1a_se_squeeze[0][0]']

 block1a_se_reduce (Conv2D)      (None, 1, 1, 8)       264
['block1a_se_reshape[0][0]']

 block1a_se_expand (Conv2D)      (None, 1, 1, 32)      288
['block1a_se_reduce[0][0]']

 block1a_se_excite (Multiply)    (None, 112, 112, 32   0
['block1a_activation[0][0]',
                                 )

'block1a_se_expand[0][0]']

 block1a_project_conv (Conv2D)   (None, 112, 112, 16   512
['block1a_se_excite[0][0]']
                                 )

 block1a_project_bn (BatchNorma  (None, 112, 112, 16   64
['block1a_project_conv[0][0]']
 lization)                       )
```

```
 block2a_expand_conv (Conv2D)    (None, 112, 112, 96   1536
['block1a_project_bn[0][0]']
                                 )

 block2a_expand_bn (BatchNormal   (None, 112, 112, 96   384
['block2a_expand_conv[0][0]']
 ization)                         )

 block2a_expand_activation (Act   (None, 112, 112, 96   0
['block2a_expand_bn[0][0]']
 ivation)                         )

 block2a_dwconv_pad (ZeroPaddin   (None, 113, 113, 96   0
['block2a_expand_activation[0][0]
 g2D)                             )                                       ']

 block2a_dwconv (DepthwiseConv2   (None, 56, 56, 96)    864
['block2a_dwconv_pad[0][0]']
 D)

 block2a_bn (BatchNormalization   (None, 56, 56, 96)    384
['block2a_dwconv[0][0]']
 )

 block2a_activation (Activation   (None, 56, 56, 96)    0
['block2a_bn[0][0]']
 )

 block2a_se_squeeze (GlobalAver   (None, 96)            0
['block2a_activation[0][0]']
 agePooling2D)

 block2a_se_reshape (Reshape)    (None, 1, 1, 96)      0
['block2a_se_squeeze[0][0]']

 block2a_se_reduce (Conv2D)      (None, 1, 1, 4)       388
['block2a_se_reshape[0][0]']

 block2a_se_expand (Conv2D)      (None, 1, 1, 96)      480
['block2a_se_reduce[0][0]']

 block2a_se_excite (Multiply)    (None, 56, 56, 96)    0
['block2a_activation[0][0]',

 'block2a_se_expand[0][0]']

 block2a_project_conv (Conv2D)   (None, 56, 56, 24)    2304
['block2a_se_excite[0][0]']

 block2a_project_bn (BatchNorma   (None, 56, 56, 24)    96
['block2a_project_conv[0][0]']
```

```
 lization)

 block2b_expand_conv (Conv2D)    (None, 56, 56, 144)   3456
['block2a_project_bn[0][0]']

 block2b_expand_bn (BatchNormal   (None, 56, 56, 144)   576
['block2b_expand_conv[0][0]']
 ization)

 block2b_expand_activation (Act   (None, 56, 56, 144)   0
['block2b_expand_bn[0][0]']
 ivation)

 block2b_dwconv (DepthwiseConv2   (None, 56, 56, 144)   1296
['block2b_expand_activation[0][0]
 D)                                                                    ']

 block2b_bn (BatchNormalization   (None, 56, 56, 144)   576
['block2b_dwconv[0][0]']
 )

 block2b_activation (Activation   (None, 56, 56, 144)   0
['block2b_bn[0][0]']
 )

 block2b_se_squeeze (GlobalAver   (None, 144)           0
['block2b_activation[0][0]']
 agePooling2D)

 block2b_se_reshape (Reshape)    (None, 1, 1, 144)      0
['block2b_se_squeeze[0][0]']

 block2b_se_reduce (Conv2D)      (None, 1, 1, 6)        870
['block2b_se_reshape[0][0]']

 block2b_se_expand (Conv2D)      (None, 1, 1, 144)      1008
['block2b_se_reduce[0][0]']

 block2b_se_excite (Multiply)    (None, 56, 56, 144)    0
['block2b_activation[0][0]',

'block2b_se_expand[0][0]']

 block2b_project_conv (Conv2D)   (None, 56, 56, 24)     3456
['block2b_se_excite[0][0]']

 block2b_project_bn (BatchNorma   (None, 56, 56, 24)     96
['block2b_project_conv[0][0]']
 lization)
```

```
 block2b_drop (Dropout)          (None, 56, 56, 24)   0
['block2b_project_bn[0][0]']

 block2b_add (Add)               (None, 56, 56, 24)   0
['block2b_drop[0][0]',

'block2a_project_bn[0][0]']

 block3a_expand_conv (Conv2D)    (None, 56, 56, 144)  3456
['block2b_add[0][0]']

 block3a_expand_bn (BatchNormal  (None, 56, 56, 144)  576
['block3a_expand_conv[0][0]']
 ization)

 block3a_expand_activation (Act  (None, 56, 56, 144)  0
['block3a_expand_bn[0][0]']
 ivation)

 block3a_dwconv_pad (ZeroPaddin  (None, 59, 59, 144)  0
['block3a_expand_activation[0][0]
 g2D)                                                                          ']

 block3a_dwconv (DepthwiseConv2  (None, 28, 28, 144)  3600
['block3a_dwconv_pad[0][0]']
 D)

 block3a_bn (BatchNormalization  (None, 28, 28, 144)  576
['block3a_dwconv[0][0]']
 )

 block3a_activation (Activation  (None, 28, 28, 144)  0
['block3a_bn[0][0]']
 )

 block3a_se_squeeze (GlobalAver  (None, 144)          0
['block3a_activation[0][0]']
 agePooling2D)

 block3a_se_reshape (Reshape)    (None, 1, 1, 144)    0
['block3a_se_squeeze[0][0]']

 block3a_se_reduce (Conv2D)      (None, 1, 1, 6)      870
['block3a_se_reshape[0][0]']

 block3a_se_expand (Conv2D)      (None, 1, 1, 144)    1008
['block3a_se_reduce[0][0]']

 block3a_se_excite (Multiply)    (None, 28, 28, 144)  0
['block3a_activation[0][0]',
```

'block3a_se_expand[0][0]']

 block3a_project_conv (Conv2D)   (None, 28, 28, 40)   5760
['block3a_se_excite[0][0]']

 block3a_project_bn (BatchNorma   (None, 28, 28, 40)   160
['block3a_project_conv[0][0]']
 lization)

 block3b_expand_conv (Conv2D)   (None, 28, 28, 240)   9600
['block3a_project_bn[0][0]']

 block3b_expand_bn (BatchNormal   (None, 28, 28, 240)   960
['block3b_expand_conv[0][0]']
 ization)

 block3b_expand_activation (Act   (None, 28, 28, 240)   0
['block3b_expand_bn[0][0]']
 ivation)

 block3b_dwconv (DepthwiseConv2   (None, 28, 28, 240)   6000
['block3b_expand_activation[0][0]
 D)   ']

 block3b_bn (BatchNormalization   (None, 28, 28, 240)   960
['block3b_dwconv[0][0]']
)

 block3b_activation (Activation   (None, 28, 28, 240)   0
['block3b_bn[0][0]']
)

 block3b_se_squeeze (GlobalAver   (None, 240)   0
['block3b_activation[0][0]']
 agePooling2D)

 block3b_se_reshape (Reshape)   (None, 1, 1, 240)   0
['block3b_se_squeeze[0][0]']

 block3b_se_reduce (Conv2D)   (None, 1, 1, 10)   2410
['block3b_se_reshape[0][0]']

 block3b_se_expand (Conv2D)   (None, 1, 1, 240)   2640
['block3b_se_reduce[0][0]']

 block3b_se_excite (Multiply)   (None, 28, 28, 240)   0
['block3b_activation[0][0]',

 'block3b_se_expand[0][0]']

```
block3b_project_conv (Conv2D)   (None, 28, 28, 40)    9600
['block3b_se_excite[0][0]']

block3b_project_bn (BatchNorma   (None, 28, 28, 40)    160
['block3b_project_conv[0][0]']
lization)

block3b_drop (Dropout)          (None, 28, 28, 40)    0
['block3b_project_bn[0][0]']

block3b_add (Add)               (None, 28, 28, 40)    0
['block3b_drop[0][0]',

'block3a_project_bn[0][0]']

block4a_expand_conv (Conv2D)    (None, 28, 28, 240)   9600
['block3b_add[0][0]']

block4a_expand_bn (BatchNormal   (None, 28, 28, 240)   960
['block4a_expand_conv[0][0]']
ization)

block4a_expand_activation (Act   (None, 28, 28, 240)   0
['block4a_expand_bn[0][0]']
ivation)

block4a_dwconv_pad (ZeroPaddin   (None, 29, 29, 240)   0
['block4a_expand_activation[0][0]
g2D)                                                                              ']

block4a_dwconv (DepthwiseConv2   (None, 14, 14, 240)   2160
['block4a_dwconv_pad[0][0]']
D)

block4a_bn (BatchNormalization   (None, 14, 14, 240)   960
['block4a_dwconv[0][0]']
)

block4a_activation (Activation   (None, 14, 14, 240)   0
['block4a_bn[0][0]']
)

block4a_se_squeeze (GlobalAver   (None, 240)           0
['block4a_activation[0][0]']
agePooling2D)

block4a_se_reshape (Reshape)    (None, 1, 1, 240)     0
['block4a_se_squeeze[0][0]']

block4a_se_reduce (Conv2D)      (None, 1, 1, 10)      2410
['block4a_se_reshape[0][0]']
```

```
 block4a_se_expand (Conv2D)      (None, 1, 1, 240)    2640
['block4a_se_reduce[0][0]']

 block4a_se_excite (Multiply)    (None, 14, 14, 240)  0
['block4a_activation[0][0]',

'block4a_se_expand[0][0]']

 block4a_project_conv (Conv2D)   (None, 14, 14, 80)   19200
['block4a_se_excite[0][0]']

 block4a_project_bn (BatchNorma  (None, 14, 14, 80)   320
['block4a_project_conv[0][0]']
 lization)

 block4b_expand_conv (Conv2D)    (None, 14, 14, 480)  38400
['block4a_project_bn[0][0]']

 block4b_expand_bn (BatchNormal  (None, 14, 14, 480)  1920
['block4b_expand_conv[0][0]']
 ization)

 block4b_expand_activation (Act  (None, 14, 14, 480)  0
['block4b_expand_bn[0][0]']
 ivation)

 block4b_dwconv (DepthwiseConv2  (None, 14, 14, 480)  4320
['block4b_expand_activation[0][0]
 D)                                                                                   ']

 block4b_bn (BatchNormalization  (None, 14, 14, 480)  1920
['block4b_dwconv[0][0]']
 )

 block4b_activation (Activation  (None, 14, 14, 480)  0
['block4b_bn[0][0]']
 )

 block4b_se_squeeze (GlobalAver  (None, 480)          0
['block4b_activation[0][0]']
 agePooling2D)

 block4b_se_reshape (Reshape)    (None, 1, 1, 480)    0
['block4b_se_squeeze[0][0]']

 block4b_se_reduce (Conv2D)      (None, 1, 1, 20)     9620
['block4b_se_reshape[0][0]']

 block4b_se_expand (Conv2D)      (None, 1, 1, 480)    10080
['block4b_se_reduce[0][0]']
```

```
 block4b_se_excite (Multiply)     (None, 14, 14, 480)   0
['block4b_activation[0][0]',

'block4b_se_expand[0][0]']

 block4b_project_conv (Conv2D)   (None, 14, 14, 80)    38400
['block4b_se_excite[0][0]']

 block4b_project_bn (BatchNorma   (None, 14, 14, 80)    320
['block4b_project_conv[0][0]']
 lization)

 block4b_drop (Dropout)          (None, 14, 14, 80)    0
['block4b_project_bn[0][0]']

 block4b_add (Add)               (None, 14, 14, 80)    0
['block4b_drop[0][0]',

'block4a_project_bn[0][0]']

 block4c_expand_conv (Conv2D)    (None, 14, 14, 480)   38400
['block4b_add[0][0]']

 block4c_expand_bn (BatchNormal   (None, 14, 14, 480)   1920
['block4c_expand_conv[0][0]']
 ization)

 block4c_expand_activation (Act   (None, 14, 14, 480)   0
['block4c_expand_bn[0][0]']
 ivation)

 block4c_dwconv (DepthwiseConv2   (None, 14, 14, 480)   4320
['block4c_expand_activation[0][0]
 D)                                                                               ']

 block4c_bn (BatchNormalization   (None, 14, 14, 480)   1920
['block4c_dwconv[0][0]']
 )

 block4c_activation (Activation   (None, 14, 14, 480)   0
['block4c_bn[0][0]']
 )

 block4c_se_squeeze (GlobalAver   (None, 480)           0
['block4c_activation[0][0]']
 agePooling2D)

 block4c_se_reshape (Reshape)    (None, 1, 1, 480)     0
['block4c_se_squeeze[0][0]']
```

```
 block4c_se_reduce (Conv2D)        (None, 1, 1, 20)      9620
['block4c_se_reshape[0][0]']

 block4c_se_expand (Conv2D)        (None, 1, 1, 480)     10080
['block4c_se_reduce[0][0]']

 block4c_se_excite (Multiply)      (None, 14, 14, 480)   0
['block4c_activation[0][0]',

'block4c_se_expand[0][0]']

 block4c_project_conv (Conv2D)     (None, 14, 14, 80)    38400
['block4c_se_excite[0][0]']

 block4c_project_bn (BatchNorma    (None, 14, 14, 80)    320
['block4c_project_conv[0][0]']
 lization)

 block4c_drop (Dropout)            (None, 14, 14, 80)    0
['block4c_project_bn[0][0]']

 block4c_add (Add)                 (None, 14, 14, 80)    0
['block4c_drop[0][0]',

'block4b_add[0][0]']

 block5a_expand_conv (Conv2D)      (None, 14, 14, 480)   38400
['block4c_add[0][0]']

 block5a_expand_bn (BatchNormal    (None, 14, 14, 480)   1920
['block5a_expand_conv[0][0]']
 ization)

 block5a_expand_activation (Act    (None, 14, 14, 480)   0
['block5a_expand_bn[0][0]']
 ivation)

 block5a_dwconv (DepthwiseConv2    (None, 14, 14, 480)   12000
['block5a_expand_activation[0][0]
 D)                                                                            ']

 block5a_bn (BatchNormalization    (None, 14, 14, 480)   1920
['block5a_dwconv[0][0]']
 )

 block5a_activation (Activation    (None, 14, 14, 480)   0
['block5a_bn[0][0]']
 )

 block5a_se_squeeze (GlobalAver    (None, 480)           0
['block5a_activation[0][0]']
```

```
 agePooling2D)

 block5a_se_reshape (Reshape)     (None, 1, 1, 480)     0
['block5a_se_squeeze[0][0]']

 block5a_se_reduce (Conv2D)       (None, 1, 1, 20)      9620
['block5a_se_reshape[0][0]']

 block5a_se_expand (Conv2D)       (None, 1, 1, 480)     10080
['block5a_se_reduce[0][0]']

 block5a_se_excite (Multiply)     (None, 14, 14, 480)   0
['block5a_activation[0][0]',

'block5a_se_expand[0][0]']

 block5a_project_conv (Conv2D)    (None, 14, 14, 112)   53760
['block5a_se_excite[0][0]']

 block5a_project_bn (BatchNorma   (None, 14, 14, 112)   448
['block5a_project_conv[0][0]']
 lization)

 block5b_expand_conv (Conv2D)     (None, 14, 14, 672)   75264
['block5a_project_bn[0][0]']

 block5b_expand_bn (BatchNormal   (None, 14, 14, 672)   2688
['block5b_expand_conv[0][0]']
 ization)

 block5b_expand_activation (Act   (None, 14, 14, 672)   0
['block5b_expand_bn[0][0]']
 ivation)

 block5b_dwconv (DepthwiseConv2   (None, 14, 14, 672)   16800
['block5b_expand_activation[0][0]
 D)                                                                    ']

 block5b_bn (BatchNormalization   (None, 14, 14, 672)   2688
['block5b_dwconv[0][0]']
 )

 block5b_activation (Activation   (None, 14, 14, 672)   0
['block5b_bn[0][0]']
 )

 block5b_se_squeeze (GlobalAver   (None, 672)           0
['block5b_activation[0][0]']
 agePooling2D)
```

```
 block5b_se_reshape (Reshape)     (None, 1, 1, 672)     0
['block5b_se_squeeze[0][0]']

 block5b_se_reduce (Conv2D)       (None, 1, 1, 28)      18844
['block5b_se_reshape[0][0]']

 block5b_se_expand (Conv2D)       (None, 1, 1, 672)     19488
['block5b_se_reduce[0][0]']

 block5b_se_excite (Multiply)     (None, 14, 14, 672)   0
['block5b_activation[0][0]',

'block5b_se_expand[0][0]']

 block5b_project_conv (Conv2D)    (None, 14, 14, 112)   75264
['block5b_se_excite[0][0]']

 block5b_project_bn (BatchNorma   (None, 14, 14, 112)   448
['block5b_project_conv[0][0]']
 lization)

 block5b_drop (Dropout)           (None, 14, 14, 112)   0
['block5b_project_bn[0][0]']

 block5b_add (Add)                (None, 14, 14, 112)   0
['block5b_drop[0][0]',

'block5a_project_bn[0][0]']

 block5c_expand_conv (Conv2D)     (None, 14, 14, 672)   75264
['block5b_add[0][0]']

 block5c_expand_bn (BatchNormal   (None, 14, 14, 672)   2688
['block5c_expand_conv[0][0]']
 ization)

 block5c_expand_activation (Act   (None, 14, 14, 672)   0
['block5c_expand_bn[0][0]']
 ivation)

 block5c_dwconv (DepthwiseConv2   (None, 14, 14, 672)   16800
['block5c_expand_activation[0][0]
 D)                                                                                ']

 block5c_bn (BatchNormalization   (None, 14, 14, 672)   2688
['block5c_dwconv[0][0]']
 )

 block5c_activation (Activation   (None, 14, 14, 672)   0
['block5c_bn[0][0]']
 )
```

```
 block5c_se_squeeze (GlobalAver   (None, 672)          0
['block5c_activation[0][0]']
 agePooling2D)

 block5c_se_reshape (Reshape)     (None, 1, 1, 672)    0
['block5c_se_squeeze[0][0]']

 block5c_se_reduce (Conv2D)       (None, 1, 1, 28)     18844
['block5c_se_reshape[0][0]']

 block5c_se_expand (Conv2D)       (None, 1, 1, 672)    19488
['block5c_se_reduce[0][0]']

 block5c_se_excite (Multiply)     (None, 14, 14, 672)  0
['block5c_activation[0][0]',

'block5c_se_expand[0][0]']

 block5c_project_conv (Conv2D)    (None, 14, 14, 112)  75264
['block5c_se_excite[0][0]']

 block5c_project_bn (BatchNorma   (None, 14, 14, 112)  448
['block5c_project_conv[0][0]']
 lization)

 block5c_drop (Dropout)           (None, 14, 14, 112)  0
['block5c_project_bn[0][0]']

 block5c_add (Add)                (None, 14, 14, 112)  0
['block5c_drop[0][0]',

'block5b_add[0][0]']

 block6a_expand_conv (Conv2D)     (None, 14, 14, 672)  75264
['block5c_add[0][0]']

 block6a_expand_bn (BatchNormal   (None, 14, 14, 672)  2688
['block6a_expand_conv[0][0]']
 ization)

 block6a_expand_activation (Act   (None, 14, 14, 672)  0
['block6a_expand_bn[0][0]']
 ivation)

 block6a_dwconv_pad (ZeroPaddin   (None, 17, 17, 672)  0
['block6a_expand_activation[0][0]
 g2D)                                                                    ']

 block6a_dwconv (DepthwiseConv2   (None, 7, 7, 672)    16800
['block6a_dwconv_pad[0][0]']
```

```
 D)

 block6a_bn (BatchNormalization   (None, 7, 7, 672)    2688
['block6a_dwconv[0][0]']
 )

 block6a_activation (Activation   (None, 7, 7, 672)    0
['block6a_bn[0][0]']
 )

 block6a_se_squeeze (GlobalAver   (None, 672)          0
['block6a_activation[0][0]']
 agePooling2D)

 block6a_se_reshape (Reshape)     (None, 1, 1, 672)    0
['block6a_se_squeeze[0][0]']

 block6a_se_reduce (Conv2D)       (None, 1, 1, 28)     18844
['block6a_se_reshape[0][0]']

 block6a_se_expand (Conv2D)       (None, 1, 1, 672)    19488
['block6a_se_reduce[0][0]']

 block6a_se_excite (Multiply)     (None, 7, 7, 672)    0
['block6a_activation[0][0]',

 'block6a_se_expand[0][0]']

 block6a_project_conv (Conv2D)    (None, 7, 7, 192)    129024
['block6a_se_excite[0][0]']

 block6a_project_bn (BatchNorma   (None, 7, 7, 192)    768
['block6a_project_conv[0][0]']
 lization)

 block6b_expand_conv (Conv2D)     (None, 7, 7, 1152)   221184
['block6a_project_bn[0][0]']

 block6b_expand_bn (BatchNormal   (None, 7, 7, 1152)   4608
['block6b_expand_conv[0][0]']
 ization)

 block6b_expand_activation (Act   (None, 7, 7, 1152)   0
['block6b_expand_bn[0][0]']
 ivation)

 block6b_dwconv (DepthwiseConv2   (None, 7, 7, 1152)   28800
['block6b_expand_activation[0][0]
 D)                                                                          ']
```

```
 block6b_bn (BatchNormalization   (None, 7, 7, 1152)   4608
['block6b_dwconv[0][0]']
 )

 block6b_activation (Activation   (None, 7, 7, 1152)   0
['block6b_bn[0][0]']
 )

 block6b_se_squeeze (GlobalAver   (None, 1152)         0
['block6b_activation[0][0]']
 agePooling2D)

 block6b_se_reshape (Reshape)     (None, 1, 1, 1152)   0
['block6b_se_squeeze[0][0]']

 block6b_se_reduce (Conv2D)       (None, 1, 1, 48)     55344
['block6b_se_reshape[0][0]']

 block6b_se_expand (Conv2D)       (None, 1, 1, 1152)   56448
['block6b_se_reduce[0][0]']

 block6b_se_excite (Multiply)     (None, 7, 7, 1152)   0
['block6b_activation[0][0]',

 'block6b_se_expand[0][0]']

 block6b_project_conv (Conv2D)    (None, 7, 7, 192)    221184
['block6b_se_excite[0][0]']

 block6b_project_bn (BatchNorma   (None, 7, 7, 192)    768
['block6b_project_conv[0][0]']
 lization)

 block6b_drop (Dropout)           (None, 7, 7, 192)    0
['block6b_project_bn[0][0]']

 block6b_add (Add)                (None, 7, 7, 192)    0
['block6b_drop[0][0]',

 'block6a_project_bn[0][0]']

 block6c_expand_conv (Conv2D)     (None, 7, 7, 1152)   221184
['block6b_add[0][0]']

 block6c_expand_bn (BatchNormal   (None, 7, 7, 1152)   4608
['block6c_expand_conv[0][0]']
 ization)

 block6c_expand_activation (Act   (None, 7, 7, 1152)   0
['block6c_expand_bn[0][0]']
 ivation)
```

```
 block6c_dwconv (DepthwiseConv2    (None, 7, 7, 1152)   28800
['block6c_expand_activation[0][0]
 D)                                                                        ']

 block6c_bn (BatchNormalization    (None, 7, 7, 1152)   4608
['block6c_dwconv[0][0]']
 )

 block6c_activation (Activation    (None, 7, 7, 1152)   0
['block6c_bn[0][0]']
 )

 block6c_se_squeeze (GlobalAver    (None, 1152)         0
['block6c_activation[0][0]'
 agePooling2D)

 block6c_se_reshape (Reshape)      (None, 1, 1, 1152)   0
['block6c_se_squeeze[0][0]']

 block6c_se_reduce (Conv2D)        (None, 1, 1, 48)     55344
['block6c_se_reshape[0][0]']

 block6c_se_expand (Conv2D)        (None, 1, 1, 1152)   56448
['block6c_se_reduce[0][0]']

 block6c_se_excite (Multiply)      (None, 7, 7, 1152)   0
['block6c_activation[0][0]',

'block6c_se_expand[0][0]']

 block6c_project_conv (Conv2D)     (None, 7, 7, 192)    221184
['block6c_se_excite[0][0]']

 block6c_project_bn (BatchNorma    (None, 7, 7, 192)    768
['block6c_project_conv[0][0]']
 lization)

 block6c_drop (Dropout)            (None, 7, 7, 192)    0
['block6c_project_bn[0][0]']

 block6c_add (Add)                 (None, 7, 7, 192)    0
['block6c_drop[0][0]',

'block6b_add[0][0]']

 block6d_expand_conv (Conv2D)      (None, 7, 7, 1152)   221184
['block6c_add[0][0]']

 block6d_expand_bn (BatchNormal    (None, 7, 7, 1152)   4608
['block6d_expand_conv[0][0]']
```

```
 ization)

 block6d_expand_activation (Act   (None, 7, 7, 1152)   0         ['block6d_expand_bn[0][0]']
 ivation)

 block6d_dwconv (DepthwiseConv2   (None, 7, 7, 1152)   28800     ['block6d_expand_activation[0][0]
 D)                                                                ']

 block6d_bn (BatchNormalization   (None, 7, 7, 1152)   4608      ['block6d_dwconv[0][0]']
 )

 block6d_activation (Activation   (None, 7, 7, 1152)   0         ['block6d_bn[0][0]']
 )

 block6d_se_squeeze (GlobalAver   (None, 1152)         0         ['block6d_activation[0][0]']
 agePooling2D)

 block6d_se_reshape (Reshape)     (None, 1, 1, 1152)   0         ['block6d_se_squeeze[0][0]']

 block6d_se_reduce (Conv2D)       (None, 1, 1, 48)     55344     ['block6d_se_reshape[0][0]']

 block6d_se_expand (Conv2D)       (None, 1, 1, 1152)   56448     ['block6d_se_reduce[0][0]']

 block6d_se_excite (Multiply)     (None, 7, 7, 1152)   0         ['block6d_activation[0][0]',
                                                                  'block6d_se_expand[0][0]']

 block6d_project_conv (Conv2D)    (None, 7, 7, 192)    221184    ['block6d_se_excite[0][0]']

 block6d_project_bn (BatchNorma   (None, 7, 7, 192)    768       ['block6d_project_conv[0][0]']
 lization)

 block6d_drop (Dropout)           (None, 7, 7, 192)    0         ['block6d_project_bn[0][0]']

 block6d_add (Add)                (None, 7, 7, 192)    0         ['block6d_drop[0][0]',
                                                                  'block6c_add[0][0]']
```

```
 block7a_expand_conv (Conv2D)     (None, 7, 7, 1152)   221184
['block6d_add[0][0]']

 block7a_expand_bn (BatchNormal   (None, 7, 7, 1152)   4608
['block7a_expand_conv[0][0]']
 ization)

 block7a_expand_activation (Act   (None, 7, 7, 1152)   0
['block7a_expand_bn[0][0]']
 ivation)

 block7a_dwconv (DepthwiseConv2   (None, 7, 7, 1152)   10368
['block7a_expand_activation[0][0]
 D)                                                                              ']

 block7a_bn (BatchNormalization   (None, 7, 7, 1152)   4608
['block7a_dwconv[0][0]']
 )

 block7a_activation (Activation   (None, 7, 7, 1152)   0
['block7a_bn[0][0]']
 )

 block7a_se_squeeze (GlobalAver   (None, 1152)         0
['block7a_activation[0][0]']
 agePooling2D)

 block7a_se_reshape (Reshape)     (None, 1, 1, 1152)   0
['block7a_se_squeeze[0][0]']

 block7a_se_reduce (Conv2D)       (None, 1, 1, 48)     55344
['block7a_se_reshape[0][0]']

 block7a_se_expand (Conv2D)       (None, 1, 1, 1152)   56448
['block7a_se_reduce[0][0]']

 block7a_se_excite (Multiply)     (None, 7, 7, 1152)   0
['block7a_activation[0][0]',

 'block7a_se_expand[0][0]']

 block7a_project_conv (Conv2D)    (None, 7, 7, 320)    368640
['block7a_se_excite[0][0]']

 block7a_project_bn (BatchNorma   (None, 7, 7, 320)    1280
['block7a_project_conv[0][0]']
 lization)

 top_conv (Conv2D)                (None, 7, 7, 1280)   409600
['block7a_project_bn[0][0]']
```

```
 top_bn (BatchNormalization)      (None, 7, 7, 1280)    5120
['top_conv[0][0]']

 top_activation (Activation)      (None, 7, 7, 1280)    0
['top_bn[0][0]']

 avg_pool (GlobalAveragePooling   (None, 1280)          0
['top_activation[0][0]']
 2D)

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

 main_output_layer (Dense)        (None, 400)           51600
['dense[0][0]']

================================================================
==========================
Total params: 4,265,139
Trainable params: 4,223,116
Non-trainable params: 42,023
_____
_____
```

Model-8

```
Model: "model"
_____
_____
 Layer (type)                    Output Shape          Param #
Connected to
================================================================
==========================
 input_1 (InputLayer)            [(None, 96, 96, 3)]   0                []

 conv2d (Conv2D)                 (None, 47, 47, 32)    864
['input_1[0][0]']

 batch_normalization (BatchNorm  (None, 47, 47, 32)    96
['conv2d[0][0]']
 alization)

 activation (Activation)         (None, 47, 47, 32)    0
['batch_normalization[0][0]']

 conv2d_1 (Conv2D)               (None, 45, 45, 32)    9216
['activation[0][0]']
```

```
 batch_normalization_1 (BatchNo    (None, 45, 45, 32)   96
['conv2d_1[0][0]']
 rmalization)

 activation_1 (Activation)         (None, 45, 45, 32)   0
['batch_normalization_1[0][0]']

 conv2d_2 (Conv2D)                 (None, 45, 45, 64)   18432
['activation_1[0][0]']

 batch_normalization_2 (BatchNo    (None, 45, 45, 64)   192
['conv2d_2[0][0]']
 rmalization)

 activation_2 (Activation)         (None, 45, 45, 64)   0
['batch_normalization_2[0][0]']

 max_pooling2d (MaxPooling2D)      (None, 22, 22, 64)   0
['activation_2[0][0]']

 conv2d_3 (Conv2D)                 (None, 22, 22, 80)   5120
['max_pooling2d[0][0]']

 batch_normalization_3 (BatchNo    (None, 22, 22, 80)   240
['conv2d_3[0][0]']
 rmalization)

 activation_3 (Activation)         (None, 22, 22, 80)   0
['batch_normalization_3[0][0]']

 conv2d_4 (Conv2D)                 (None, 20, 20, 192)  138240
['activation_3[0][0]']

 batch_normalization_4 (BatchNo    (None, 20, 20, 192)  576
['conv2d_4[0][0]']
 rmalization)

 activation_4 (Activation)         (None, 20, 20, 192)  0
['batch_normalization_4[0][0]']

 max_pooling2d_1 (MaxPooling2D)    (None, 9, 9, 192)    0
['activation_4[0][0]']

 conv2d_8 (Conv2D)                 (None, 9, 9, 64)     12288
['max_pooling2d_1[0][0]']

 batch_normalization_8 (BatchNo    (None, 9, 9, 64)     192
['conv2d_8[0][0]']
 rmalization)
```

```
 activation_8 (Activation)        (None, 9, 9, 64)     0
['batch_normalization_8[0][0]']

 conv2d_6 (Conv2D)                (None, 9, 9, 48)     9216
['max_pooling2d_1[0][0]']

 conv2d_9 (Conv2D)                (None, 9, 9, 96)     55296
['activation_8[0][0]']

 batch_normalization_6 (BatchNo   (None, 9, 9, 48)     144
['conv2d_6[0][0]']
 rmalization)

 batch_normalization_9 (BatchNo   (None, 9, 9, 96)     288
['conv2d_9[0][0]']
 rmalization)

 activation_6 (Activation)        (None, 9, 9, 48)     0
['batch_normalization_6[0][0]']

 activation_9 (Activation)        (None, 9, 9, 96)     0
['batch_normalization_9[0][0]']

 average_pooling2d (AveragePool   (None, 9, 9, 192)    0
['max_pooling2d_1[0][0]']
 ing2D)

 conv2d_5 (Conv2D)                (None, 9, 9, 64)     12288
['max_pooling2d_1[0][0]']

 conv2d_7 (Conv2D)                (None, 9, 9, 64)     76800
['activation_6[0][0]']

 conv2d_10 (Conv2D)               (None, 9, 9, 96)     82944
['activation_9[0][0]']

 conv2d_11 (Conv2D)               (None, 9, 9, 32)     6144
['average_pooling2d[0][0]']

 batch_normalization_5 (BatchNo   (None, 9, 9, 64)     192
['conv2d_5[0][0]']
 rmalization)

 batch_normalization_7 (BatchNo   (None, 9, 9, 64)     192
['conv2d_7[0][0]']
 rmalization)

 batch_normalization_10 (BatchN   (None, 9, 9, 96)     288
['conv2d_10[0][0]']
 ormalization)
```

```
 batch_normalization_11 (BatchN   (None, 9, 9, 32)     96
['conv2d_11[0][0]']
 ormalization)

 activation_5 (Activation)       (None, 9, 9, 64)     0
['batch_normalization_5[0][0]']

 activation_7 (Activation)       (None, 9, 9, 64)     0
['batch_normalization_7[0][0]']

 activation_10 (Activation)      (None, 9, 9, 96)     0
['batch_normalization_10[0][0]']

 activation_11 (Activation)      (None, 9, 9, 32)     0
['batch_normalization_11[0][0]']

 mixed0 (Concatenate)            (None, 9, 9, 256)    0
['activation_5[0][0]',

'activation_7[0][0]',

'activation_10[0][0]',

'activation_11[0][0]']

 conv2d_15 (Conv2D)              (None, 9, 9, 64)     16384
['mixed0[0][0]']

 batch_normalization_15 (BatchN  (None, 9, 9, 64)     192
['conv2d_15[0][0]']
 ormalization)

 activation_15 (Activation)      (None, 9, 9, 64)     0
['batch_normalization_15[0][0]']

 conv2d_13 (Conv2D)              (None, 9, 9, 48)     12288
['mixed0[0][0]']

 conv2d_16 (Conv2D)              (None, 9, 9, 96)     55296
['activation_15[0][0]']

 batch_normalization_13 (BatchN  (None, 9, 9, 48)     144
['conv2d_13[0][0]']
 ormalization)

 batch_normalization_16 (BatchN  (None, 9, 9, 96)     288
['conv2d_16[0][0]']
 ormalization)

 activation_13 (Activation)      (None, 9, 9, 48)     0
['batch_normalization_13[0][0]']
```

```
 activation_16 (Activation)      (None, 9, 9, 96)     0
['batch_normalization_16[0][0]']

 average_pooling2d_1 (AveragePo  (None, 9, 9, 256)    0
['mixed0[0][0]']
 oling2D)

 conv2d_12 (Conv2D)              (None, 9, 9, 64)     16384
['mixed0[0][0]']

 conv2d_14 (Conv2D)              (None, 9, 9, 64)     76800
['activation_13[0][0]']

 conv2d_17 (Conv2D)              (None, 9, 9, 96)     82944
['activation_16[0][0]']

 conv2d_18 (Conv2D)              (None, 9, 9, 64)     16384
['average_pooling2d_1[0][0]']

 batch_normalization_12 (BatchN  (None, 9, 9, 64)     192
['conv2d_12[0][0]']
 ormalization)

 batch_normalization_14 (BatchN  (None, 9, 9, 64)     192
['conv2d_14[0][0]']
 ormalization)

 batch_normalization_17 (BatchN  (None, 9, 9, 96)     288
['conv2d_17[0][0]']
 ormalization)

 batch_normalization_18 (BatchN  (None, 9, 9, 64)     192
['conv2d_18[0][0]']
 ormalization)

 activation_12 (Activation)      (None, 9, 9, 64)     0
['batch_normalization_12[0][0]']

 activation_14 (Activation)      (None, 9, 9, 64)     0
['batch_normalization_14[0][0]']

 activation_17 (Activation)      (None, 9, 9, 96)     0
['batch_normalization_17[0][0]']

 activation_18 (Activation)      (None, 9, 9, 64)     0
['batch_normalization_18[0][0]']

 mixed1 (Concatenate)            (None, 9, 9, 288)    0
['activation_12[0][0]',
```

```
                              'activation_14[0][0]',

                              'activation_17[0][0]',

                              'activation_18[0][0]']

 conv2d_22 (Conv2D)              (None, 9, 9, 64)      18432
['mixed1[0][0]']

 batch_normalization_22 (BatchN  (None, 9, 9, 64)      192
['conv2d_22[0][0]']
 ormalization)

 activation_22 (Activation)      (None, 9, 9, 64)      0
['batch_normalization_22[0][0]']

 conv2d_20 (Conv2D)              (None, 9, 9, 48)      13824
['mixed1[0][0]']

 conv2d_23 (Conv2D)              (None, 9, 9, 96)      55296
['activation_22[0][0]']

 batch_normalization_20 (BatchN  (None, 9, 9, 48)      144
['conv2d_20[0][0]']
 ormalization)

 batch_normalization_23 (BatchN  (None, 9, 9, 96)      288
['conv2d_23[0][0]']
 ormalization)

 activation_20 (Activation)      (None, 9, 9, 48)      0
['batch_normalization_20[0][0]']

 activation_23 (Activation)      (None, 9, 9, 96)      0
['batch_normalization_23[0][0]']

 average_pooling2d_2 (AveragePo  (None, 9, 9, 288)     0
['mixed1[0][0]']
 oling2D)

 conv2d_19 (Conv2D)              (None, 9, 9, 64)      18432
['mixed1[0][0]']

 conv2d_21 (Conv2D)              (None, 9, 9, 64)      76800
['activation_20[0][0]']

 conv2d_24 (Conv2D)              (None, 9, 9, 96)      82944
['activation_23[0][0]']
```

```
 conv2d_25 (Conv2D)              (None, 9, 9, 64)      18432
['average_pooling2d_2[0][0]']

 batch_normalization_19 (BatchN  (None, 9, 9, 64)      192
['conv2d_19[0][0]']
 ormalization)

 batch_normalization_21 (BatchN  (None, 9, 9, 64)      192
['conv2d_21[0][0]']
 ormalization)

 batch_normalization_24 (BatchN  (None, 9, 9, 96)      288
['conv2d_24[0][0]']
 ormalization)

 batch_normalization_25 (BatchN  (None, 9, 9, 64)      192
['conv2d_25[0][0]']
 ormalization)

 activation_19 (Activation)      (None, 9, 9, 64)      0
['batch_normalization_19[0][0]']

 activation_21 (Activation)      (None, 9, 9, 64)      0
['batch_normalization_21[0][0]']

 activation_24 (Activation)      (None, 9, 9, 96)      0
['batch_normalization_24[0][0]']

 activation_25 (Activation)      (None, 9, 9, 64)      0
['batch_normalization_25[0][0]']

 mixed2 (Concatenate)            (None, 9, 9, 288)     0
['activation_19[0][0]',

'activation_21[0][0]',

'activation_24[0][0]',

'activation_25[0][0]']

 conv2d_27 (Conv2D)              (None, 9, 9, 64)      18432
['mixed2[0][0]']

 batch_normalization_27 (BatchN  (None, 9, 9, 64)      192
['conv2d_27[0][0]']
 ormalization)

 activation_27 (Activation)      (None, 9, 9, 64)      0
['batch_normalization_27[0][0]']
```

```
 conv2d_28 (Conv2D)              (None, 9, 9, 96)      55296
['activation_27[0][0]']

 batch_normalization_28 (BatchN  (None, 9, 9, 96)      288
['conv2d_28[0][0]']
 ormalization)

 activation_28 (Activation)      (None, 9, 9, 96)      0
['batch_normalization_28[0][0]']

 conv2d_26 (Conv2D)              (None, 4, 4, 384)     995328
['mixed2[0][0]']

 conv2d_29 (Conv2D)              (None, 4, 4, 96)      82944
['activation_28[0][0]']

 batch_normalization_26 (BatchN  (None, 4, 4, 384)     1152
['conv2d_26[0][0]']
 ormalization)

 batch_normalization_29 (BatchN  (None, 4, 4, 96)      288
['conv2d_29[0][0]']
 ormalization)

 activation_26 (Activation)      (None, 4, 4, 384)     0
['batch_normalization_26[0][0]']

 activation_29 (Activation)      (None, 4, 4, 96)      0
['batch_normalization_29[0][0]']

 max_pooling2d_2 (MaxPooling2D)  (None, 4, 4, 288)     0
['mixed2[0][0]']

 mixed3 (Concatenate)            (None, 4, 4, 768)     0
['activation_26[0][0]',

'activation_29[0][0]',

'max_pooling2d_2[0][0]']

 conv2d_34 (Conv2D)              (None, 4, 4, 128)     98304
['mixed3[0][0]']

 batch_normalization_34 (BatchN  (None, 4, 4, 128)     384
['conv2d_34[0][0]']
 ormalization)

 activation_34 (Activation)      (None, 4, 4, 128)     0
['batch_normalization_34[0][0]']
```

```
 conv2d_35 (Conv2D)              (None, 4, 4, 128)     114688
['activation_34[0][0]']

 batch_normalization_35 (BatchN  (None, 4, 4, 128)     384
['conv2d_35[0][0]']
 ormalization)

 activation_35 (Activation)      (None, 4, 4, 128)     0
['batch_normalization_35[0][0]']

 conv2d_31 (Conv2D)              (None, 4, 4, 128)     98304
['mixed3[0][0]']

 conv2d_36 (Conv2D)              (None, 4, 4, 128)     114688
['activation_35[0][0]']

 batch_normalization_31 (BatchN  (None, 4, 4, 128)     384
['conv2d_31[0][0]']
 ormalization)

 batch_normalization_36 (BatchN  (None, 4, 4, 128)     384
['conv2d_36[0][0]']
 ormalization)

 activation_31 (Activation)      (None, 4, 4, 128)     0
['batch_normalization_31[0][0]']

 activation_36 (Activation)      (None, 4, 4, 128)     0
['batch_normalization_36[0][0]']

 conv2d_32 (Conv2D)              (None, 4, 4, 128)     114688
['activation_31[0][0]']

 conv2d_37 (Conv2D)              (None, 4, 4, 128)     114688
['activation_36[0][0]']

 batch_normalization_32 (BatchN  (None, 4, 4, 128)     384
['conv2d_32[0][0]']
 ormalization)

 batch_normalization_37 (BatchN  (None, 4, 4, 128)     384
['conv2d_37[0][0]']
 ormalization)

 activation_32 (Activation)      (None, 4, 4, 128)     0
['batch_normalization_32[0][0]']

 activation_37 (Activation)      (None, 4, 4, 128)     0
['batch_normalization_37[0][0]']
```

```
 average_pooling2d_3 (AveragePo   (None, 4, 4, 768)    0
['mixed3[0][0]']
 oling2D)

 conv2d_30 (Conv2D)               (None, 4, 4, 192)    147456
['mixed3[0][0]']

 conv2d_33 (Conv2D)               (None, 4, 4, 192)    172032
['activation_32[0][0]']

 conv2d_38 (Conv2D)               (None, 4, 4, 192)    172032
['activation_37[0][0]']

 conv2d_39 (Conv2D)               (None, 4, 4, 192)    147456
['average_pooling2d_3[0][0]']

 batch_normalization_30 (BatchN   (None, 4, 4, 192)    576
['conv2d_30[0][0]']
 ormalization)

 batch_normalization_33 (BatchN   (None, 4, 4, 192)    576
['conv2d_33[0][0]']
 ormalization)

 batch_normalization_38 (BatchN   (None, 4, 4, 192)    576
['conv2d_38[0][0]']
 ormalization)

 batch_normalization_39 (BatchN   (None, 4, 4, 192)    576
['conv2d_39[0][0]']
 ormalization)

 activation_30 (Activation)       (None, 4, 4, 192)    0
['batch_normalization_30[0][0]']

 activation_33 (Activation)       (None, 4, 4, 192)    0
['batch_normalization_33[0][0]']

 activation_38 (Activation)       (None, 4, 4, 192)    0
['batch_normalization_38[0][0]']

 activation_39 (Activation)       (None, 4, 4, 192)    0
['batch_normalization_39[0][0]']

 mixed4 (Concatenate)             (None, 4, 4, 768)    0
['activation_30[0][0]',

'activation_33[0][0]',

'activation_38[0][0]',
```

'activation_39[0][0]']

 conv2d_44 (Conv2D)   (None, 4, 4, 160)   122880
['mixed4[0][0]']

 batch_normalization_44 (BatchN (None, 4, 4, 160)   480
['conv2d_44[0][0]']
 ormalization)

 activation_44 (Activation)   (None, 4, 4, 160)   0
['batch_normalization_44[0][0]']

 conv2d_45 (Conv2D)   (None, 4, 4, 160)   179200
['activation_44[0][0]']

 batch_normalization_45 (BatchN (None, 4, 4, 160)   480
['conv2d_45[0][0]']
 ormalization)

 activation_45 (Activation)   (None, 4, 4, 160)   0
['batch_normalization_45[0][0]']

 conv2d_41 (Conv2D)   (None, 4, 4, 160)   122880
['mixed4[0][0]']

 conv2d_46 (Conv2D)   (None, 4, 4, 160)   179200
['activation_45[0][0]']

 batch_normalization_41 (BatchN (None, 4, 4, 160)   480
['conv2d_41[0][0]']
 ormalization)

 batch_normalization_46 (BatchN (None, 4, 4, 160)   480
['conv2d_46[0][0]']
 ormalization)

 activation_41 (Activation)   (None, 4, 4, 160)   0
['batch_normalization_41[0][0]']

 activation_46 (Activation)   (None, 4, 4, 160)   0
['batch_normalization_46[0][0]']

 conv2d_42 (Conv2D)   (None, 4, 4, 160)   179200
['activation_41[0][0]']

 conv2d_47 (Conv2D)   (None, 4, 4, 160)   179200
['activation_46[0][0]']

 batch_normalization_42 (BatchN (None, 4, 4, 160)   480
['conv2d_42[0][0]']

ormalization)

 batch_normalization_47 (BatchN   (None, 4, 4, 160)   480
['conv2d_47[0][0]']
 ormalization)

 activation_42 (Activation)   (None, 4, 4, 160)   0
['batch_normalization_42[0][0]']

 activation_47 (Activation)   (None, 4, 4, 160)   0
['batch_normalization_47[0][0]']

 average_pooling2d_4 (AveragePo   (None, 4, 4, 768)   0
['mixed4[0][0]']
 oling2D)

 conv2d_40 (Conv2D)   (None, 4, 4, 192)   147456
['mixed4[0][0]']

 conv2d_43 (Conv2D)   (None, 4, 4, 192)   215040
['activation_42[0][0]']

 conv2d_48 (Conv2D)   (None, 4, 4, 192)   215040
['activation_47[0][0]']

 conv2d_49 (Conv2D)   (None, 4, 4, 192)   147456
['average_pooling2d_4[0][0]']

 batch_normalization_40 (BatchN   (None, 4, 4, 192)   576
['conv2d_40[0][0]']
 ormalization)

 batch_normalization_43 (BatchN   (None, 4, 4, 192)   576
['conv2d_43[0][0]']
 ormalization)

 batch_normalization_48 (BatchN   (None, 4, 4, 192)   576
['conv2d_48[0][0]']
 ormalization)

 batch_normalization_49 (BatchN   (None, 4, 4, 192)   576
['conv2d_49[0][0]']
 ormalization)

 activation_40 (Activation)   (None, 4, 4, 192)   0
['batch_normalization_40[0][0]']

 activation_43 (Activation)   (None, 4, 4, 192)   0
['batch_normalization_43[0][0]']

```
 activation_48 (Activation)        (None, 4, 4, 192)     0
['batch_normalization_48[0][0]']

 activation_49 (Activation)        (None, 4, 4, 192)     0
['batch_normalization_49[0][0]']

 mixed5 (Concatenate)              (None, 4, 4, 768)     0
['activation_40[0][0]',

'activation_43[0][0]',

'activation_48[0][0]',

'activation_49[0][0]']

 conv2d_54 (Conv2D)               (None, 4, 4, 160)     122880
['mixed5[0][0]']

 batch_normalization_54 (BatchN   (None, 4, 4, 160)     480
['conv2d_54[0][0]']
 ormalization)

 activation_54 (Activation)        (None, 4, 4, 160)     0
['batch_normalization_54[0][0]']

 conv2d_55 (Conv2D)               (None, 4, 4, 160)     179200
['activation_54[0][0]']

 batch_normalization_55 (BatchN   (None, 4, 4, 160)     480
['conv2d_55[0][0]']
 ormalization)

 activation_55 (Activation)        (None, 4, 4, 160)     0
['batch_normalization_55[0][0]']

 conv2d_51 (Conv2D)               (None, 4, 4, 160)     122880
['mixed5[0][0]']

 conv2d_56 (Conv2D)               (None, 4, 4, 160)     179200
['activation_55[0][0]']

 batch_normalization_51 (BatchN   (None, 4, 4, 160)     480
['conv2d_51[0][0]']
 ormalization)

 batch_normalization_56 (BatchN   (None, 4, 4, 160)     480
['conv2d_56[0][0]']
 ormalization)

 activation_51 (Activation)        (None, 4, 4, 160)     0
['batch_normalization_51[0][0]']
```

```
 activation_56 (Activation)      (None, 4, 4, 160)    0
['batch_normalization_56[0][0]']

 conv2d_52 (Conv2D)              (None, 4, 4, 160)    179200
['activation_51[0][0]']

 conv2d_57 (Conv2D)              (None, 4, 4, 160)    179200
['activation_56[0][0]']

 batch_normalization_52 (BatchN  (None, 4, 4, 160)    480
['conv2d_52[0][0]']
 ormalization)

 batch_normalization_57 (BatchN  (None, 4, 4, 160)    480
['conv2d_57[0][0]']
 ormalization)

 activation_52 (Activation)      (None, 4, 4, 160)    0
['batch_normalization_52[0][0]']

 activation_57 (Activation)      (None, 4, 4, 160)    0
['batch_normalization_57[0][0]']

 average_pooling2d_5 (AveragePo  (None, 4, 4, 768)    0
['mixed5[0][0]']
 oling2D)

 conv2d_50 (Conv2D)              (None, 4, 4, 192)    147456
['mixed5[0][0]']

 conv2d_53 (Conv2D)              (None, 4, 4, 192)    215040
['activation_52[0][0]']

 conv2d_58 (Conv2D)              (None, 4, 4, 192)    215040
['activation_57[0][0]']

 conv2d_59 (Conv2D)              (None, 4, 4, 192)    147456
['average_pooling2d_5[0][0]']

 batch_normalization_50 (BatchN  (None, 4, 4, 192)    576
['conv2d_50[0][0]']
 ormalization)

 batch_normalization_53 (BatchN  (None, 4, 4, 192)    576
['conv2d_53[0][0]']
 ormalization)

 batch_normalization_58 (BatchN  (None, 4, 4, 192)    576
['conv2d_58[0][0]']
 ormalization)
```

```
 batch_normalization_59 (BatchN   (None, 4, 4, 192)    576
['conv2d_59[0][0]']
 ormalization)

 activation_50 (Activation)      (None, 4, 4, 192)     0
['batch_normalization_50[0][0]']

 activation_53 (Activation)      (None, 4, 4, 192)     0
['batch_normalization_53[0][0]']

 activation_58 (Activation)      (None, 4, 4, 192)     0
['batch_normalization_58[0][0]']

 activation_59 (Activation)      (None, 4, 4, 192)     0
['batch_normalization_59[0][0]']

 mixed6 (Concatenate)            (None, 4, 4, 768)     0
['activation_50[0][0]',

 'activation_53[0][0]',

 'activation_58[0][0]',

 'activation_59[0][0]']

 conv2d_64 (Conv2D)              (None, 4, 4, 192)    147456
['mixed6[0][0]']

 batch_normalization_64 (BatchN   (None, 4, 4, 192)    576
['conv2d_64[0][0]']
 ormalization)

 activation_64 (Activation)      (None, 4, 4, 192)     0
['batch_normalization_64[0][0]']

 conv2d_65 (Conv2D)              (None, 4, 4, 192)    258048
['activation_64[0][0]']

 batch_normalization_65 (BatchN   (None, 4, 4, 192)    576
['conv2d_65[0][0]']
 ormalization)

 activation_65 (Activation)      (None, 4, 4, 192)     0
['batch_normalization_65[0][0]']

 conv2d_61 (Conv2D)              (None, 4, 4, 192)    147456
['mixed6[0][0]']

 conv2d_66 (Conv2D)              (None, 4, 4, 192)    258048
['activation_65[0][0]']
```

```
 batch_normalization_61 (BatchN   (None, 4, 4, 192)    576
['conv2d_61[0][0]']
 ormalization)

 batch_normalization_66 (BatchN   (None, 4, 4, 192)    576
['conv2d_66[0][0]']
 ormalization)

 activation_61 (Activation)       (None, 4, 4, 192)    0
['batch_normalization_61[0][0]']

 activation_66 (Activation)       (None, 4, 4, 192)    0
['batch_normalization_66[0][0]']

 conv2d_62 (Conv2D)               (None, 4, 4, 192)    258048
['activation_61[0][0]']

 conv2d_67 (Conv2D)               (None, 4, 4, 192)    258048
['activation_66[0][0]']

 batch_normalization_62 (BatchN   (None, 4, 4, 192)    576
['conv2d_62[0][0]']
 ormalization)

 batch_normalization_67 (BatchN   (None, 4, 4, 192)    576
['conv2d_67[0][0]']
 ormalization)

 activation_62 (Activation)       (None, 4, 4, 192)    0
['batch_normalization_62[0][0]']

 activation_67 (Activation)       (None, 4, 4, 192)    0
['batch_normalization_67[0][0]']

 average_pooling2d_6 (AveragePo   (None, 4, 4, 768)    0
['mixed6[0][0]']
 oling2D)

 conv2d_60 (Conv2D)               (None, 4, 4, 192)    147456
['mixed6[0][0]']

 conv2d_63 (Conv2D)               (None, 4, 4, 192)    258048
['activation_62[0][0]']

 conv2d_68 (Conv2D)               (None, 4, 4, 192)    258048
['activation_67[0][0]']

 conv2d_69 (Conv2D)               (None, 4, 4, 192)    147456
['average_pooling2d_6[0][0]']
```

```
 batch_normalization_60 (BatchN   (None, 4, 4, 192)    576
['conv2d_60[0][0]']
 ormalization)

 batch_normalization_63 (BatchN   (None, 4, 4, 192)    576
['conv2d_63[0][0]']
 ormalization)

 batch_normalization_68 (BatchN   (None, 4, 4, 192)    576
['conv2d_68[0][0]']
 ormalization)

 batch_normalization_69 (BatchN   (None, 4, 4, 192)    576
['conv2d_69[0][0]']
 ormalization)

 activation_60 (Activation)       (None, 4, 4, 192)    0
['batch_normalization_60[0][0]']

 activation_63 (Activation)       (None, 4, 4, 192)    0
['batch_normalization_63[0][0]']

 activation_68 (Activation)       (None, 4, 4, 192)    0
['batch_normalization_68[0][0]']

 activation_69 (Activation)       (None, 4, 4, 192)    0
['batch_normalization_69[0][0]']

 mixed7 (Concatenate)             (None, 4, 4, 768)    0
['activation_60[0][0]',

'activation_63[0][0]',

'activation_68[0][0]',

'activation_69[0][0]']

 conv2d_72 (Conv2D)               (None, 4, 4, 192)    147456
['mixed7[0][0]']

 batch_normalization_72 (BatchN   (None, 4, 4, 192)    576
['conv2d_72[0][0]']
 ormalization)

 activation_72 (Activation)       (None, 4, 4, 192)    0
['batch_normalization_72[0][0]']

 conv2d_73 (Conv2D)               (None, 4, 4, 192)    258048
['activation_72[0][0]']
```

```
 batch_normalization_73 (BatchN   (None, 4, 4, 192)    576
['conv2d_73[0][0]']
 ormalization)

 activation_73 (Activation)       (None, 4, 4, 192)    0
['batch_normalization_73[0][0]']

 conv2d_70 (Conv2D)               (None, 4, 4, 192)    147456
['mixed7[0][0]']

 conv2d_74 (Conv2D)               (None, 4, 4, 192)    258048
['activation_73[0][0]']

 batch_normalization_70 (BatchN   (None, 4, 4, 192)    576
['conv2d_70[0][0]']
 ormalization)

 batch_normalization_74 (BatchN   (None, 4, 4, 192)    576
['conv2d_74[0][0]']
 ormalization)

 activation_70 (Activation)       (None, 4, 4, 192)    0
['batch_normalization_70[0][0]']

 activation_74 (Activation)       (None, 4, 4, 192)    0
['batch_normalization_74[0][0]']

 conv2d_71 (Conv2D)               (None, 1, 1, 320)    552960
['activation_70[0][0]']

 conv2d_75 (Conv2D)               (None, 1, 1, 192)    331776
['activation_74[0][0]']

 batch_normalization_71 (BatchN   (None, 1, 1, 320)    960
['conv2d_71[0][0]']
 ormalization)

 batch_normalization_75 (BatchN   (None, 1, 1, 192)    576
['conv2d_75[0][0]']
 ormalization)

 activation_71 (Activation)       (None, 1, 1, 320)    0
['batch_normalization_71[0][0]']

 activation_75 (Activation)       (None, 1, 1, 192)    0
['batch_normalization_75[0][0]']

 max_pooling2d_3 (MaxPooling2D)   (None, 1, 1, 768)    0
['mixed7[0][0]']
```

```
 mixed8 (Concatenate)          (None, 1, 1, 1280)   0
['activation_71[0][0]',

'activation_75[0][0]',

'max_pooling2d_3[0][0]']

 conv2d_80 (Conv2D)            (None, 1, 1, 448)    573440
['mixed8[0][0]']

 batch_normalization_80 (BatchN  (None, 1, 1, 448)  1344
['conv2d_80[0][0]']
 ormalization)

 activation_80 (Activation)    (None, 1, 1, 448)    0
['batch_normalization_80[0][0]']

 conv2d_77 (Conv2D)            (None, 1, 1, 384)    491520
['mixed8[0][0]']

 conv2d_81 (Conv2D)            (None, 1, 1, 384)    1548288
['activation_80[0][0]']

 batch_normalization_77 (BatchN  (None, 1, 1, 384)  1152
['conv2d_77[0][0]']
 ormalization)

 batch_normalization_81 (BatchN  (None, 1, 1, 384)  1152
['conv2d_81[0][0]']
 ormalization)

 activation_77 (Activation)    (None, 1, 1, 384)    0
['batch_normalization_77[0][0]']

 activation_81 (Activation)    (None, 1, 1, 384)    0
['batch_normalization_81[0][0]']

 conv2d_78 (Conv2D)            (None, 1, 1, 384)    442368
['activation_77[0][0]']

 conv2d_79 (Conv2D)            (None, 1, 1, 384)    442368
['activation_77[0][0]']

 conv2d_82 (Conv2D)            (None, 1, 1, 384)    442368
['activation_81[0][0]']

 conv2d_83 (Conv2D)            (None, 1, 1, 384)    442368
['activation_81[0][0]']

 average_pooling2d_7 (AveragePo  (None, 1, 1, 1280)  0
['mixed8[0][0]']
```

```
 oling2D)

 conv2d_76 (Conv2D)              (None, 1, 1, 320)    409600
['mixed8[0][0]']

 batch_normalization_78 (BatchN  (None, 1, 1, 384)    1152
['conv2d_78[0][0]']
 ormalization)

 batch_normalization_79 (BatchN  (None, 1, 1, 384)    1152
['conv2d_79[0][0]']
 ormalization)

 batch_normalization_82 (BatchN  (None, 1, 1, 384)    1152
['conv2d_82[0][0]']
 ormalization)

 batch_normalization_83 (BatchN  (None, 1, 1, 384)    1152
['conv2d_83[0][0]']
 ormalization)

 conv2d_84 (Conv2D)              (None, 1, 1, 192)    245760
['average_pooling2d_7[0][0]']

 batch_normalization_76 (BatchN  (None, 1, 1, 320)    960
['conv2d_76[0][0]']
 ormalization)

 activation_78 (Activation)      (None, 1, 1, 384)    0
['batch_normalization_78[0][0]']

 activation_79 (Activation)      (None, 1, 1, 384)    0
['batch_normalization_79[0][0]']

 activation_82 (Activation)      (None, 1, 1, 384)    0
['batch_normalization_82[0][0]']

 activation_83 (Activation)      (None, 1, 1, 384)    0
['batch_normalization_83[0][0]']

 batch_normalization_84 (BatchN  (None, 1, 1, 192)    576
['conv2d_84[0][0]']
 ormalization)

 activation_76 (Activation)      (None, 1, 1, 320)    0
['batch_normalization_76[0][0]']

 mixed9_0 (Concatenate)          (None, 1, 1, 768)    0
['activation_78[0][0]',

'activation_79[0][0]']
```

```
 concatenate (Concatenate)       (None, 1, 1, 768)     0
['activation_82[0][0]',

'activation_83[0][0]']

 activation_84 (Activation)      (None, 1, 1, 192)     0
['batch_normalization_84[0][0]']

 mixed9 (Concatenate)            (None, 1, 1, 2048)    0
['activation_76[0][0]',

'mixed9_0[0][0]',

'concatenate[0][0]',

'activation_84[0][0]']

 conv2d_89 (Conv2D)              (None, 1, 1, 448)     917504
['mixed9[0][0]']

 batch_normalization_89 (BatchN  (None, 1, 1, 448)    1344
['conv2d_89[0][0]']
 ormalization)

 activation_89 (Activation)      (None, 1, 1, 448)     0
['batch_normalization_89[0][0]']

 conv2d_86 (Conv2D)              (None, 1, 1, 384)     786432
['mixed9[0][0]']

 conv2d_90 (Conv2D)              (None, 1, 1, 384)     1548288
['activation_89[0][0]']

 batch_normalization_86 (BatchN  (None, 1, 1, 384)    1152
['conv2d_86[0][0]']
 ormalization)

 batch_normalization_90 (BatchN  (None, 1, 1, 384)    1152
['conv2d_90[0][0]']
 ormalization)

 activation_86 (Activation)      (None, 1, 1, 384)     0
['batch_normalization_86[0][0]']

 activation_90 (Activation)      (None, 1, 1, 384)     0
['batch_normalization_90[0][0]']

 conv2d_87 (Conv2D)              (None, 1, 1, 384)     442368
['activation_86[0][0]']
```

```
 conv2d_88 (Conv2D)              (None, 1, 1, 384)    442368
['activation_86[0][0]']

 conv2d_91 (Conv2D)              (None, 1, 1, 384)    442368
['activation_90[0][0]']

 conv2d_92 (Conv2D)              (None, 1, 1, 384)    442368
['activation_90[0][0]']

 average_pooling2d_8 (AveragePo  (None, 1, 1, 2048)   0
['mixed9[0][0]']
 oling2D)

 conv2d_85 (Conv2D)              (None, 1, 1, 320)    655360
['mixed9[0][0]']

 batch_normalization_87 (BatchN  (None, 1, 1, 384)    1152
['conv2d_87[0][0]']
 ormalization)

 batch_normalization_88 (BatchN  (None, 1, 1, 384)    1152
['conv2d_88[0][0]']
 ormalization)

 batch_normalization_91 (BatchN  (None, 1, 1, 384)    1152
['conv2d_91[0][0]']
 ormalization)

 batch_normalization_92 (BatchN  (None, 1, 1, 384)    1152
['conv2d_92[0][0]']
 ormalization)

 conv2d_93 (Conv2D)              (None, 1, 1, 192)    393216
['average_pooling2d_8[0][0]']

 batch_normalization_85 (BatchN  (None, 1, 1, 320)    960
['conv2d_85[0][0]']
 ormalization)

 activation_87 (Activation)      (None, 1, 1, 384)    0
['batch_normalization_87[0][0]']

 activation_88 (Activation)      (None, 1, 1, 384)    0
['batch_normalization_88[0][0]']

 activation_91 (Activation)      (None, 1, 1, 384)    0
['batch_normalization_91[0][0]']

 activation_92 (Activation)      (None, 1, 1, 384)    0
['batch_normalization_92[0][0]']
```

```
 batch_normalization_93 (BatchN   (None, 1, 1, 192)    576
['conv2d_93[0][0]']
 ormalization)

 activation_85 (Activation)      (None, 1, 1, 320)    0
['batch_normalization_85[0][0]']

 mixed9_1 (Concatenate)          (None, 1, 1, 768)    0
['activation_87[0][0]',

'activation_88[0][0]']

 concatenate_1 (Concatenate)     (None, 1, 1, 768)    0
['activation_91[0][0]',

'activation_92[0][0]']

 activation_93 (Activation)      (None, 1, 1, 192)    0
['batch_normalization_93[0][0]']

 mixed10 (Concatenate)           (None, 1, 1, 2048)   0
['activation_85[0][0]',

'mixed9_1[0][0]',

'concatenate_1[0][0]',

'activation_93[0][0]']

 global_average_pooling2d (Glob  (None, 2048)         0
['mixed10[0][0]']
 alAveragePooling2D)

 dense (Dense)                   (None, 128)          262272
['global_average_pooling2d[0][0]'
                                                                    ]

 main_output_layer (Dense)       (None, 400)          51600
['dense[0][0]']

==========================================================================
===========================
Total params: 22,116,656
Trainable params: 22,082,224
Non-trainable params: 34,432
```

Model-9

```
Model: "model"
_____

 Layer (type)              Output Shape            Param #
=================================================================
 input_1 (InputLayer)      [(None, 224, 224, 3)]   0

 block1_conv1 (Conv2D)     (None, 224, 224, 64)    1792

 block1_conv2 (Conv2D)     (None, 224, 224, 64)    36928

 block1_pool (MaxPooling2D) (None, 112, 112, 64)   0

 block2_conv1 (Conv2D)     (None, 112, 112, 128)   73856

 block2_conv2 (Conv2D)     (None, 112, 112, 128)   147584

 block2_pool (MaxPooling2D) (None, 56, 56, 128)    0

 block3_conv1 (Conv2D)     (None, 56, 56, 256)     295168

 block3_conv2 (Conv2D)     (None, 56, 56, 256)     590080

 block3_conv3 (Conv2D)     (None, 56, 56, 256)     590080

 block3_conv4 (Conv2D)     (None, 56, 56, 256)     590080

 block3_pool (MaxPooling2D) (None, 28, 28, 256)    0

 block4_conv1 (Conv2D)     (None, 28, 28, 512)     1180160

 block4_conv2 (Conv2D)     (None, 28, 28, 512)     2359808

 block4_conv3 (Conv2D)     (None, 28, 28, 512)     2359808

 block4_conv4 (Conv2D)     (None, 28, 28, 512)     2359808

 block4_pool (MaxPooling2D) (None, 14, 14, 512)    0

 block5_conv1 (Conv2D)     (None, 14, 14, 512)     2359808

 block5_conv2 (Conv2D)     (None, 14, 14, 512)     2359808

 block5_conv3 (Conv2D)     (None, 14, 14, 512)     2359808

 block5_conv4 (Conv2D)     (None, 14, 14, 512)     2359808

 block5_pool (MaxPooling2D) (None, 7, 7, 512)      0

 flatten (Flatten)         (None, 25088)           0
```

Layer (type)	Output Shape	Param #
dense (Dense)	(None, 1024)	25691136
dense_1 (Dense)	(None, 1024)	1049600
main_output_layer (Dense)	(None, 400)	410000

===

Total params: 47,175,120
Trainable params: 27,150,736
Non-trainable params: 20,024,384

_____

Model-10

Model: "model"

_____

Layer (type)	Output Shape	Param #
input_1 (InputLayer)	[(None, 224, 224, 3)]	0
block1_conv1 (Conv2D)	(None, 224, 224, 64)	1792
block1_conv2 (Conv2D)	(None, 224, 224, 64)	36928
block1_pool (MaxPooling2D)	(None, 112, 112, 64)	0
block2_conv1 (Conv2D)	(None, 112, 112, 128)	73856
block2_conv2 (Conv2D)	(None, 112, 112, 128)	147584
block2_pool (MaxPooling2D)	(None, 56, 56, 128)	0
block3_conv1 (Conv2D)	(None, 56, 56, 256)	295168
block3_conv2 (Conv2D)	(None, 56, 56, 256)	590080
block3_conv3 (Conv2D)	(None, 56, 56, 256)	590080
block3_pool (MaxPooling2D)	(None, 28, 28, 256)	0
block4_conv1 (Conv2D)	(None, 28, 28, 512)	1180160
block4_conv2 (Conv2D)	(None, 28, 28, 512)	2359808
block4_conv3 (Conv2D)	(None, 28, 28, 512)	2359808
block4_pool (MaxPooling2D)	(None, 14, 14, 512)	0

Layer (type)	Output Shape	Param #
block5_conv1 (Conv2D)	(None, 14, 14, 512)	2359808
block5_conv2 (Conv2D)	(None, 14, 14, 512)	2359808
block5_conv3 (Conv2D)	(None, 14, 14, 512)	2359808
block5_pool (MaxPooling2D)	(None, 7, 7, 512)	0
global_average_pooling2d (G lobalAveragePooling2D)	(None, 512)	0
dense (Dense)	(None, 128)	65664
dropout (Dropout)	(None, 128)	0
dense_1 (Dense)	(None, 128)	16512
main_output_layer (Dense)	(None, 400)	51600

==

Total params: 14,848,464
Trainable params: 13,112,976
Non-trainable params: 1,735,488

_____

Model-11

Model: "model"

_____

Layer (type)	Output Shape	Param #
input_1 (InputLayer)	[(None, 224, 224, 3)]	0
block1_conv1 (Conv2D)	(None, 224, 224, 64)	1792
block1_conv2 (Conv2D)	(None, 224, 224, 64)	36928
block1_pool (MaxPooling2D)	(None, 112, 112, 64)	0
block2_conv1 (Conv2D)	(None, 112, 112, 128)	73856
block2_conv2 (Conv2D)	(None, 112, 112, 128)	147584
block2_pool (MaxPooling2D)	(None, 56, 56, 128)	0
block3_conv1 (Conv2D)	(None, 56, 56, 256)	295168
block3_conv2 (Conv2D)	(None, 56, 56, 256)	590080

block3_conv3 (Conv2D)	(None, 56, 56, 256)	590080
block3_conv4 (Conv2D)	(None, 56, 56, 256)	590080
block3_pool (MaxPooling2D)	(None, 28, 28, 256)	0
block4_conv1 (Conv2D)	(None, 28, 28, 512)	1180160
block4_conv2 (Conv2D)	(None, 28, 28, 512)	2359808
block4_conv3 (Conv2D)	(None, 28, 28, 512)	2359808
block4_conv4 (Conv2D)	(None, 28, 28, 512)	2359808
block4_pool (MaxPooling2D)	(None, 14, 14, 512)	0
block5_conv1 (Conv2D)	(None, 14, 14, 512)	2359808
block5_conv2 (Conv2D)	(None, 14, 14, 512)	2359808
block5_conv3 (Conv2D)	(None, 14, 14, 512)	2359808
block5_conv4 (Conv2D)	(None, 14, 14, 512)	2359808
global_average_pooling2d (G lobalAveragePooling2D)	(None, 512)	0
dense (Dense)	(None, 128)	65664
dense_1 (Dense)	(None, 128)	16512
main_output_layer (Dense)	(None, 400)	51600

===
Total params: 20,158,160
Trainable params: 9,573,008
Non-trainable params: 10,585,152
_____

```
input_1          InputLayer

block1_conv1     Conv2D

block1_conv2     Conv2D

block1_pool      MaxPooling2D

block2_conv1     Conv2D

block2_conv2     Conv2D

block2_pool      MaxPooling2D

block3_conv1     Conv2D

block3_conv2     Conv2D

block3_conv3     Conv2D

block3_conv4     Conv2D

block3_pool      MaxPooling2D

block4_conv1     Conv2D

block4_conv2     Conv2D

block4_conv3     Conv2D

block4_conv4     Conv2D

block4_pool      MaxPooling2D

block5_conv1     Conv2D

block5_conv2     Conv2D

block5_conv3     Conv2D

block5_conv4     Conv2D

global_average_pooling2d   GlobalAveragePooling2D

dense            Dense

dense_1          Dense

main_output_layer   Dense
```