

<https://keras.io/api/applications/inceptionresnetv2/>

In [1]:

```
import tensorflow as tf
import numpy as np
import pandas as pd
from sklearn.metrics import classification_report, confusion_matrix
import matplotlib.pyplot as plt
import seaborn as sns
import os
```

INFO:tensorflow:Enabling eager execution
INFO:tensorflow:Enabling v2 tensorshape
INFO:tensorflow:Enabling resource variables
INFO:tensorflow:Enabling tensor equality
INFO:tensorflow:Enabling control flow v2

In [2]:

```
epochs = 100 # quantidade de vezes a ser executado o algoritmo, uma epoch é quanto to
batch = 32 # número de amostras que será carregado a cada execução
```

In [3]:

```
#carrega o modelo da InceptionResNetV2 com os pesos aprendidos no treino da Inception
base_model = tf.keras.applications.InceptionResNetV2(weights='imagenet', include_top=
```

In [4]:

```
# o restante do modelo e suas camadas não são discutidos a seguir
# x recebe o final da InceptionResNetV2
x=base_model.output
```

In [5]:

```
#Nova configuração para o modelo

#adiciona apos x uma camada GlobalMaxPooling2D e atribui este no a x novamente (logo
x=tf.keras.layers.GlobalMaxPooling2D()(x)

#adiciona apos x uma camada densa com 128 neurônios com funcao de ativacao relu. Atrib
x=tf.keras.layers.Dense(128,activation='relu')(x)

#adiciona apos x uma camada densa com 64 neurônios com funcao de ativacao relu. Atrib
x=tf.keras.layers.Dense(64,activation='relu')(x)

#adiciona apos x uma camada densa com 32 neurônios com funcao de ativacao relu. Atrib
x=tf.keras.layers.Dense(32,activation='relu')(x)

#adiciona apos x os neurônios que devem ser utilizados, nesse caso foram desligados 2
x=tf.keras.layers.Dropout(0.5)(x)

#adiciona apos x uma camada densa com 7 neurônios (sete classes) com funcao de ativac
#pred=tf.keras.layers.Dense(3,activation='softmax')(x)
pred=tf.keras.layers.Dense(3,activation='sigmoid')(x)

#definindo modelo final
model=tf.keras.models.Model(inputs=base_model.input,outputs=pred)

#mostrando modelo final e sua estrutura
model.summary()
```

Layer (type)	Output Shape	Param #	Connected to
input_1 (InputLayer)	[(None, None, None, 0		
conv2d (Conv2D)	(None, None, None, 3 864		input_1[0][0]
batch_normalization (BatchNorma	(None, None, None, 3 96		conv2d[0][0]
activation (Activation)	(None, None, None, 3 0		batch_normalization
conv2d_1 (Conv2D)	(None, None, None, 3 9216		activation[0][0]
batch_normalization_1 (BatchNor	(None, None, None, 3 96		conv2d_1[0][0]
activation_1 (Activation)	(None, None, None, 3 0		batch_normalization_1
conv2d_2 (Conv2D)	(None, None, None, 6 18432		activation_1[0][0]
batch_normalization_2 (BatchNor	(None, None, None, 6 192		conv2d_2[0][0]
activation_2 (Activation)	(None, None, None, 6 0		batch_normalization_2
max_pooling2d (MaxPooling2D)	(None, None, None, 6 0		activation_2[0][0]
conv2d_3 (Conv2D)	(None, None, None, 8 5120		max_pooling2d[0][0]
batch_normalization_3 (BatchNor	(None, None, None, 8 240		conv2d_3[0][0]
activation_3 (Activation)	(None, None, None, 8 0		batch_normalization_3
conv2d_4 (Conv2D)	(None, None, None, 1 138240		activation_3[0][0]
batch_normalization_4 (BatchNor	(None, None, None, 1 576		conv2d_4[0][0]
activation_4 (Activation)	(None, None, None, 1 0		batch_normalization_4
max_pooling2d_1 (MaxPooling2D)	(None, None, None, 1 0		activation_4[0][0]
conv2d_8 (Conv2D)	(None, None, None, 6 12288		max_pooling2d_1[0][0]
batch_normalization_8 (BatchNor	(None, None, None, 6 192		conv2d_8[0][0]
activation_8 (Activation)	(None, None, None, 6 0		batch_normalization_8
conv2d_6 (Conv2D)	(None, None, None, 4 9216		max_pooling2d_1[0][0]
conv2d_9 (Conv2D)	(None, None, None, 9 55296		activation_8[0][0]
batch_normalization_6 (BatchNor	(None, None, None, 4 144		conv2d_6[0][0]
batch_normalization_9 (BatchNor	(None, None, None, 9 288		conv2d_9[0][0]
activation_6 (Activation)	(None, None, None, 4 0		batch_normalization_
activation_9 (Activation)	(None, None, None, 9 0		batch_normalization_
average_pooling2d (AveragePooli	(None, None, None, 1 0		max_pooling2d_1[0][0]
conv2d_5 (Conv2D)	(None, None, None, 9 18432		max_pooling2d_1[0][0]
conv2d_7 (Conv2D)	(None, None, None, 6 76800		activation_6[0][0]
conv2d_10 (Conv2D)	(None, None, None, 9 82944		activation_9[0][0]
conv2d_11 (Conv2D)	(None, None, None, 6 12288		average_pooling2d[0]
batch_normalization_5 (BatchNor	(None, None, None, 9 288		conv2d_5[0][0]
batch_normalization_7 (BatchNor	(None, None, None, 6 192		conv2d_7[0][0]
batch_normalization_10 (BatchNo	(None, None, None, 9 288		conv2d_10[0][0]
batch_normalization_11 (BatchNo	(None, None, None, 6 192		conv2d_11[0][0]
activation_5 (Activation)	(None, None, None, 9 0		batch_normalization_5
activation_7 (Activation)	(None, None, None, 6 0		batch_normalization_7
activation_10 (Activation)	(None, None, None, 9 0		batch_normalization_1
activation_11 (Activation)	(None, None, None, 6 0		batch_normalization_1
mixed_5b (Concatenate)	(None, None, None, 3 0		activation_5[0][0]
			activation_7[0][0]
			activation_10[0][0]
			activation_11[0][0]
conv2d_15 (Conv2D)	(None, None, None, 3 10240		mixed_5b[0][0]
batch_normalization_15 (BatchNo	(None, None, None, 3 96		conv2d_15[0][0]
activation_15 (Activation)	(None, None, None, 3 0		batch_normalization_1
conv2d_13 (Conv2D)	(None, None, None, 3 10240		mixed_5b[0][0]
conv2d_16 (Conv2D)	(None, None, None, 4 13824		activation_15[0][0]
batch_normalization_13 (BatchNo	(None, None, None, 3 96		conv2d_13[0][0]
batch_normalization_16 (BatchNo	(None, None, None, 4 144		conv2d_16[0][0]
activation_13 (Activation)	(None, None, None, 3 0		batch_normalization_1
activation_16 (Activation)	(None, None, None, 4 0		batch_normalization_1
conv2d_12 (Conv2D)	(None, None, None, 3 10240		mixed_5b[0][0]
conv2d_14 (Conv2D)	(None, None, None, 3 9216		activation_13[0][0]
conv2d_17 (Conv2D)	(None, None, None, 6 27648		activation_16[0][0]
batch_normalization_12 (BatchNo	(None, None, None, 3 96		conv2d_12[0][0]
batch_normalization_14 (BatchNo	(None, None, None, 3 96		conv2d_14[0][0]
batch_normalization_17 (BatchNo	(None, None, None, 6 192		conv2d_17[0][0]
activation_12 (Activation)	(None, None, None, 3 0		batch_normalization_1
activation_14 (Activation)	(None, None, None, 3 0		batch_normalization_1
activation_17 (Activation)	(None, None, None, 6 0		batch_normalization_1
block35_1_mixed (Concatenate)	(None, None, None, 1 0		activation_12[0][0]
			activation_14[0][0]
			activation_17[0][0]
block35_1_conv (Conv2D)	(None, None, None, 3 41280		block35_1_mixed[0][0]
block35_1 (Lambda)	(None, None, None, 3 0		mixed_5b[0][0]
block35_1_ac (Activation)	(None, None, None, 3 0		block35_1_conv[0][0]
conv2d_21 (Conv2D)	(None, None, None, 3 10240		block35_1_ac[0][0]
batch_normalization_21 (BatchNo	(None, None, None, 3 96		conv2d_21[0][0]
activation_21 (Activation)	(None, None, None, 3 0		batch_normalization_2
conv2d_19 (Conv2D)	(None, None, None, 3 10240		block35_1_ac[0][0]
conv2d_22 (Conv2D)	(None, None, None, 4 13824		activation_21[0][0]
batch_normalization_19 (BatchNo	(None, None, None, 3 96		conv2d_19[0][0]
batch_normalization_22 (BatchNo	(None, None, None, 4 144		conv2d_22[0][0]
activation_19 (Activation)	(None, None, None, 3 0		batch_normalization_1
activation_22 (Activation)	(None, None, None, 4 0		batch_normalization_2
conv2d_18 (Conv2D)	(None, None, None, 3 10240		block35_1_ac[0][0]
conv2d_20 (Conv2D)	(None, None, None, 3 9216		activation_19[0][0]
conv2d_23 (Conv2D)	(None, None, None, 6 27648		activation_22[0][0]
batch_normalization_18 (BatchNo	(None, None, None, 3 96		conv2d_18[0][0]
batch_normalization_20 (BatchNo	(None, None, None, 3 96		conv2d_20[0][0]
batch_normalization_23 (BatchNo	(None, None, None, 6 192		conv2d_23[0][0]
activation_18 (Activation)	(None, None, None, 3 0		batch_normalization_1
activation_20 (Activation)	(None, None, None, 3 0		batch_normalization_2
activation_23 (Activation)	(None, None, None, 6 0		batch_normalization_2
block35_2_mixed (Concatenate)	(None, None, None, 1 0		activation_18[0][0]
			activation_20[0][0]
			activation_23[0][0]
block35_2_conv (Conv2D)	(None, None, None, 3 41280		block35_2_mixed[0][0]
block35_2 (Lambda)	(None, None, None, 3 0		block35_1_conv[0][0]
block35_2_ac (Activation)	(None, None, None, 3 0		block35_2[0][0]
conv2d_24 (Conv2D)	(None, None, None, 3 10240		block35_2_ac[0][0]
batch_normalization_27 (BatchNo	(None, None, None, 3 96		conv2d_27[0][0]
activation_27 (Activation)	(None, None, None, 3 0		batch_normalization_2
conv2d_25 (Conv2D)	(None, None, None, 3 10240		block35_2_ac[0][0]
conv2d_28 (Conv2D)	(None, None, None, 4 13824		activation_27[0][0]
batch_normalization_25 (BatchNo	(None, None, None, 3 96		conv2d_25[0][0]
batch_normalization_28 (BatchNo	(None, None, None, 4 144		conv2d_28[0][0]
activation_25 (Activation)	(None, None, None, 3 0		batch_normalization_2
activation_28 (Activation)	(None, None, None, 4 0		batch_normalization_2
conv2d_24 (Conv2D)	(None, None, None, 3 10240		block35_2_ac[0][0]
conv2d_26 (Conv2D)	(None, None, None, 3 9216		activation_25[0][0]
conv2d_29 (Conv2D)	(None, None, None, 6 27648		activation_28[0][0]
batch_normalization_24 (BatchNo	(None, None, None, 3 96		conv2d_24[0][0]
batch_normalization_26 (BatchNo	(None, None, None, 3 96		conv2d_26[0][0]
batch_normalization_29 (BatchNo	(None, None, None, 6 192		conv2d_29[0][0]
activation_24 (Activation)	(None, None, None, 3 0		batch_normalization_2
activation_26 (Activation)	(None, None, None, 3 0		batch_normalization_2
activation_29 (Activation)	(None, None, None, 6 0		batch_normalization_2
block35_3_mixed (Concatenate)	(None, None, None, 1 0		activation_24[0][0]
			activation_26[0][0]
			activation_29[0][0]
block35_3_conv (Conv2D)	(None, None, None, 3 41280		block35_3_mixed[0][0]
block35_3 (Lambda)	(None, None, None, 3 0		block35_2_conv[0][0]
block35_3_ac (Activation)	(None, None, None, 3 0		block35_3[0][0]
conv2d_33 (Conv2D)	(None, None, None, 3 10240		block35_3_ac[0][0]
batch_normalization_33 (BatchNo	(None, None, None, 3 96		conv2d_33[0][0]
activation_33 (Activation)	(None, None, None, 3 0		batch_normalization_3
conv2d_31 (Conv2D)	(None, None, None, 3 10240		block35_3_ac[0][0]
conv2d_34 (Conv2D)	(None, None, None, 4 13824		activation_33[0][0]
batch_normalization_31 (BatchNo	(None, None, None, 3 96		conv2d_31[0][0]
batch_normalization_34 (BatchNo	(None, None, None, 4 144		conv2d_34[0][0]
activation_31 (Activation)	(None, None, None, 3 0		batch_normalization_3
activation_34 (Activation)	(None, None, None, 4 0		batch_normalization_3
conv2d_30 (Conv2D)	(None, None, None, 3 10240		block35_3_ac[0][0]
conv2d_32 (Conv2D)	(None, None, None, 3 9216		activation_31[0][0]
conv2d_35 (Conv2D)	(None, None, None, 6 27648		activation_34[0][0]
batch_normalization_30 (BatchNo	(None, None, None, 3 96		conv2d_30[0][0]
batch_normalization_32 (BatchNo	(None, None, None, 3 96		conv2d_32[0][0]
batch_normalization_35 (BatchNo	(None, None, None, 6 192		conv2d_35[0][0]
activation_30 (Activation)	(None, None, None, 3 0		batch_normalization_3
activation_32 (Activation)	(None, None, None, 3 0		batch_normalization_3
activation_35 (Activation)	(None, None, None, 6 0		batch_normalization_3
block35_4_mixed (Concatenate)	(None, None, None, 1 0		activation_30[0][0]
			activation_32[0][0]
			activation_35[0][0]
block35_4_conv (Conv2D)	(None, None, None, 3 41280		block35_4_mixed[0][0]
block35_4 (Lambda)	(None, None, None, 3 0		block35_3_conv[0][0]
block35_4_ac (Activation)	(None, None, None, 3 0		block35_4[0][0]
conv2d_39 (Conv2D)	(None, None, None, 3 10240		block35_4_ac[0][0]
batch_normalization_39 (BatchNo	(None, None, None, 3 96		conv2d_39[0][0]
activation_39 (Activation)	(None, None, None, 3 0		batch_normalization_3
conv2d_37 (Conv2D)	(None, None, None, 3 10240		block35_4_ac[0][0]
conv2d_40 (Conv2D)	(None, None, None, 4 13824		activation_39[0][0]
batch_normalization_37 (BatchNo	(None, None, None, 3 96		conv2d_37[0][0]
batch_normalization_40 (BatchNo	(None, None, None, 4 144		conv2d_40[0][0]
activation_37 (Activation)	(None, None, None, 3 0		batch_normalization_3
activation_40 (Activation)	(None, None, None, 4 0		batch_normalization_3
conv2d_36 (Conv2D)	(None, None, None, 3 10240		block35_4_ac[0][0]
conv2d_38 (Conv2D)	(None, None, None, 3 9216		activation_37[0][0]
conv2d_41 (Conv2D)	(None, None, None, 6 27648		activation_40[0][0]
batch_normalization_36 (BatchNo	(None, None, None, 3 96		conv2d_36[0][0]
batch_normalization_38 (BatchNo	(None, None, None, 3 96		conv2d_38[0][0]
batch_normalization_41 (BatchNo	(None, None, None, 6 192		conv2d_41[0][0]
activation_36 (Activation)	(None, None, None, 3 0		batch_normalization_3
activation_38 (Activation)	(None, None, None, 3 0		batch_normalization_3
activation_41 (Activation)	(None, None, None, 6 0		batch_normalization_4
block35_5_mixed (Concatenate)	(None, None, None, 1 0		activation_36[0][0]
			activation_38[0][0]
			activation_41[0][0]
block35_5_conv (Conv2D)	(None, None, None, 3 41280		block35_5_mixed[0][0]
block35_5 (Lambda)	(None, None, None, 3 0		block35_4_conv[0][0]
block35_5_ac (Activation)	(None, None, None, 3 0		block35_5[0][0]
conv2d_45 (Conv2D)	(None, None, None, 3 10240		block35_5_ac[0][0]
batch_normalization_45 (BatchNo	(None, None, None, 3 96		conv2d_45[0][0]
activation_45 (Activation)	(None, None, None, 3 0		batch_normalization_4
conv2d_43 (Conv2D)	(None, None, None, 3 10240		block35_5_ac[0][0]
conv2d_46 (Conv2D)	(None, None, None, 4 13824		activation_45[0][0]
batch_normalization_43 (BatchNo	(None, None, None, 3 96		conv2d_43[0][0]
batch_normalization_46 (BatchNo	(None, None, None, 4 144		conv2d_46[0][0]
activation_43 (Activation)	(None, None, None, 3 0		batch_normalization_4
activation_46 (Activation)	(None, None, None, 4 0		batch_normalization_4
conv2d_42 (Conv2D)	(None, None, None, 3 10240		block35_5_ac[0][0]
conv2d_44 (Conv2D)	(None, None, None, 3 9216		activation_43[0][0]
conv2d_47 (Conv2D)	(None, None, None, 6 27648		activation_46[0][0]
batch_normalization_42 (BatchNo	(None, None, None, 3 96		conv2d_42[0][0]
batch_normalization_44 (BatchNo	(None, None, None, 3 96		conv2d_44[0][0]
batch_normalization_47 (BatchNo	(None, None, None, 6 192		conv2d_47[0][0]
activation_42 (Activation)	(None, None, None, 3 0		batch_normalization_4
activation_44 (Activation)	(None, None, None, 3 0		batch_normalization_4
activation_47 (Activation)	(None, None, None, 6 0		batch_normalization_4
block35_6_mixed (Concatenate)	(None, None, None, 1 0		activation_42[0][0]
			activation_44[0][0]
			activation_47[0][0]
block35_6_conv (Conv2D)	(None, None, None, 3 41280		block35_6_mixed[0][0]
block35_6 (Lambda)	(None, None, None, 3 0		block35_5_conv[0][0]
block35_6_ac (Activation)	(None, None, None, 3 0		block35_6[0][0]
conv2d_51 (Conv2D)	(None, None, None, 3 10240		block35_6_ac[0][0]
batch_normalization_51 (BatchNo	(None, None, None, 3 96		conv2d_51[0][0]
activation_51 (Activation)	(None, None, None, 3 0		batch_normalization_5
conv2d_49 (Conv2D)	(None, None, None, 3 10240		block35_6_ac[0][0]
conv2d_52 (Conv2D)	(None, None, None, 4 13824		activation_51[0][0]
batch_normalization_49 (BatchNo	(None, None, None, 3 96		conv2d_49[0][0]
batch_normalization_52 (BatchNo	(None, None, None, 4 144		conv2d_52[0][0]
activation_49 (Activation)	(None, None, None, 3 0		batch_normalization_4
activation_52 (Activation)	(None, None, None, 4 0		batch_normalization_5
conv2d_48 (Conv2D)	(None, None, None, 3 10240		block35_6_ac[0][0]
conv2d_50 (Conv2D)	(None, None, None, 3 9216		activation_49[0][0]
conv2d_53 (Conv2D)	(None, None, None, 6 27648		activation_52[0][0]
batch_normalization_48 (BatchNo	(None, None, None, 3 96		conv2d_48[0][0]
batch_normalization_50 (BatchNo	(None, None, None, 3 96		conv2d_50[0][0]
batch_normalization_53 (BatchNo	(None, None, None, 6 192		conv2d_53[0][0]
activation_48 (Activation)	(None, None, None, 3 0		batch_normalization_4
activation_50 (Activation)	(None, None, None, 3 0		batch_normalization_5
activation_53 (Activation)	(None, None, None, 6 0		batch_normalization_5
block35_7_mixed (Concatenate)	(None, None, None, 1 0		activation_48[0][0]
			activation_50[0][0]
			activation_53[0][0]
block35_7_conv (Conv2D)	(None, None, None, 3 41280		block35_7_mixed[0][0]
block35_7 (Lambda)	(None, None, None, 3 0		block35_6_conv[0][0]
block35_7_ac (Activation)	(None, None, None, 3 0		block35_7[0][0]
conv2d_57 (Conv2D)	(None, None, None, 3 10240		block35_7_ac[0][0]
batch_normalization_57 (BatchNo	(None, None, None, 3 96		conv2d_57[0][0]
activation_57 (Activation)	(None, None, None, 3 0		batch_normalization_5
conv2d_55 (Conv2D)	(None, None, None, 3 10240		block35_7_ac[0][0]
conv2d_58 (Conv2D)	(None, None, None, 4 13824		activation_57[0][0]
batch_normalization_55 (BatchNo	(None, None, None, 3 96		conv2d_55[0][0]
batch_normalization_58 (BatchNo	(None, None, None, 4 144		conv2d_58[0][0]
activation_55 (Activation)	(None, None, None, 3 0		batch_normalization_5
activation_58 (Activation)	(None, None, None, 4 0		batch_normalization_5
conv2d_54 (Conv2D)	(None, None, None, 3 10240		block35_7_ac[0][0]
conv2d_56 (Conv2D)	(None, None, None, 3 9216		activation_55[0][0]
conv2d_59 (Conv2D)	(None, None, None, 6 27648		activation_58[0][0]
batch_normalization_54 (BatchNo	(None, None, None, 3 96		conv2d_54[0][0]
batch_normalization_56 (BatchNo	(None, None, None, 3 96		conv2d_56[0][0]
batch_normalization_59 (BatchNo	(None, None, None, 6 192		conv2d_59[0][0]
activation_54 (Activation)	(None, None, None, 3 0		batch_normalization_5

4[0][0]		
activation_56 (Activation)	(None, None, None, 3 0	batch_normalization_56[0][0]
activation_59 (Activation)	(None, None, None, 6 0	batch_normalization_59[0][0]
block35_8_mixed (Concatenate)	(None, None, None, 1 0	activation_54[0][0] activation_56[0][0] activation_59[0][0]
block35_8_conv (Conv2D)	(None, None, None, 3 41280	block35_8_mixed[0][0]
block35_8 (Lambda)	(None, None, None, 3 0	block35_7_ac[0][0] block35_8_conv[0][0]
block35_8_ac (Activation)	(None, None, None, 3 0	block35_8[0][0]
conv2d_63 (Conv2D)	(None, None, None, 3 10240	block35_8_ac[0][0]
batch_normalization_63 (BatchNo	(None, None, None, 3 96	conv2d_63[0][0]
activation_63 (Activation)	(None, None, None, 3 0	batch_normalization_63[0][0]
conv2d_61 (Conv2D)	(None, None, None, 3 10240	block35_8_ac[0][0]
conv2d_64 (Conv2D)	(None, None, None, 4 13824	activation_63[0][0]
batch_normalization_61 (BatchNo	(None, None, None, 3 96	conv2d_61[0][0]
batch_normalization_64 (BatchNo	(None, None, None, 4 144	conv2d_64[0][0]
activation_61 (Activation)	(None, None, None, 3 0	batch_normalization_61[0][0]
activation_64 (Activation)	(None, None, None, 4 0	batch_normalization_64[0][0]
conv2d_60 (Conv2D)	(None, None, None, 3 10240	block35_8_ac[0][0]
conv2d_62 (Conv2D)	(None, None, None, 3 9216	activation_61[0][0]
conv2d_65 (Conv2D)	(None, None, None, 6 27648	activation_64[0][0]
batch_normalization_60 (BatchNo	(None, None, None, 3 96	conv2d_60[0][0]
batch_normalization_62 (BatchNo	(None, None, None, 3 96	conv2d_62[0][0]
batch_normalization_65 (BatchNo	(None, None, None, 6 192	conv2d_65[0][0]
activation_60 (Activation)	(None, None, None, 3 0	batch_normalization_60[0][0]
activation_62 (Activation)	(None, None, None, 3 0	batch_normalization_62[0][0]
activation_65 (Activation)	(None, None, None, 6 0	batch_normalization_65[0][0]
block35_9_mixed (Concatenate)	(None, None, None, 1 0	activation_60[0][0] activation_62[0][0] activation_65[0][0]
block35_9_conv (Conv2D)	(None, None, None, 3 41280	block35_9_mixed[0][0]
block35_9 (Lambda)	(None, None, None, 3 0	block35_8_ac[0][0] block35_9_conv[0][0]
block35_9_ac (Activation)	(None, None, None, 3 0	block35_9[0][0]
conv2d_69 (Conv2D)	(None, None, None, 3 10240	block35_9_ac[0][0]
batch_normalization_69 (BatchNo	(None, None, None, 3 96	conv2d_69[0][0]
activation_69 (Activation)	(None, None, None, 3 0	batch_normalization_69[0][0]
conv2d_67 (Conv2D)	(None, None, None, 3 10240	block35_9_ac[0][0]
conv2d_70 (Conv2D)	(None, None, None, 4 13824	activation_69[0][0]
batch_normalization_67 (BatchNo	(None, None, None, 3 96	conv2d_67[0][0]
batch_normalization_70 (BatchNo	(None, None, None, 4 144	conv2d_70[0][0]
activation_67 (Activation)	(None, None, None, 3 0	batch_normalization_67[0][0]
activation_70 (Activation)	(None, None, None, 4 0	batch_normalization_70[0][0]
conv2d_66 (Conv2D)	(None, None, None, 3 10240	block35_9_ac[0][0]
conv2d_68 (Conv2D)	(None, None, None, 3 9216	activation_67[0][0]
conv2d_71 (Conv2D)	(None, None, None, 6 27648	activation_70[0][0]
batch_normalization_66 (BatchNo	(None, None, None, 3 96	conv2d_66[0][0]
batch_normalization_68 (BatchNo	(None, None, None, 3 96	conv2d_68[0][0]
batch_normalization_71 (BatchNo	(None, None, None, 6 192	conv2d_71[0][0]
activation_66 (Activation)	(None, None, None, 3 0	batch_normalization_66[0][0]
activation_68 (Activation)	(None, None, None, 3 0	batch_normalization_68[0][0]
activation_71 (Activation)	(None, None, None, 6 0	batch_normalization_71[0][0]
block35_10_mixed (Concatenate)	(None, None, None, 1 0	activation_66[0][0] activation_68[0][0] activation_71[0][0]
block35_10_conv (Conv2D)	(None, None, None, 3 41280	block35_10_mixed[0]
block35_10 (Lambda)	(None, None, None, 3 0	block35_9_ac[0][0] block35_10_conv[0][0]
block35_10_ac (Activation)	(None, None, None, 3 0	block35_10[0][0]
conv2d_73 (Conv2D)	(None, None, None, 2 81920	block35_10_ac[0][0]
batch_normalization_73 (BatchNo	(None, None, None, 2 768	conv2d_73[0][0]
activation_73 (Activation)	(None, None, None, 2 0	batch_normalization_73[0][0]
conv2d_74 (Conv2D)	(None, None, None, 2 589824	activation_73[0][0]
batch_normalization_74 (BatchNo	(None, None, None, 2 768	conv2d_74[0][0]
activation_74 (Activation)	(None, None, None, 2 0	batch_normalization_74[0][0]
conv2d_72 (Conv2D)	(None, None, None, 3 1105920	block35_10_ac[0][0]
conv2d_75 (Conv2D)	(None, None, None, 3 884736	activation_74[0][0]
batch_normalization_72 (BatchNo	(None, None, None, 3 1152	conv2d_72[0][0]
batch_normalization_75 (BatchNo	(None, None, None, 3 1152	conv2d_75[0][0]
activation_72 (Activation)	(None, None, None, 3 0	batch_normalization_72[0][0]
activation_75 (Activation)	(None, None, None, 3 0	batch_normalization_75[0][0]
max_pooling2d_2 (MaxPooling2D)	(None, None, None, 3 0	block35_10_ac[0][0]
mixed_6a (Concatenate)	(None, None, None, 1 0	activation_72[0][0] activation_75[0][0] max_pooling2d_2[0][0]
conv2d_77 (Conv2D)	(None, None, None, 1 139264	mixed_6a[0][0]
batch_normalization_77 (BatchNo	(None, None, None, 1 384	conv2d_77[0][0]
activation_77 (Activation)	(None, None, None, 1 0	batch_normalization_77[0][0]
conv2d_78 (Conv2D)	(None, None, None, 1 143360	activation_77[0][0]
batch_normalization_78 (BatchNo	(None, None, None, 1 480	conv2d_78[0][0]
activation_78 (Activation)	(None, None, None, 1 0	batch_normalization_78[0][0]
conv2d_76 (Conv2D)	(None, None, None, 1 208896	mixed_6a[0][0]
conv2d_79 (Conv2D)	(None, None, None, 1 215040	activation_78[0][0]
batch_normalization_76 (BatchNo	(None, None, None, 1 576	conv2d_76[0][0]
batch_normalization_79 (BatchNo	(None, None, None, 1 576	conv2d_79[0][0]
activation_76 (Activation)	(None, None, None, 1 0	batch_normalization_76[0][0]
activation_79 (Activation)	(None, None, None, 1 0	batch_normalization_79[0][0]
block17_1_mixed (Concatenate)	(None, None, None, 3 0	activation_76[0][0] activation_79[0][0]
block17_1_conv (Conv2D)	(None, None, None, 1 418880	block17_1_mixed[0][0]
block17_1 (Lambda)	(None, None, None, 1 0	mixed_6a[0][0] block17_1_conv[0][0]
block17_1_ac (Activation)	(None, None, None, 1 0	block17_1[0][0]
conv2d_81 (Conv2D)	(None, None, None, 1 139264	block17_1_ac[0][0]
batch_normalization_81 (BatchNo	(None, None, None, 1 384	conv2d_81[0][0]
activation_81 (Activation)	(None, None, None, 1 0	batch_normalization_81[0][0]
conv2d_82 (Conv2D)	(None, None, None, 1 143360	activation_81[0][0]
batch_normalization_82 (BatchNo	(None, None, None, 1 480	conv2d_82[0][0]
activation_82 (Activation)	(None, None, None, 1 0	batch_normalization_82[0][0]
conv2d_80 (Conv2D)	(None, None, None, 1 208896	block17_1_ac[0][0]
conv2d_83 (Conv2D)	(None, None, None, 1 215040	activation_82[0][0]
batch_normalization_80 (BatchNo	(None, None, None, 1 576	conv2d_80[0][0]
batch_normalization_83 (BatchNo	(None, None, None, 1 576	conv2d_83[0][0]
activation_80 (Activation)	(None, None, None, 1 0	batch_normalization_80[0][0]
activation_83 (Activation)	(None, None, None, 1 0	batch_normalization_83[0][0]
block17_2_mixed (Concatenate)	(None, None, None, 3 0	activation_80[0][0] activation_83[0][0]
block17_2_conv (Conv2D)	(None, None, None, 1 418880	block17_2_mixed[0][0]
block17_2 (Lambda)	(None, None, None, 1 0	block17_1_ac[0][0] block17_2_conv[0][0]
block17_2_ac (Activation)	(None, None, None, 1 0	block17_2[0][0]
conv2d_85 (Conv2D)	(None, None, None, 1 139264	block17_2_ac[0][0]
batch_normalization_85 (BatchNo	(None, None, None, 1 384	conv2d_85[0][0]
activation_85 (Activation)	(None, None, None, 1 0	batch_normalization_85[0][0]
conv2d_86 (Conv2D)	(None, None, None, 1 143360	activation_85[0][0]
batch_normalization_86 (BatchNo	(None, None, None, 1 480	conv2d_86[0][0]
activation_86 (Activation)	(None, None, None, 1 0	batch_normalization_86[0][0]
conv2d_84 (Conv2D)	(None, None, None, 1 208896	block17_2_ac[0][0]
conv2d_87 (Conv2D)	(None, None, None, 1 215040	activation_86[0][0]
batch_normalization_84 (BatchNo	(None, None, None, 1 576	conv2d_84[0][0]
batch_normalization_87 (BatchNo	(None, None, None, 1 576	conv2d_87[0][0]
activation_84 (Activation)	(None, None, None, 1 0	batch_normalization_84[0][0]
activation_87 (Activation)	(None, None, None, 1 0	batch_normalization_87[0][0]
block17_3_mixed (Concatenate)	(None, None, None, 3 0	activation_84[0][0] activation_87[0][0]
block17_3_conv (Conv2D)	(None, None, None, 1 418880	block17_3_mixed[0][0]
block17_3 (Lambda)	(None, None, None, 1 0	block17_2_ac[0][0] block17_3_conv[0][0]
block17_3_ac (Activation)	(None, None, None, 1 0	block17_3[0][0]
conv2d_89 (Conv2D)	(None, None, None, 1 139264	block17_3_ac[0][0]
batch_normalization_89 (BatchNo	(None, None, None, 1 384	conv2d_89[0][0]
activation_89 (Activation)	(None, None, None, 1 0	batch_normalization_89[0][0]
conv2d_90 (Conv2D)	(None, None, None, 1 143360	activation_89[0][0]
batch_normalization_90 (BatchNo	(None, None, None, 1 480	conv2d_90[0][0]
activation_90 (Activation)	(None, None, None, 1 0	batch_normalization_90[0][0]
conv2d_88 (Conv2D)	(None, None, None, 1 208896	block17_3_ac[0][0]
conv2d_91 (Conv2D)	(None, None, None, 1 215040	activation_90[0][0]
batch_normalization_88 (BatchNo	(None, None, None, 1 576	conv2d_88[0][0]
batch_normalization_91 (BatchNo	(None, None, None, 1 576	conv2d_91[0][0]
activation_88 (Activation)	(None, None, None, 1 0	batch_normalization_88[0][0]
activation_91 (Activation)	(None, None, None, 1 0	batch_normalization_91[0][0]
block17_4_mixed (Concatenate)	(None, None, None, 3 0	activation_88[0][0] activation_91[0][0]
block17_4_conv (Conv2D)	(None, None, None, 1 418880	block17_4_mixed[0][0]
block17_4 (Lambda)	(None, None, None, 1 0	block17_3_ac[0][0] block17_4_conv[0][0]
block17_4_ac (Activation)	(None, None, None, 1 0	block17_4[0][0]
conv2d_93 (Conv2D)	(None, None, None, 1 139264	block17_4_ac[0][0]
batch_normalization_93 (BatchNo	(None, None, None, 1 384	conv2d_93[0][0]
activation_93 (Activation)	(None, None, None, 1 0	batch_normalization_93[0][0]
conv2d_94 (Conv2D)	(None, None, None, 1 143360	activation_93[0][0]
batch_normalization_94 (BatchNo	(None, None, None, 1 480	conv2d_94[0][0]
activation_94 (Activation)	(None, None, None, 1 0	batch_normalization_94[0][0]
conv2d_92 (Conv2D)	(None, None, None, 1 208896	block17_4_ac[0][0]
conv2d_95 (Conv2D)	(None, None, None, 1 215040	activation_94[0][0]
batch_normalization_92 (BatchNo	(None, None, None, 1 576	conv2d_92[0][0]
batch_normalization_95 (BatchNo	(None, None, None, 1 576	conv2d_95[0][0]
activation_92 (Activation)	(None, None, None, 1 0	batch_normalization_92[0][0]
activation_95 (Activation)	(None, None, None, 1 0	batch_normalization_95[0][0]
block17_5_mixed (Concatenate)	(None, None, None, 3 0	activation_92[0][0] activation_95[0][0]
block17_5_conv (Conv2D)	(None, None, None, 1 418880	block17_5_mixed[0][0]
block17_5 (Lambda)	(None, None, None, 1 0	block17_4_ac[0][0] block17_5_conv[0][0]
block17_5_ac (Activation)	(None, None, None, 1 0	block17_5[0][0]
conv2d_97 (Conv2D)	(None, None, None, 1 139264	block17_5_ac[0][0]
batch_normalization_97 (BatchNo	(None, None, None, 1 384	conv2d_97[0][0]
activation_97 (Activation)	(None, None, None, 1 0	batch_normalization_97[0][0]
conv2d_98 (Conv2D)	(None, None, None, 1 143360	activation_97[0][0]
batch_normalization_98 (BatchNo	(None, None, None, 1 480	conv2d_98[0][0]
activation_98 (Activation)	(None, None, None, 1 0	batch_normalization_98[0][0]
conv2d_96 (Conv2D)	(None, None, None, 1 208896	block17_5_ac[0][0]
conv2d_99 (Conv2D)	(None, None, None, 1 215040	activation_98[0][0]
batch_normalization_96 (BatchNo	(None, None, None, 1 576	conv2d_96[0][0]
batch_normalization_99 (BatchNo	(None, None, None, 1 576	conv2d_99[0][0]
activation_96 (Activation)	(None, None, None, 1 0	batch_normalization_96[0][0]
activation_99 (Activation)	(None, None, None, 1 0	batch_normalization_99[0][0]
block17_6_mixed (Concatenate)	(None, None, None, 3 0	activation_96[0][0] activation_99[0][0]
block17_6_conv (Conv2D)	(None, None, None, 1 418880	block17_6_mixed[0][0]
block17_6 (Lambda)	(None, None, None, 1 0	block17_5_ac[0][0] block17_6_conv[0][0]
block17_6_ac (Activation)	(None, None, None, 1 0	block17_6[0][0]
conv2d_101 (Conv2D)	(None, None, None, 1 139264	block17_6_ac[0][0]
batch_normalization_101 (BatchN	(None, None, None, 1 384	conv2d_101[0][0]
activation_101 (Activation)	(None, None, None, 1 0	batch_normalization_101[0][0]
conv2d_102 (Conv2D)	(None, None, None, 1 143360	activation_101[0][0]
batch_normalization_102 (BatchN	(None, None, None, 1 480	conv2d_102[0][0]
activation_102 (Activation)	(None, None, None, 1 0	batch_normalization_102[0][0]
conv2d_100 (Conv2D)	(None, None, None, 1 208896	block17_6_ac[0][0]
conv2d_103 (Conv2D)	(None, None, None, 1 215040	activation_102[0][0]
batch_normalization_100 (BatchN	(None, None, None, 1 576	conv2d_100[0][0]
batch_normalization_103 (BatchN	(None, None, None, 1 576	conv2d_103[0][0]
activation_100 (Activation)	(None, None, None, 1 0	batch_normalization_100[0][0]
activation_103 (Activation)	(None, None, None, 1 0	batch_normalization_103[0][0]
block17_7_mixed (Concatenate)	(None, None, None, 3 0	activation_100[0][0] activation_103[0][0]
block17_7_conv (Conv2D)	(None, None, None, 1 418880	block17_7_mixed[0][0]
block17_7 (Lambda)	(None, None, None, 1 0	block17_6_ac[0][0] block17_7_conv[0][0]
block17_7_ac (Activation)	(None, None, None, 1 0	block17_7[0][0]
conv2d_105 (Conv2D)	(None, None, None, 1 139264	block17_7_ac[0][0]
batch_normalization_105 (BatchN	(None, None, None, 1 384	conv2d_105[0][0]
activation_105 (Activation)	(None, None, None, 1 0	batch_normalization_105[0][0]
conv2d_106 (Conv2D)	(None, None, None, 1 143360	activation_105[0][0]
batch_normalization_106 (BatchN	(None, None, None, 1 480	conv2d_106[0][0]
activation_106 (Activation)	(None, None, None, 1 0	batch_normalization_106[0][0]
conv2d_104 (Conv2D)	(None, None, None, 1 208896	block17_7_ac[0][0]
conv2d_107 (Conv2D)	(None, None, None, 1 215040	activation_106[0][0]
batch_normalization_104 (BatchN	(None, None, None, 1 576	conv2d_104[0][0]
batch_normalization_107 (BatchN	(None, None, None, 1 576	conv2d_107[0][0]
activation_104 (Activation)	(None, None, None, 1 0	batch_normalization_104[0][0]
activation_107 (Activation)	(None, None, None, 1 0	batch_normalization_107[0][0]
block17_8_mixed (Concatenate)	(None, None, None, 3 0	activation_104[0][0] activation_107[0][0]
block17_8_conv (Conv2D)	(None, None, None, 1 418880	block17_8_mixed[0][0]
block17_8 (Lambda)	(None, None, None, 1 0	block17_7_ac[0][0] block17_8_conv[0][0]
block17_8_ac (Activation)	(None, None, None, 1 0	block17_8[0][0]
conv2d_109 (Conv2D)	(None, None, None, 1 139264	block17_8_ac[0][0]
batch_normalization_109 (BatchN	(None, None, None, 1 384	conv2d_109[0][0]
activation_109 (Activation)	(None, None, None, 1 0	batch_normalization_109[0][0]
conv2d_110 (Conv2D)	(None, None, None, 1 143360	activation_109[0][0]
batch_normalization_110 (BatchN	(None, None, None, 1 480	conv2d_110[0][0]
activation_110 (Activation)	(None, None, None, 1 0	batch_normalization_110[0][0]
conv2d_108 (Conv2D)	(None, None, None, 1 208896	block17_8_ac[0][0]
conv2d_111 (Conv2D)	(None, None, None, 1 215040	activation_110[0][0]
batch_normalization_108 (BatchN	(None, None, None, 1 576	conv2d_108[0][0]
batch_normalization_111 (BatchN	(None, None, None, 1 576	conv2d_111[0][0]
activation_108 (Activation)	(None, None, None, 1 0	batch_normalization_108[0][0]
activation_111 (Activation)	(None, None, None, 1 0	batch_normalization_111[0][0]
block17_9_mixed (Concatenate)	(None, None, None, 3 0	activation_108[0][0] activation_111[0][0]
block17_9_conv (Conv2D)	(None, None, None, 1 418880	block17_9_mixed[0][0]
block17_9 (Lambda)	(None, None, None, 1 0	block17_8_ac[0][0] block17_9_conv[0][0]
block17_9_ac (Activation)	(None, None, None, 1 0	block17_9[0][0]
conv2d_113 (Conv2D)	(None, None, None, 1 139264	block17_9_ac[0][0]
batch_normalization_113 (BatchN	(None, None, None, 1 384	conv2d_113[0][0]
activation_113 (Activation)	(None, None, None, 1 0	batch_normalization_113[0][0]
conv2d_114 (Conv2D)	(None, None, None, 1 143360	activation_113[0][0]
batch_normalization_114 (BatchN	(None, None, None, 1 480	conv2d_114[0][0]
activation_114 (Activation)	(None, None, None, 1 0	batch_normalization_114[0][0]
conv2d_112 (Conv2D)	(None, None, None, 1 208896	block17_9_ac[0][0]
conv2d_115 (Conv2D)	(None, None, None, 1 215040	activation_114[0][0]
batch_normalization_112 (BatchN	(None, None, None, 1 576	conv2d_112[0][0]
batch_normalization_115 (BatchN	(None, None, None, 1 576	conv2d_115[0][0]
activation_112 (Activation)	(None, None, None, 1 0	batch_normalization_112[0][0]
activation_115 (Activation)	(None, None, None, 1 0	batch_normalization_115[0][0]
block17_10_mixed (Concatenate)	(None, None, None, 3 0	activation_112[0][0] activation_115[0][0]
block17_10_conv (Conv2D)	(None, None, None, 1 418880	block17_10_mixed[0]
block17_10 (Lambda)	(None, None, None, 1 0	block17_9_ac[0][0] block17_10_conv[0][0]
block17_10_ac (Activation)	(None, None, None, 1 0	block17_10[0][0]

conv2d_117 (Conv2D)	(None, None, None, 1 139264	block17_10_ac[0][0]
batch_normalization_117 (BatchN	(None, None, None, 1 384	conv2d_117[0][0]
activation_117 (Activation) 17[0][0]	(None, None, None, 1 0	batch_normalization_1
conv2d_118 (Conv2D)	(None, None, None, 1 143360	activation_117[0][0]
batch_normalization_118 (BatchN	(None, None, None, 1 480	conv2d_118[0][0]
activation_118 (Activation) 18[0][0]	(None, None, None, 1 0	batch_normalization_1
conv2d_116 (Conv2D)	(None, None, None, 1 208896	block17_10_ac[0][0]
conv2d_119 (Conv2D)	(None, None, None, 1 215040	activation_118[0][0]
batch_normalization_116 (BatchN	(None, None, None, 1 576	conv2d_116[0][0]
batch_normalization_119 (BatchN	(None, None, None, 1 576	conv2d_119[0][0]
activation_116 (Activation) 16[0][0]	(None, None, None, 1 0	batch_normalization_1
activation_119 (Activation) 19[0][0]	(None, None, None, 1 0	batch_normalization_1
block17_l1_mixed (Concatenate)	(None, None, None, 3 0	activation_116[0][0]
		activation_119[0][0]
block17_l1_conv (Conv2D) [0]	(None, None, None, 1 418880	block17_l1_mixed[0]
block17_l1 (Lambda)	(None, None, None, 1 0	block17_10_ac[0][0]
		block17_l1_conv[0][0]
block17_l1_ac (Activation)	(None, None, None, 1 0	block17_l1[0][0]
conv2d_121 (Conv2D)	(None, None, None, 1 139264	block17_l1_ac[0][0]
batch_normalization_121 (BatchN	(None, None, None, 1 384	conv2d_121[0][0]
activation_121 (Activation) 21[0][0]	(None, None, None, 1 0	batch_normalization_1
conv2d_122 (Conv2D)	(None, None, None, 1 143360	activation_121[0][0]
batch_normalization_122 (BatchN	(None, None, None, 1 480	conv2d_122[0][0]
activation_122 (Activation) 22[0][0]	(None, None, None, 1 0	batch_normalization_1
conv2d_120 (Conv2D)	(None, None, None, 1 208896	block17_l1_ac[0][0]
conv2d_123 (Conv2D)	(None, None, None, 1 215040	activation_122[0][0]
batch_normalization_120 (BatchN	(None, None, None, 1 576	conv2d_120[0][0]
batch_normalization_123 (BatchN	(None, None, None, 1 576	conv2d_123[0][0]
activation_120 (Activation) 20[0][0]	(None, None, None, 1 0	batch_normalization_1
activation_123 (Activation) 23[0][0]	(None, None, None, 1 0	batch_normalization_1
block17_12_mixed (Concatenate)	(None, None, None, 3 0	activation_120[0][0]
		activation_123[0][0]
block17_12_conv (Conv2D) [0]	(None, None, None, 1 418880	block17_12_mixed[0]
block17_12 (Lambda)	(None, None, None, 1 0	block17_l1_ac[0][0]
		block17_12_conv[0][0]
block17_12_ac (Activation)	(None, None, None, 1 0	block17_12[0][0]
conv2d_125 (Conv2D)	(None, None, None, 1 139264	block17_12_ac[0][0]
batch_normalization_125 (BatchN	(None, None, None, 1 384	conv2d_125[0][0]
activation_125 (Activation) 25[0][0]	(None, None, None, 1 0	batch_normalization_1
conv2d_126 (Conv2D)	(None, None, None, 1 143360	activation_125[0][0]
batch_normalization_126 (BatchN	(None, None, None, 1 480	conv2d_126[0][0]
activation_126 (Activation) 26[0][0]	(None, None, None, 1 0	batch_normalization_1
conv2d_124 (Conv2D)	(None, None, None, 1 208896	block17_12_ac[0][0]
conv2d_127 (Conv2D)	(None, None, None, 1 215040	activation_126[0][0]
batch_normalization_124 (BatchN	(None, None, None, 1 576	conv2d_124[0][0]
batch_normalization_127 (BatchN	(None, None, None, 1 576	conv2d_127[0][0]
activation_124 (Activation) 24[0][0]	(None, None, None, 1 0	batch_normalization_1
activation_127 (Activation) 27[0][0]	(None, None, None, 1 0	batch_normalization_1
block17_13_mixed (Concatenate)	(None, None, None, 3 0	activation_124[0][0]
		activation_127[0][0]
block17_13_conv (Conv2D) [0]	(None, None, None, 1 418880	block17_13_mixed[0]
block17_13 (Lambda)	(None, None, None, 1 0	block17_12_ac[0][0]
		block17_13_conv[0][0]
block17_13_ac (Activation)	(None, None, None, 1 0	block17_13[0][0]
conv2d_129 (Conv2D)	(None, None, None, 1 139264	block17_13_ac[0][0]
batch_normalization_129 (BatchN	(None, None, None, 1 384	conv2d_129[0][0]
activation_129 (Activation) 29[0][0]	(None, None, None, 1 0	batch_normalization_1
conv2d_130 (Conv2D)	(None, None, None, 1 143360	activation_129[0][0]
batch_normalization_130 (BatchN	(None, None, None, 1 480	conv2d_130[0][0]
activation_130 (Activation) 30[0][0]	(None, None, None, 1 0	batch_normalization_1
conv2d_128 (Conv2D)	(None, None, None, 1 208896	block17_13_ac[0][0]
conv2d_131 (Conv2D)	(None, None, None, 1 215040	activation_130[0][0]
batch_normalization_128 (BatchN	(None, None, None, 1 576	conv2d_128[0][0]
batch_normalization_131 (BatchN	(None, None, None, 1 576	conv2d_131[0][0]
activation_128 (Activation) 28[0][0]	(None, None, None, 1 0	batch_normalization_1
activation_131 (Activation) 31[0][0]	(None, None, None, 1 0	batch_normalization_1
block17_14_mixed (Concatenate)	(None, None, None, 3 0	activation_128[0][0]
		activation_131[0][0]
block17_14_conv (Conv2D) [0]	(None, None, None, 1 418880	block17_14_mixed[0]
block17_14 (Lambda)	(None, None, None, 1 0	block17_13_ac[0][0]
		block17_14_conv[0][0]
block17_14_ac (Activation)	(None, None, None, 1 0	block17_14[0][0]
conv2d_133 (Conv2D)	(None, None, None, 1 139264	block17_14_ac[0][0]
batch_normalization_133 (BatchN	(None, None, None, 1 384	conv2d_133[0][0]
activation_133 (Activation) 33[0][0]	(None, None, None, 1 0	batch_normalization_1
conv2d_134 (Conv2D)	(None, None, None, 1 143360	activation_133[0][0]
batch_normalization_134 (BatchN	(None, None, None, 1 480	conv2d_134[0][0]
activation_134 (Activation) 34[0][0]	(None, None, None, 1 0	batch_normalization_1
conv2d_132 (Conv2D)	(None, None, None, 1 208896	block17_14_ac[0][0]
conv2d_135 (Conv2D)	(None, None, None, 1 215040	activation_134[0][0]
batch_normalization_132 (BatchN	(None, None, None, 1 576	conv2d_132[0][0]
batch_normalization_135 (BatchN	(None, None, None, 1 576	conv2d_135[0][0]
activation_132 (Activation) 32[0][0]	(None, None, None, 1 0	batch_normalization_1
activation_135 (Activation) 35[0][0]	(None, None, None, 1 0	batch_normalization_1
block17_15_mixed (Concatenate)	(None, None, None, 3 0	activation_132[0][0]
		activation_135[0][0]
block17_15_conv (Conv2D) [0]	(None, None, None, 1 418880	block17_15_mixed[0]
block17_15 (Lambda)	(None, None, None, 1 0	block17_14_ac[0][0]
		block17_15_conv[0][0]
block17_15_ac (Activation)	(None, None, None, 1 0	block17_15[0][0]
conv2d_137 (Conv2D)	(None, None, None, 1 139264	block17_15_ac[0][0]
batch_normalization_137 (BatchN	(None, None, None, 1 384	conv2d_137[0][0]
activation_137 (Activation) 37[0][0]	(None, None, None, 1 0	batch_normalization_1
conv2d_138 (Conv2D)	(None, None, None, 1 143360	activation_137[0][0]
batch_normalization_138 (BatchN	(None, None, None, 1 480	conv2d_138[0][0]
activation_138 (Activation) 38[0][0]	(None, None, None, 1 0	batch_normalization_1
conv2d_136 (Conv2D)	(None, None, None, 1 208896	block17_15_ac[0][0]
conv2d_139 (Conv2D)	(None, None, None, 1 215040	activation_138[0][0]
batch_normalization_136 (BatchN	(None, None, None, 1 576	conv2d_136[0][0]
batch_normalization_139 (BatchN	(None, None, None, 1 576	conv2d_139[0][0]
activation_136 (Activation) 36[0][0]	(None, None, None, 1 0	batch_normalization_1
activation_139 (Activation) 39[0][0]	(None, None, None, 1 0	batch_normalization_1
block17_16_mixed (Concatenate)	(None, None, None, 3 0	activation_136[0][0]
		activation_139[0][0]
block17_16_conv (Conv2D) [0]	(None, None, None, 1 418880	block17_16_mixed[0]
block17_16 (Lambda)	(None, None, None, 1 0	block17_15_ac[0][0]
		block17_16_conv[0][0]
block17_16_ac (Activation)	(None, None, None, 1 0	block17_16[0][0]
conv2d_141 (Conv2D)	(None, None, None, 1 139264	block17_16_ac[0][0]
batch_normalization_141 (BatchN	(None, None, None, 1 384	conv2d_141[0][0]
activation_141 (Activation) 41[0][0]	(None, None, None, 1 0	batch_normalization_1
conv2d_142 (Conv2D)	(None, None, None, 1 143360	activation_141[0][0]
batch_normalization_142 (BatchN	(None, None, None, 1 480	conv2d_142[0][0]
activation_142 (Activation) 42[0][0]	(None, None, None, 1 0	batch_normalization_1
conv2d_140 (Conv2D)	(None, None, None, 1 208896	block17_16_ac[0][0]
conv2d_143 (Conv2D)	(None, None, None, 1 215040	activation_142[0][0]
batch_normalization_140 (BatchN	(None, None, None, 1 576	conv2d_140[0][0]
batch_normalization_143 (BatchN	(None, None, None, 1 576	conv2d_143[0][0]
activation_140 (Activation) 40[0][0]	(None, None, None, 1 0	batch_normalization_1
activation_143 (Activation) 43[0][0]	(None, None, None, 1 0	batch_normalization_1
block17_17_mixed (Concatenate)	(None, None, None, 3 0	activation_140[0][0]
		activation_143[0][0]
block17_17_conv (Conv2D) [0]	(None, None, None, 1 418880	block17_17_mixed[0]
block17_17 (Lambda)	(None, None, None, 1 0	block17_16_ac[0][0]
		block17_17_conv[0][0]
block17_17_ac (Activation)	(None, None, None, 1 0	block17_17[0][0]
conv2d_145 (Conv2D)	(None, None, None, 1 139264	block17_17_ac[0][0]
batch_normalization_145 (BatchN	(None, None, None, 1 384	conv2d_145[0][0]
activation_145 (Activation) 45[0][0]	(None, None, None, 1 0	batch_normalization_1
conv2d_146 (Conv2D)	(None, None, None, 1 143360	activation_145[0][0]
batch_normalization_146 (BatchN	(None, None, None, 1 480	conv2d_146[0][0]
activation_146 (Activation) 46[0][0]	(None, None, None, 1 0	batch_normalization_1
conv2d_144 (Conv2D)	(None, None, None, 1 208896	block17_17_ac[0][0]
conv2d_147 (Conv2D)	(None, None, None, 1 215040	activation_146[0][0]
batch_normalization_144 (BatchN	(None, None, None, 1 576	conv2d_144[0][0]
batch_normalization_147 (BatchN	(None, None, None, 1 576	conv2d_147[0][0]
activation_144 (Activation) 44[0][0]	(None, None, None, 1 0	batch_normalization_1
activation_147 (Activation) 47[0][0]	(None, None, None, 1 0	batch_normalization_1
block17_18_mixed (Concatenate)	(None, None, None, 3 0	activation_144[0][0]
		activation_147[0][0]
block17_18_conv (Conv2D) [0]	(None, None, None, 1 418880	block17_18_mixed[0]
block17_18 (Lambda)	(None, None, None, 1 0	block17_17_ac[0][0]
		block17_18_conv[0][0]
block17_18_ac (Activation)	(None, None, None, 1 0	block17_18[0][0]
conv2d_149 (Conv2D)	(None, None, None, 1 139264	block17_18_ac[0][0]
batch_normalization_149 (BatchN	(None, None, None, 1 384	conv2d_149[0][0]
activation_149 (Activation) 49[0][0]	(None, None, None, 1 0	batch_normalization_1
conv2d_150 (Conv2D)	(None, None, None, 1 143360	activation_149[0][0]
batch_normalization_150 (BatchN	(None, None, None, 1 480	conv2d_150[0][0]
activation_150 (Activation) 50[0][0]	(None, None, None, 1 0	batch_normalization_1
conv2d_148 (Conv2D)	(None, None, None, 1 208896	block17_18_ac[0][0]
conv2d_151 (Conv2D)	(None, None, None, 1 215040	activation_150[0][0]
batch_normalization_148 (BatchN	(None, None, None, 1 576	conv2d_148[0][0]
batch_normalization_151 (BatchN	(None, None, None, 1 576	conv2d_151[0][0]
activation_148 (Activation) 48[0][0]	(None, None, None, 1 0	batch_normalization_1
activation_151 (Activation) 51[0][0]	(None, None, None, 1 0	batch_normalization_1
block17_19_mixed (Concatenate)	(None, None, None, 3 0	activation_148[0][0]
		activation_151[0][0]
block17_19_conv (Conv2D) [0]	(None, None, None, 1 418880	block17_19_mixed[0]
block17_19 (Lambda)	(None, None, None, 1 0	block17_18_ac[0][0]
		block17_19_conv[0][0]
block17_19_ac (Activation)	(None, None, None, 1 0	block17_19[0][0]
conv2d_153 (Conv2D)	(None, None, None, 1 139264	block17_19_ac[0][0]
batch_normalization_153 (BatchN	(None, None, None, 1 384	conv2d_153[0][0]
activation_153 (Activation) 53[0][0]	(None, None, None, 1 0	batch_normalization_1
conv2d_154 (Conv2D)	(None, None, None, 1 143360	activation_153[0][0]
batch_normalization_154 (BatchN	(None, None, None, 1 480	conv2d_154[0][0]
activation_154 (Activation) 54[0][0]	(None, None, None, 1 0	batch_normalization_1
conv2d_152 (Conv2D)	(None, None, None, 1 208896	block17_19_ac[0][0]
conv2d_155 (Conv2D)	(None, None, None, 1 215040	activation_154[0][0]
batch_normalization_152 (BatchN	(None, None, None, 1 576	conv2d_152[0][0]
batch_normalization_155 (BatchN	(None, None, None, 1 576	conv2d_155[0][0]
activation_152 (Activation) 52[0][0]	(None, None, None, 1 0	batch_normalization_1
activation_155 (Activation) 55[0][0]	(None, None, None, 1 0	batch_normalization_1
block17_20_mixed (Concatenate)	(None, None, None, 3 0	activation_152[0][0]
		activation_155[0][0]
block17_20_conv (Conv2D) [0]	(None, None, None, 1 418880	block17_20_mixed[0]
block17_20 (Lambda)	(None, None, None, 1 0	block17_19_ac[0][0]
		block17_20_conv[0][0]
block17_20_ac (Activation)	(None, None, None, 1 0	block17_20[0][0]
conv2d_160 (Conv2D)	(None, None, None, 2 278528	block17_20_ac[0][0]
batch_normalization_160 (BatchN	(None, None, None, 2 768	conv2d_160[0][0]
activation_160 (Activation) 60[0][0]	(None, None, None, 2 0	batch_normalization_1
conv2d_156 (Conv2D)	(None, None, None, 2 278528	block17_20_ac[0][0]
conv2d_158 (Conv2D)	(None, None, None, 2 278528	block17_20_ac[0][0]
conv2d_161 (Conv2D)	(None, None, None, 2 663552	activation_160[0][0]
batch_normalization_156 (BatchN	(None, None, None, 2 768	conv2d_156[0][0]
batch_normalization_158 (BatchN	(None, None, None, 2 768	conv2d_158[0][0]
batch_normalization_161 (BatchN	(None, None, None, 2 864	conv2d_161[0][0]
activation_156 (Activation) 56[0][0]	(None, None, None, 2 0	batch_normalization_1
activation_158 (Activation) 58[0][0]	(None, None, None, 2 0	batch_normalization_1
activation_161 (Activation) 61[0][0]	(None, None, None, 2 0	batch_normalization_1
conv2d_157 (Conv2D)	(None, None, None, 3 884736	activation_156[0][0]
conv2d_159 (Conv2D)	(None, None, None, 2 663552	activation_158[0][0]
conv2d_162 (Conv2D)	(None, None, None, 3 829440	activation_161[0][0]
batch_normalization_157 (BatchN	(None, None, None, 3 1152	conv2d_157[0][0]
batch_normalization_159 (BatchN	(None, None, None, 2 864	conv2d_159[0][0]
batch_normalization_162 (BatchN	(None, None, None, 3 960	conv2d_162[0][0]
activation_157 (Activation) 57[0][0]	(None, None, None, 3 0	batch_normalization_1
activation_159 (Activation) 59[0][0]	(None, None, None, 2 0	batch_normalization_1
activation_162 (Activation) 62[0][0]	(None, None, None, 3 0	batch_normalization_1
max_pooling2d_3 (MaxPooling2D)	(None, None, None, 1 0	block17_20_ac[0][0]
mixed_7a (Concatenate)	(None, None, None, 2 0	activation_157[0][0]
		activation_159[0][0]
		activation_162[0][0]
		max_pooling2d_3[0][0]
conv2d_164 (Conv2D)	(None, None, None, 1 399360	mixed_7a[0][0]
batch_normalization_164 (BatchN	(None, None, None, 1 576	conv2d_164[0][0]
activation_164 (Activation) 64[0][0]	(None, None, None, 1 0	batch_normalization_1
conv2d_165 (Conv2D)	(None, None, None, 2 129024	activation_164[0][0]
batch_normalization_165 (BatchN	(None, None, None, 2 672	conv2d_165[0][0]
activation_165 (Activation) 65[0][0]	(None, None, None, 2 0	batch_normalization_1
conv2d_163 (Conv2D)	(None, None, None, 1 399360	mixed_7a[0][0]
conv2d_166 (Conv2D)	(None, None, None, 2 172032	activation_165[0][0]
batch_normalization_163 (BatchN	(None, None, None, 1 576	conv2d_163[0][0]
batch_normalization_166 (BatchN	(None, None, None, 2 768	conv2d_166[0][0]
activation_163 (Activation) 63[0][0]	(None, None, None, 1 0	batch_normalization_1
activation_166 (Activation) 66[0][0]	(None, None, None, 2 0	batch_normalization_1
block8_mixed (Concatenate)	(None, None, None, 4 0	activation_163[0][0]
		activation_166[0][0]
block8_1_conv (Conv2D)	(None, None, None, 2 933920	block8_1_mixed[0][0]
block8_1 (Lambda)	(None, None, None, 2 0	mixed_7a[0][0]
		block8_1_conv[0][0]
block8_1_ac (Activation)	(None, None, None, 2 0	block8_1[0][0]
conv2d_168 (Conv2D)	(None, None, None, 1 399360	block8_1_ac[0][0]
batch_normalization_168 (BatchN	(None, None, None, 1 576	conv2d_168[0][0]
activation_168 (Activation) 68[0][0]	(None, None, None, 1 0	batch_normalization_1
conv2d_169 (Conv2D)	(None, None, None, 2 129024	activation_168[0][0]
batch_normalization_169 (BatchN	(None, None, None, 2 672	conv2d_169[0][0]
activation_169 (Activation) 69[0][0]	(None, None, None, 2 0	batch_normalization_1
conv2d_167 (Conv2D)	(None, None, None, 1 399360	block8_1_ac[0][0]
conv2d_170 (Conv2D)	(None, None, None, 2 172032	activation_169[0][0]
batch_normalization_167 (BatchN	(None, None, None, 1 576	conv2d_167[0][0]
batch_normalization_170 (BatchN	(None, None, None, 2 768	conv2d_170[0][0]
activation_167 (Activation) 67[0][0]	(None, None, None, 1 0	batch_normalization_1
activation_170 (Activation) 70[0][0]	(None, None, None, 2 0	batch_normalization_1
block8_2_mixed (Concatenate)	(None, None, None, 4 0	activation_167[0][0]
		activation_170[0][0]
block8_2_conv (Conv2D)	(None, None, None, 2 933920	block8_2_mixed[0][0]
block8_2 (Lambda)	(None, None, None, 2 0	block8_1_ac[0][0]
		block8_2_conv[0][0]
block8_2_ac (Activation)	(None, None, None, 2 0	block8_2[0][0]
conv2d_172 (Conv2D)	(None, None, None, 1 399360	block8_2_ac[0][0]
batch_normalization_172 (BatchN	(None, None, None, 1 576	conv2d_172[0][0]
activation_172 (Activation) 72[0][0]	(None, None, None, 1 0	batch_normalization_1
conv2d_173 (Conv2D)	(None, None, None, 2 129024	activation_172[0][0]
batch_normalization_173 (BatchN	(None, None, None, 2 672	conv2d_173[0][0]
activation_173 (Activation) 73[0][0]	(None, None, None, 2 0	batch_normalization_1
conv2d_171 (Conv2D)	(None, None, None, 1 399360	block8_2_ac[0][0]
conv2d_174 (Conv2D)	(None, None, None, 2 172032	activation_173[0][0]
batch_normalization_171 (BatchN	(None, None, None, 1 576	conv2d_171[0][0]
batch_normalization_174 (BatchN	(None, None, None, 2 768	conv2d_174[0][0]
activation_171 (Activation) 71[0][0]	(None, None, None, 1 0	batch_normalization_1
activation_174 (Activation)	(None, None, None, 2 0</	

74[0][0]				
block8_3_mixed (Concatenate)	(None, None, None, 4, 0)			activation_171[0][0]
				activation_174[0][0]
block8_3_conv (Conv2D)	(None, None, None, 2, 933920)			block8_3_mixed[0][0]
block8_3 (Lambda)	(None, None, None, 2, 0)			block8_2_ac[0][0]
				block8_3_conv[0][0]
block8_3_ac (Activation)	(None, None, None, 2, 0)			block8_3[0][0]
conv2d_176 (Conv2D)	(None, None, None, 1, 399360)			block8_3_ac[0][0]
batch_normalization_176 (BatchN (None, None, None, 1, 576				conv2d_176[0][0]
activation_176 (Activation)	(None, None, None, 1, 0)			batch_normalization_176[0][0]
conv2d_177 (Conv2D)	(None, None, None, 2, 129024)			activation_176[0][0]
batch_normalization_177 (BatchN (None, None, None, 2, 672				conv2d_177[0][0]
activation_177 (Activation)	(None, None, None, 2, 0)			batch_normalization_177[0][0]
conv2d_175 (Conv2D)	(None, None, None, 1, 399360)			block8_3_ac[0][0]
conv2d_178 (Conv2D)	(None, None, None, 2, 172032)			activation_177[0][0]
batch_normalization_175 (BatchN (None, None, None, 1, 576				conv2d_175[0][0]
batch_normalization_178 (BatchN (None, None, None, 2, 768				conv2d_178[0][0]
activation_175 (Activation)	(None, None, None, 1, 0)			batch_normalization_175[0][0]
activation_178 (Activation)	(None, None, None, 2, 0)			batch_normalization_178[0][0]
block8_4_mixed (Concatenate)	(None, None, None, 4, 0)			activation_175[0][0]
				activation_178[0][0]
block8_4_conv (Conv2D)	(None, None, None, 2, 933920)			block8_4_mixed[0][0]
block8_4 (Lambda)	(None, None, None, 2, 0)			block8_3_ac[0][0]
				block8_4_conv[0][0]
block8_4_ac (Activation)	(None, None, None, 2, 0)			block8_4[0][0]
conv2d_180 (Conv2D)	(None, None, None, 1, 399360)			block8_4_ac[0][0]
batch_normalization_180 (BatchN (None, None, None, 1, 576				conv2d_180[0][0]
activation_180 (Activation)	(None, None, None, 1, 0)			batch_normalization_180[0][0]
conv2d_181 (Conv2D)	(None, None, None, 2, 129024)			activation_180[0][0]
batch_normalization_181 (BatchN (None, None, None, 2, 672				conv2d_181[0][0]
activation_181 (Activation)	(None, None, None, 2, 0)			batch_normalization_181[0][0]
conv2d_179 (Conv2D)	(None, None, None, 1, 399360)			block8_4_ac[0][0]
conv2d_182 (Conv2D)	(None, None, None, 2, 172032)			activation_181[0][0]
batch_normalization_179 (BatchN (None, None, None, 1, 576				conv2d_179[0][0]
batch_normalization_182 (BatchN (None, None, None, 2, 768				conv2d_182[0][0]
activation_179 (Activation)	(None, None, None, 1, 0)			batch_normalization_179[0][0]
activation_182 (Activation)	(None, None, None, 2, 0)			batch_normalization_182[0][0]
block8_5_mixed (Concatenate)	(None, None, None, 4, 0)			activation_179[0][0]
				activation_182[0][0]
block8_5_conv (Conv2D)	(None, None, None, 2, 933920)			block8_5_mixed[0][0]
block8_5 (Lambda)	(None, None, None, 2, 0)			block8_4_ac[0][0]
				block8_5_conv[0][0]
block8_5_ac (Activation)	(None, None, None, 2, 0)			block8_5[0][0]
conv2d_184 (Conv2D)	(None, None, None, 1, 399360)			block8_5_ac[0][0]
batch_normalization_184 (BatchN (None, None, None, 1, 576				conv2d_184[0][0]
activation_184 (Activation)	(None, None, None, 1, 0)			batch_normalization_184[0][0]
conv2d_185 (Conv2D)	(None, None, None, 2, 129024)			activation_184[0][0]
batch_normalization_185 (BatchN (None, None, None, 2, 672				conv2d_185[0][0]
activation_185 (Activation)	(None, None, None, 2, 0)			batch_normalization_185[0][0]
conv2d_183 (Conv2D)	(None, None, None, 1, 399360)			block8_5_ac[0][0]
conv2d_186 (Conv2D)	(None, None, None, 2, 172032)			activation_185[0][0]
batch_normalization_183 (BatchN (None, None, None, 1, 576				conv2d_183[0][0]
batch_normalization_186 (BatchN (None, None, None, 2, 768				conv2d_186[0][0]
activation_183 (Activation)	(None, None, None, 1, 0)			batch_normalization_183[0][0]
activation_186 (Activation)	(None, None, None, 2, 0)			batch_normalization_186[0][0]
block8_6_mixed (Concatenate)	(None, None, None, 4, 0)			activation_183[0][0]
				activation_186[0][0]
block8_6_conv (Conv2D)	(None, None, None, 2, 933920)			block8_6_mixed[0][0]
block8_6 (Lambda)	(None, None, None, 2, 0)			block8_5_ac[0][0]
				block8_6_conv[0][0]
block8_6_ac (Activation)	(None, None, None, 2, 0)			block8_6[0][0]
conv2d_188 (Conv2D)	(None, None, None, 1, 399360)			block8_6_ac[0][0]
batch_normalization_188 (BatchN (None, None, None, 1, 576				conv2d_188[0][0]
activation_188 (Activation)	(None, None, None, 1, 0)			batch_normalization_188[0][0]
conv2d_189 (Conv2D)	(None, None, None, 2, 129024)			activation_188[0][0]
batch_normalization_189 (BatchN (None, None, None, 2, 672				conv2d_189[0][0]
activation_189 (Activation)	(None, None, None, 2, 0)			batch_normalization_189[0][0]
conv2d_187 (Conv2D)	(None, None, None, 1, 399360)			block8_6_ac[0][0]
conv2d_190 (Conv2D)	(None, None, None, 2, 172032)			activation_189[0][0]
batch_normalization_187 (BatchN (None, None, None, 1, 576				conv2d_187[0][0]
batch_normalization_190 (BatchN (None, None, None, 2, 768				conv2d_190[0][0]
activation_187 (Activation)	(None, None, None, 1, 0)			batch_normalization_187[0][0]
activation_190 (Activation)	(None, None, None, 2, 0)			batch_normalization_190[0][0]
block8_7_mixed (Concatenate)	(None, None, None, 4, 0)			activation_187[0][0]
				activation_190[0][0]
block8_7_conv (Conv2D)	(None, None, None, 2, 933920)			block8_7_mixed[0][0]
block8_7 (Lambda)	(None, None, None, 2, 0)			block8_6_ac[0][0]
				block8_7_conv[0][0]
block8_7_ac (Activation)	(None, None, None, 2, 0)			block8_7[0][0]
conv2d_192 (Conv2D)	(None, None, None, 1, 399360)			block8_7_ac[0][0]
batch_normalization_192 (BatchN (None, None, None, 1, 576				conv2d_192[0][0]
activation_192 (Activation)	(None, None, None, 1, 0)			batch_normalization_192[0][0]
conv2d_193 (Conv2D)	(None, None, None, 2, 129024)			activation_192[0][0]
batch_normalization_193 (BatchN (None, None, None, 2, 672				conv2d_193[0][0]
activation_193 (Activation)	(None, None, None, 2, 0)			batch_normalization_193[0][0]
conv2d_191 (Conv2D)	(None, None, None, 1, 399360)			block8_7_ac[0][0]
conv2d_194 (Conv2D)	(None, None, None, 2, 172032)			activation_193[0][0]
batch_normalization_191 (BatchN (None, None, None, 1, 576				conv2d_191[0][0]
batch_normalization_194 (BatchN (None, None, None, 2, 768				conv2d_194[0][0]
activation_191 (Activation)	(None, None, None, 1, 0)			batch_normalization_191[0][0]
activation_194 (Activation)	(None, None, None, 2, 0)			batch_normalization_194[0][0]
block8_8_mixed (Concatenate)	(None, None, None, 4, 0)			activation_191[0][0]
				activation_194[0][0]
block8_8_conv (Conv2D)	(None, None, None, 2, 933920)			block8_8_mixed[0][0]
block8_8 (Lambda)	(None, None, None, 2, 0)			block8_7_ac[0][0]
				block8_8_conv[0][0]
block8_8_ac (Activation)	(None, None, None, 2, 0)			block8_8[0][0]
conv2d_196 (Conv2D)	(None, None, None, 1, 399360)			block8_8_ac[0][0]
batch_normalization_196 (BatchN (None, None, None, 1, 576				conv2d_196[0][0]
activation_196 (Activation)	(None, None, None, 1, 0)			batch_normalization_196[0][0]
conv2d_197 (Conv2D)	(None, None, None, 2, 129024)			activation_196[0][0]
batch_normalization_197 (BatchN (None, None, None, 2, 672				conv2d_197[0][0]
activation_197 (Activation)	(None, None, None, 2, 0)			batch_normalization_197[0][0]
conv2d_195 (Conv2D)	(None, None, None, 1, 399360)			block8_8_ac[0][0]
conv2d_198 (Conv2D)	(None, None, None, 2, 172032)			activation_197[0][0]
batch_normalization_195 (BatchN (None, None, None, 1, 576				conv2d_195[0][0]
batch_normalization_198 (BatchN (None, None, None, 2, 768				conv2d_198[0][0]
activation_195 (Activation)	(None, None, None, 1, 0)			batch_normalization_195[0][0]
activation_198 (Activation)	(None, None, None, 2, 0)			batch_normalization_198[0][0]
block8_9_mixed (Concatenate)	(None, None, None, 4, 0)			activation_195[0][0]
				activation_198[0][0]
block8_9_conv (Conv2D)	(None, None, None, 2, 933920)			block8_9_mixed[0][0]
block8_9 (Lambda)	(None, None, None, 2, 0)			block8_8_ac[0][0]
				block8_9_conv[0][0]
block8_9_ac (Activation)	(None, None, None, 2, 0)			block8_9[0][0]
conv2d_200 (Conv2D)	(None, None, None, 1, 399360)			block8_9_ac[0][0]
batch_normalization_200 (BatchN (None, None, None, 1, 576				conv2d_200[0][0]
activation_200 (Activation)	(None, None, None, 1, 0)			batch_normalization_200[0][0]
conv2d_201 (Conv2D)	(None, None, None, 2, 129024)			activation_200[0][0]
batch_normalization_201 (BatchN (None, None, None, 2, 672				conv2d_201[0][0]
activation_201 (Activation)	(None, None, None, 2, 0)			batch_normalization_201[0][0]
conv2d_199 (Conv2D)	(None, None, None, 1, 399360)			block8_9_ac[0][0]
conv2d_202 (Conv2D)	(None, None, None, 2, 172032)			activation_201[0][0]
batch_normalization_199 (BatchN (None, None, None, 1, 576				conv2d_199[0][0]
batch_normalization_202 (BatchN (None, None, None, 2, 768				conv2d_202[0][0]
activation_199 (Activation)	(None, None, None, 1, 0)			batch_normalization_199[0][0]
activation_202 (Activation)	(None, None, None, 2, 0)			batch_normalization_202[0][0]
block8_10_mixed (Concatenate)	(None, None, None, 4, 0)			activation_199[0][0]
				activation_202[0][0]
block8_10_conv (Conv2D)	(None, None, None, 2, 933920)			block8_10_mixed[0][0]
block8_10 (Lambda)	(None, None, None, 2, 0)			block8_9_ac[0][0]
				block8_10_conv[0][0]
conv_7b (Conv2D)	(None, None, None, 1, 3194880)			block8_10[0][0]
conv_7b_bn (BatchNormalization)	(None, None, None, 1, 4608)			conv_7b[0][0]
conv_7b_ac (Activation)	(None, None, None, 1, 0)			conv_7b_bn[0][0]
global_max_pooling2d (GlobalMax (None, 1536)				conv_7b_ac[0][0]

```
#####
Total params: 54,543,907
Trainable params: 54,483,363
Non-trainable params: 60,544
#####
```

In [6]:

```
#congelando os neurônios já treinados na ImageNet, queremos retrainar somente a última
for l in model.layers:
    l.trainable=False
else:
    l.trainable=True
```

In [7]:

```
#definindo objeto que apanhara todas as imagens de treino, processando as imagens com
train_data_gen = tf.keras.preprocessing.image.ImageDataGenerator(preprocessing_function=
#definindo objeto que apanhara todas as imagens de teste, processando as imagens com
test_data_gen = tf.keras.preprocessing.image.ImageDataGenerator(preprocessing_function=
```

In [8]:

```
#CARREGANDO PRÓPRIO DATASET PARA USO
#target_size=(224, 224)
#definindo gerador de imagens de treino
train_generator = train_data_gen.flow_from_directory('shapes_split/train',
                                                    target_size=(128, 128), # tamanho da
                                                    batch_size=batch,
                                                    class_mode='categorical',
                                                    shuffle=True)
#definindo gerador de imagens de teste
test_generator = test_data_gen.flow_from_directory('shapes_split/test',
                                                    target_size=(128, 128), # tamanho da
                                                    batch_size=batch,
                                                    class_mode='categorical',
                                                    shuffle=True)
Found 240 images belonging to 3 classes.
Found 60 images belonging to 3 classes.
```

In [9]:

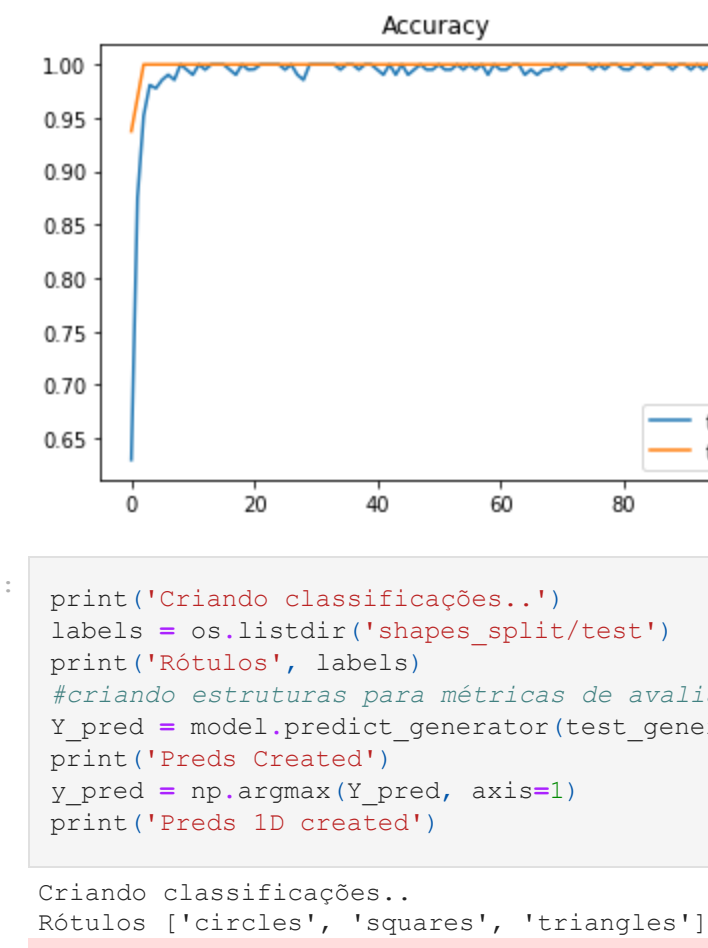
```
lr = tf.keras.optimizers.Adam(learning_rate=0.001) #estabelecendo taxa de otimização
model.compile(optimizer=lr, loss='categorical_crossentropy', metrics=['accuracy'])
```

In [10]:

```
#definição dos steps
step_size_train = train_generator.train_generator.batch_size
step_size_test = test_generator.train_generator.batch_size
```

In [11]:

```
#treinando e testando o modelo
history = model.fit_generator(generator=train_generator,
                             steps_per_epoch=step_size_train,
                             validation_data=test_generator,
                             validation_steps=step_size_test)
c:\Users\vinicius\appdata\local\programs\python\python39\lib\site-packages\tensorflow
python\keras\engine\training.py:1973: UserWarning: Model.evaluate_generator is deprecated
and will be removed in a future version. Please use 'Model.evaluate', which supports gene
rators.
warnings.warn('Model.evaluate_generator is deprecated and '
Epoch 1/100
7/7 ===== - 16s 2s/step - loss: 1.5296 - accuracy: 0.5618 -
val_loss: 1.3640e-04 - val_accuracy: 1.0000
Epoch 2/100
7/7 ===== - 17s 2s/step - loss: 0.3108 - accuracy: 0.8505 -
val_loss: 0.0556 - val_accuracy: 0.9688
Epoch 3/100
7/7 ===== - 17s 2s/step - loss: 0.1330 - accuracy: 0.9554 -
val_loss: 0.0021 - val_accuracy: 1.0000
Epoch 4/100
7/7 ===== - 17s 2s/step - loss: 0.0814 - accuracy: 0.9680 -
val_loss: 0.0023 - val_accuracy: 1.0000
Epoch 5/100
7/7 ===== - 19s 3s/step - loss: 0.0610 - accuracy: 0.9744 -
val_loss: 0.0031 - val_accuracy: 1.0000
Epoch 6/100
7/7 ===== - 18s 3s/step - loss: 0.0232 - accuracy: 0.9906 -
val_loss: 0.0012 - val_accuracy: 1.0000
Epoch 7/100
7/7 ===== - 17s 3s/step - loss: 0.0423 - accuracy: 0.9918 -
val_loss: 9.0615e-04 - val_accuracy: 1.0000
Epoch 8/100
7/7 ===== - 17s 2s/step - loss: 0.0262 - accuracy: 0.9865 -
val_loss: 8.792e-04 - val_accuracy: 1.0000
Epoch 9/100
7/7 ===== - 17s 2s/step - loss: 0.0131 - accuracy: 1.0000 -
val_loss: 7.8503e-04 - val_accuracy: 1.0000
Epoch 10/100
7/7 ===== - 16s 2s/step - loss: 0.0138 - accuracy: 0.9928 -
val_loss: 5.6287e-04 - val_accuracy: 1.0000
Epoch 11/100
7/7 ===== - 17s 2s/step - loss: 0.0271 - accuracy: 0.9922 -
val_loss: 6.2466e-04 - val_accuracy: 1.0000
Epoch 12/100
7/7 ===== - 16s 2s/step - loss: 0.0262 - accuracy: 0.9928 -
val_loss: 1.3537e-04 - val_accuracy: 1.0000
Epoch 13/100
7/7 ===== - 17s 3s/step - loss: 0.0054 - accuracy: 1.0000 -
val_loss: 4.1847e-04 - val_accuracy: 1.0000
Epoch 14/100
7/7 ===== - 16s 2s/step - loss: 0.0120 - accuracy: 1.0000 -
val_loss: 3.6340e-04 - val_accuracy: 1.0000
Epoch 15/100
7/7 ===== - 16s 2s/step - loss: 0.0089 - accuracy: 0.9945 -
val_loss: 1.9828e-04 - val_accuracy: 1.0000
Epoch 16/100
7/7 ===== - 17s 2s/step - loss: 0.0241 - accuracy: 0.9843 -
val_loss: 1.7582e-05 - val_accuracy: 1.0000
Epoch 17/1
```

```
In [15]: print('Criando classificações..')
labels = os.listdir('shapes_split/test')
print('Rótulos', labels)
#criando estruturas para métricas de avaliação, processo um pouco mais demorado
Y_pred = model.predict_generator(test_generator)
print('Preds Created')
y_pred = np.argmax(Y_pred, axis=1)
print('Preds ID created')
```

Criando classificações..
Rótulos ['circles', 'squares', 'triangles']

c:\users\vinicius\AppData\Local\Programs\Python\Python39\lib\site-packages\tensorflow\python\keras\engine\training.py:2001: UserWarning: 'Model.predict_generator' is deprecated and will be removed in a future version. Please use 'Model.predict', which supports generators.

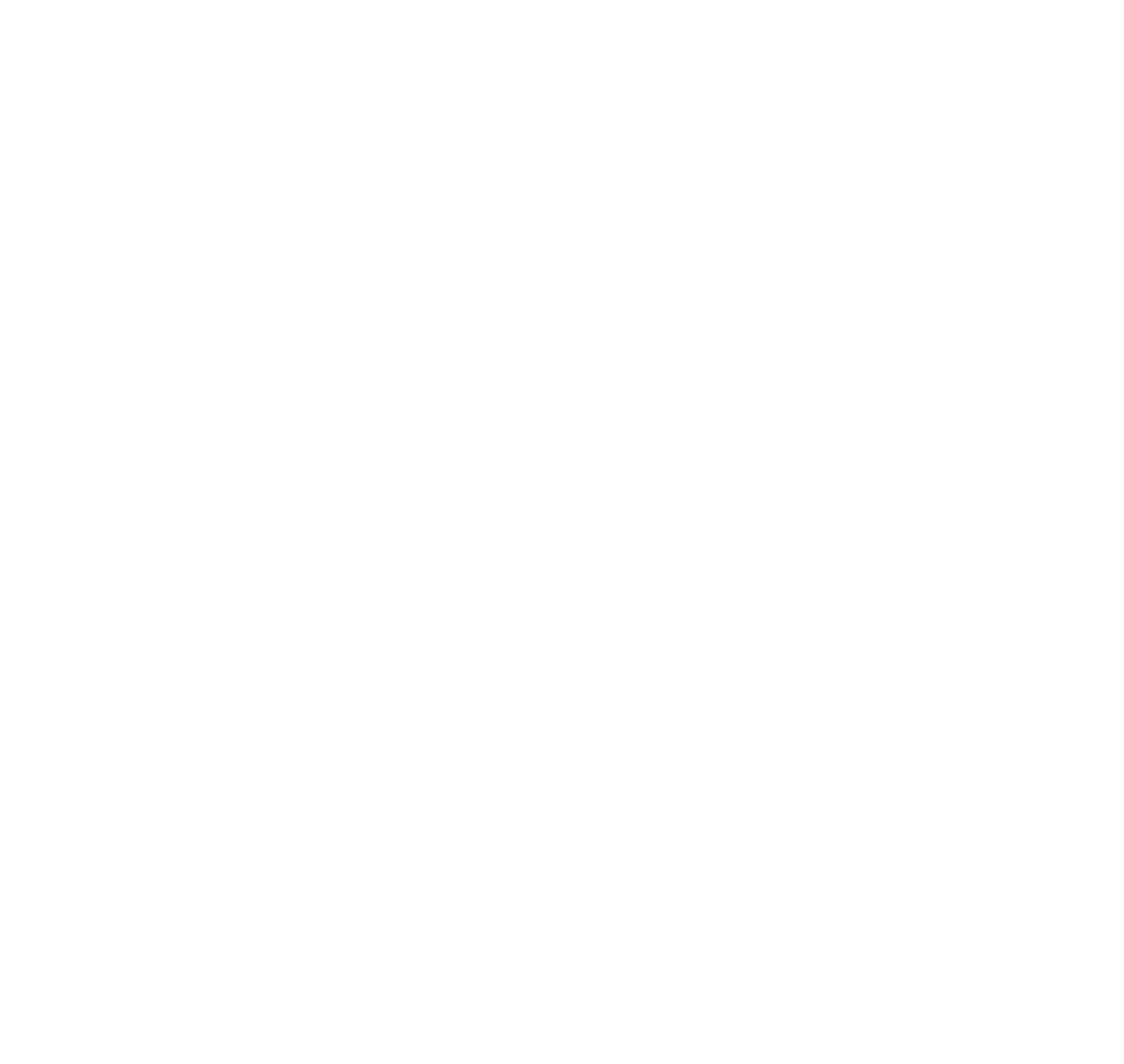
Preds Created

Preds ID created

```
In [16]: classification = classification_report(test_generator.classes, y_pred, target_names=labels)
print('-----CLASSIFICATION-----')
print(classification)
matrix = confusion_matrix(test_generator.classes, y_pred)
df_cm = pd.DataFrame(matrix, index = [i for i in range(3)],
                      columns = [i for i in range(3)])
plt.figure(figsize = (10,7))
print('-----MATRIX-----')
sns.heatmap(df_cm, annot=True, linewidths=2.5)
```

	precision	recall	f1-score	support
circles	0.35	0.35	0.35	20
squares	0.40	0.40	0.40	20
triangles	0.25	0.25	0.25	20
accuracy			0.33	60
macro avg	0.33	0.33	0.33	60
weighted avg	0.33	0.33	0.33	60

-----MATRIX-----



```
In [ ]:
```