

```
In [2]: 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 [3]: epochs = 10 # quantidade de vezes a ser executado o algoritmo, uma epoch é quanto todo
base_model = 32 # número de amostras que será carregado a cada execução

In [4]: #carrega o modelo da InceptionResNetV2 com os pesos aprendidos no treino da Inception
base_model = tf.keras.applications.InceptionResNetV2(weights='imagenet', include_top=False)

In [5]: # o restante do modelo e suas camadas são discutidos a seguir
# x recebe o final da InceptionResNetV2
x=base_model.output

In [6]: #Nova configuração para o modelo
#adiciona após x uma camada GlobalMaxPooling2D e atribui este no a x novamente (logo
x=tf.keras.layers.GlobalMaxPooling2D()(x)
#adiciona após x uma camada densa com 128 neurônios com funcao de ativacao relu. Atrib
x=tf.keras.layers.Dense(128,activation='relu')(x)
#adiciona após x uma camada densa com 64 neurônios com funcao de ativacao relu. Atrib
x=tf.keras.layers.Dense(64,activation='relu')(x)
#adiciona após x uma camada densa com 32 neurônios com funcao de ativacao relu. Atrib
x=tf.keras.layers.Dense(32,activation='relu')(x)
#adiciona após x os neurônios que devem ser utilizados, nesse caso foram desligados 2
x=tf.keras.layers.Dropout(0.5)(x)
#adiciona após x uma camada densa com 7 neurônios (sete classes) com funcao de ativac
#preds=tf.keras.layers.Dense(3,activation='softmax')(x)
preds=tf.keras.layers.Dense(3,activation='softmax')(x)
#definiendo modelo final
model=tf.keras.models.Model(inputs=base_model.input,outputs=preds)
#mostrando modelo final e sua estrutura
model.summary()

Model: "model"

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_1 (Activation) (None, None, None, 3 0) batch_normalization
[0][0]
-----
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_1 (Activation) (None, None, None, 3 0) batch_normalization_1
[0][0]
-----
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
[0][0]
-----
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
[0][0]
-----
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
[0][0]
-----
max_pooling2d_1 (MaxPooling2D) (None, None, None, 1 0) activation_4[0][0]
-----
conv2d_5 (Conv2D) (None, None, None, 6 12288) max_pooling2d_1[0][0]
-----
batch_normalization_5 (BatchNor (None, None, None, 6 192) conv2d_5[0][0]
-----
activation_5 (Activation) (None, None, None, 6 0) batch_normalization_5
[0][0]
-----
conv2d_6 (Conv2D) (None, None, None, 4 9216) max_pooling2d_1[0][0]
-----
conv2d_7 (Conv2D) (None, None, None, 9 55296) activation_5[0][0]
-----
batch_normalization_6 (BatchNor (None, None, None, 4 144) conv2d_6[0][0]
-----
batch_normalization_7 (BatchNor (None, None, None, 9 288) conv2d_7[0][0]
-----
activation_6 (Activation) (None, None, None, 4 0) batch_normalization_
[0][0]
-----
activation_7 (Activation) (None, None, None, 9 0) batch_normalization_5
[0][0]
-----
average_pooling2d (AveragePooli (None, None, None, 1 0) max_pooling2d_1[0][0]
-----
conv2d_8 (Conv2D) (None, None, None, 9 18432) max_pooling2d_1[0][0]
-----
conv2d_9 (Conv2D) (None, None, None, 6 76800) activation_6[0][0]
-----
conv2d_10 (Conv2D) (None, None, None, 9 82944) activation_7[0][0]
-----
conv2d_11 (Conv2D) (None, None, None, 6 12288) average_pooling2d[0]
[0]
-----
batch_normalization_8 (BatchNor (None, None, None, 9 288) conv2d_5[0][0]
-----
batch_normalization_9 (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_8 (Activation) (None, None, None, 9 0) batch_normalization_5
[0][0]
-----
activation_9 (Activation) (None, None, None, 6 0) batch_normalization_7
[0][0]
-----
activation_10 (Activation) (None, None, None, 9 0) batch_normalization_1
[0][0]
-----
activation_11 (Activation) (None, None, None, 6 0) batch_normalization_1
[0][0]
-----
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
5[0][0]
-----
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
3[0][0]
-----
activation_16 (Activation) (None, None, None, 4 0) batch_normalization_1
6[0][0]
-----
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
2[0][0]
-----
activation_14 (Activation) (None, None, None, 3 0) batch_normalization_1
4[0][0]
-----
activation_17 (Activation) (None, None, None, 6 0) batch_normalization_1
7[0][0]
-----
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_conv[0][0]
-----
block35_1_ac (Activation) (None, None, None, 3 0) block35_1[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
1[0][0]
-----
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
9[0][0]
-----
activation_22 (Activation) (None, None, None, 4 0) batch_normalization_2
2[0][0]
-----
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
8[0][0]
-----
activation_20 (Activation) (None, None, None, 3 0) batch_normalization_2
0[0][0]
-----
activation_23 (Activation) (None, None, None, 6 0) batch_normalization_2
3[0][0]
-----
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_2_conv[0][0]
block35_2_mixed[0][0]
-----
block35_2_ac (Activation) (None, None, None, 3 0) block35_2[0][0]
-----
conv2d_27 (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
7[0][0]
-----
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
5[0][0]
-----
activation_28 (Activation) (None, None, None, 4 0) batch_normalization_2
8[0][0]
-----
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
4[0][0]
-----
activation_26 (Activation) (None, None, None, 3 0) batch_normalization_2
6[0][0]
-----
activation_29 (Activation) (None, None, None, 6 0) batch_normalization_2
9[0][0]
-----
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_3_conv[0][0]
block35_3_mixed[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
3[0][0]
-----
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
1[0][0]
-----
activation_34 (Activation) (None, None, None, 4 0) batch_normalization_3
4[0][0]
-----
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
0[0][0]
-----
activation_32 (Activation) (None, None, None, 3 0) batch_normalization_3
2[0][0]
-----
activation_35 (Activation) (None, None, None, 6 0) batch_normalization_3
5[0][0]
-----
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_ac[0][0]
block35_4_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
9[0][0]
-----
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
7[0][0]
-----
activation_40 (Activation) (None, None, None, 4 0) batch_normalization_
0[0][0]
-----
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
6[0][0]
-----
activation_38 (Activation) (None, None, None, 3 0) batch_normalization_3
8[0][0]
-----
activation_41 (Activation) (None, None, None, 6 0) batch_normalization_4
1[0][0]
-----
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_ac[0][0]
block35_5_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
5[0][0]
-----
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
3[0][0]
-----
activation_46 (Activation) (None, None, None, 4 0) batch_normalization_4
6[0][0]
-----
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
2[0][0]
-----
activation_44 (Activation) (None, None, None, 3 0) batch_normalization_4
4[0][0]
-----
activation_47 (Activation) (None, None, None, 6 0) batch_normalization_4
7[0][0]
-----
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_ac[0][0]
block35_6_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
1[0][0]
-----
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
9[0][0]
-----
activation_52 (Activation) (None, None, None, 4 0) batch_normalization_5
2[0][0]
-----
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]
-----
activation_48 (Activation) (None, None, None, 3 0) batch_normalization_4
8[0][0]
-----
activation_50 (Activation) (None, None, None, 3 0) batch_normalization_5
0[0][0]
-----
activation_53 (Activation) (None, None, None, 6 0) batch_normalization_5
3[0][0]
-----
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_ac[0][0]
block35_7_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
7[0][0]
-----
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
5[0][0]
-----
activation_58 (Activation) (None, None, None, 4 0) batch_normalization_5
8[0][0]
-----
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_59 (BatchNo (None, None, None, 6 192) conv2d_59[0][0]
-----
activation_54 (Activation) (None, None, None, 3 0) batch_normalization_
4[0][0]
```



activation_56 (Activation) 6[0][0]	(None, None, None, 3 0	batch_normalization_56[0][0]
activation_59 (Activation) 9[0][0]	(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) 3[0][0]	(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) 1[0][0]	(None, None, None, 3 0	batch_normalization_61[0][0]
activation_64 (Activation) 4[0][0]	(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) 0[0][0]	(None, None, None, 3 0	batch_normalization_60[0][0]
activation_62 (Activation) 2[0][0]	(None, None, None, 3 0	batch_normalization_62[0][0]
activation_65 (Activation) 5[0][0]	(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) 9[0][0]	(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) 7[0][0]	(None, None, None, 3 0	batch_normalization_67[0][0]
activation_70 (Activation) 0[0][0]	(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) 6[0][0]	(None, None, None, 3 0	batch_normalization_66[0][0]
activation_68 (Activation) 8[0][0]	(None, None, None, 3 0	batch_normalization_68[0][0]
activation_71 (Activation) 1[0][0]	(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][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) 3[0][0]	(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) 4[0][0]	(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) 2[0][0]	(None, None, None, 3 0	batch_normalization_72[0][0]
activation_75 (Activation) 5[0][0]	(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) 7[0][0]	(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) 8[0][0]	(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) 6[0][0]	(None, None, None, 1 0	batch_normalization_76[0][0]
activation_79 (Activation) 9[0][0]	(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) 1[0][0]	(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) 2[0][0]	(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) 0[0][0]	(None, None, None, 1 0	batch_normalization_80[0][0]
activation_83 (Activation) 3[0][0]	(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) 5[0][0]	(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) 6[0][0]	(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) 4[0][0]	(None, None, None, 1 0	batch_normalization_84[0][0]
activation_87 (Activation) 7[0][0]	(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) 9[0][0]	(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) 0[0][0]	(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) 8[0][0]	(None, None, None, 1 0	batch_normalization_88[0][0]
activation_91 (Activation) 1[0][0]	(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) 3[0][0]	(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) 4[0][0]	(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) 2[0][0]	(None, None, None, 1 0	batch_normalization_92[0][0]
activation_95 (Activation) 5[0][0]	(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) 7[0][0]	(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) 8[0][0]	(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) 6[0][0]	(None, None, None, 1 0	batch_normalization_96[0][0]
activation_99 (Activation) 9[0][0]	(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) 01[0][0]	(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) 02[0][0]	(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) 00[0][0]	(None, None, None, 1 0	batch_normalization_100[0][0]
activation_103 (Activation) 03[0][0]	(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) 05[0][0]	(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) 06[0][0]	(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) 04[0][0]	(None, None, None, 1 0	batch_normalization_104[0][0]
activation_107 (Activation) 07[0][0]	(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) 09[0][0]	(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) 10[0][0]	(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) 08[0][0]	(None, None, None, 1 0	batch_normalization_108[0][0]
activation_111 (Activation) 11[0][0]	(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) 13[0][0]	(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) 14[0][0]	(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) 12[0][0]	(None, None, None, 1 0	batch_normalization_112[0][0]
activation_115 (Activation) 15[0][0]	(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][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 (BatchNormalizer)	(None, None, None, 1 384)	conv2d_117[0]
activation_117 (Activation)	(None, None, None, 1 0)	batch_normalization_117[0]
conv2d_118 (Conv2D)	(None, None, None, 1 143360)	activation_117[0]
batch_normalization_118 (BatchNormalizer)	(None, None, None, 1 480)	conv2d_118[0]
activation_118 (Activation)	(None, None, None, 1 0)	batch_normalization_118[0]
conv2d_116 (Conv2D)	(None, None, None, 1 208896)	block17_10_ac[0]
conv2d_119 (Conv2D)	(None, None, None, 1 215040)	activation_118[0]
batch_normalization_116 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_116[0]
batch_normalization_119 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_119[0]
activation_116 (Activation)	(None, None, None, 1 0)	batch_normalization_116[0]
activation_119 (Activation)	(None, None, None, 1 0)	batch_normalization_119[0]
block17_11_mixed (Concatenate)	(None, None, None, 3 0)	activation_116[0]
block17_11_conv (Conv2D)	(None, None, None, 1 418880)	activation_119[0]
block17_11 (Lambda)	(None, None, None, 1 0)	block17_11_mixed[0]
block17_11_ac (Activation)	(None, None, None, 1 0)	block17_10_ac[0]
conv2d_121 (Conv2D)	(None, None, None, 1 139264)	block17_11_conv[0]
batch_normalization_121 (BatchNormalizer)	(None, None, None, 1 384)	block17_11_ac[0]
activation_121 (Activation)	(None, None, None, 1 0)	conv2d_121[0]
conv2d_122 (Conv2D)	(None, None, None, 1 143360)	activation_121[0]
batch_normalization_122 (BatchNormalizer)	(None, None, None, 1 480)	conv2d_122[0]
activation_122 (Activation)	(None, None, None, 1 0)	batch_normalization_122[0]
conv2d_120 (Conv2D)	(None, None, None, 1 208896)	block17_11_ac[0]
conv2d_123 (Conv2D)	(None, None, None, 1 215040)	activation_122[0]
batch_normalization_120 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_120[0]
batch_normalization_123 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_123[0]
activation_120 (Activation)	(None, None, None, 1 0)	batch_normalization_120[0]
activation_123 (Activation)	(None, None, None, 1 0)	batch_normalization_123[0]
block17_12_mixed (Concatenate)	(None, None, None, 3 0)	activation_120[0]
block17_12_conv (Conv2D)	(None, None, None, 1 418880)	activation_123[0]
block17_12 (Lambda)	(None, None, None, 1 0)	block17_12_mixed[0]
block17_12_ac (Activation)	(None, None, None, 1 0)	block17_11_ac[0]
conv2d_125 (Conv2D)	(None, None, None, 1 139264)	block17_12_conv[0]
batch_normalization_125 (BatchNormalizer)	(None, None, None, 1 384)	block17_12_ac[0]
activation_125 (Activation)	(None, None, None, 1 0)	conv2d_125[0]
conv2d_126 (Conv2D)	(None, None, None, 1 143360)	activation_125[0]
batch_normalization_126 (BatchNormalizer)	(None, None, None, 1 480)	conv2d_126[0]
activation_126 (Activation)	(None, None, None, 1 0)	batch_normalization_126[0]
conv2d_124 (Conv2D)	(None, None, None, 1 208896)	block17_12_ac[0]
conv2d_127 (Conv2D)	(None, None, None, 1 215040)	activation_126[0]
batch_normalization_124 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_124[0]
batch_normalization_127 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_127[0]
activation_124 (Activation)	(None, None, None, 1 0)	batch_normalization_124[0]
activation_127 (Activation)	(None, None, None, 1 0)	batch_normalization_127[0]
block17_13_mixed (Concatenate)	(None, None, None, 3 0)	activation_124[0]
block17_13_conv (Conv2D)	(None, None, None, 1 418880)	activation_127[0]
block17_13 (Lambda)	(None, None, None, 1 0)	block17_13_mixed[0]
block17_13_ac (Activation)	(None, None, None, 1 0)	block17_12_ac[0]
conv2d_129 (Conv2D)	(None, None, None, 1 139264)	block17_13_conv[0]
batch_normalization_129 (BatchNormalizer)	(None, None, None, 1 384)	block17_13_ac[0]
activation_129 (Activation)	(None, None, None, 1 0)	conv2d_129[0]
batch_normalization_130 (BatchNormalizer)	(None, None, None, 1 480)	conv2d_130[0]
activation_130 (Activation)	(None, None, None, 1 0)	batch_normalization_130[0]
conv2d_128 (Conv2D)	(None, None, None, 1 208896)	block17_13_ac[0]
conv2d_131 (Conv2D)	(None, None, None, 1 215040)	activation_130[0]
batch_normalization_128 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_128[0]
batch_normalization_131 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_131[0]
activation_128 (Activation)	(None, None, None, 1 0)	batch_normalization_128[0]
activation_131 (Activation)	(None, None, None, 1 0)	batch_normalization_131[0]
block17_14_mixed (Concatenate)	(None, None, None, 3 0)	activation_128[0]
block17_14_conv (Conv2D)	(None, None, None, 1 418880)	activation_131[0]
block17_14 (Lambda)	(None, None, None, 1 0)	block17_14_mixed[0]
block17_14_ac (Activation)	(None, None, None, 1 0)	block17_13_ac[0]
conv2d_133 (Conv2D)	(None, None, None, 1 139264)	block17_14_conv[0]
batch_normalization_133 (BatchNormalizer)	(None, None, None, 1 384)	block17_14_ac[0]
activation_133 (Activation)	(None, None, None, 1 0)	conv2d_133[0]
conv2d_134 (Conv2D)	(None, None, None, 1 143360)	activation_133[0]
batch_normalization_134 (BatchNormalizer)	(None, None, None, 1 480)	conv2d_134[0]
activation_134 (Activation)	(None, None, None, 1 0)	batch_normalization_134[0]
conv2d_132 (Conv2D)	(None, None, None, 1 208896)	block17_14_ac[0]
conv2d_135 (Conv2D)	(None, None, None, 1 215040)	activation_134[0]
batch_normalization_132 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_132[0]
batch_normalization_135 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_135[0]
activation_132 (Activation)	(None, None, None, 1 0)	batch_normalization_132[0]
activation_135 (Activation)	(None, None, None, 1 0)	batch_normalization_135[0]
block17_15_mixed (Concatenate)	(None, None, None, 3 0)	activation_132[0]
block17_15_conv (Conv2D)	(None, None, None, 1 418880)	activation_135[0]
block17_15 (Lambda)	(None, None, None, 1 0)	block17_15_mixed[0]
block17_15_ac (Activation)	(None, None, None, 1 0)	block17_14_ac[0]
conv2d_137 (Conv2D)	(None, None, None, 1 139264)	block17_15_conv[0]
batch_normalization_137 (BatchNormalizer)	(None, None, None, 1 384)	block17_15_ac[0]
activation_137 (Activation)	(None, None, None, 1 0)	conv2d_137[0]
conv2d_138 (Conv2D)	(None, None, None, 1 143360)	activation_137[0]
batch_normalization_138 (BatchNormalizer)	(None, None, None, 1 480)	conv2d_138[0]
activation_138 (Activation)	(None, None, None, 1 0)	batch_normalization_138[0]
conv2d_136 (Conv2D)	(None, None, None, 1 208896)	block17_15_ac[0]
conv2d_139 (Conv2D)	(None, None, None, 1 215040)	activation_138[0]
batch_normalization_136 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_136[0]
batch_normalization_139 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_139[0]
activation_136 (Activation)	(None, None, None, 1 0)	batch_normalization_136[0]
activation_139 (Activation)	(None, None, None, 1 0)	batch_normalization_139[0]
block17_16_mixed (Concatenate)	(None, None, None, 3 0)	activation_136[0]
block17_16_conv (Conv2D)	(None, None, None, 1 418880)	activation_139[0]
block17_16 (Lambda)	(None, None, None, 1 0)	block17_16_mixed[0]
block17_16_ac (Activation)	(None, None, None, 1 0)	block17_15_ac[0]
conv2d_141 (Conv2D)	(None, None, None, 1 139264)	block17_16_conv[0]
batch_normalization_141 (BatchNormalizer)	(None, None, None, 1 384)	block17_16_ac[0]
activation_141 (Activation)	(None, None, None, 1 0)	conv2d_141[0]
conv2d_142 (Conv2D)	(None, None, None, 1 143360)	activation_141[0]
batch_normalization_142 (BatchNormalizer)	(None, None, None, 1 480)	conv2d_142[0]
activation_142 (Activation)	(None, None, None, 1 0)	batch_normalization_142[0]
conv2d_140 (Conv2D)	(None, None, None, 1 208896)	block17_16_ac[0]
conv2d_143 (Conv2D)	(None, None, None, 1 215040)	activation_142[0]
batch_normalization_140 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_140[0]
batch_normalization_143 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_143[0]
activation_140 (Activation)	(None, None, None, 1 0)	batch_normalization_140[0]
activation_143 (Activation)	(None, None, None, 1 0)	batch_normalization_143[0]
block17_17_mixed (Concatenate)	(None, None, None, 3 0)	activation_140[0]
block17_17_conv (Conv2D)	(None, None, None, 1 418880)	activation_143[0]
block17_17 (Lambda)	(None, None, None, 1 0)	block17_17_mixed[0]
block17_17_ac (Activation)	(None, None, None, 1 0)	block17_16_ac[0]
conv2d_145 (Conv2D)	(None, None, None, 1 139264)	block17_17_conv[0]
batch_normalization_145 (BatchNormalizer)	(None, None, None, 1 384)	block17_17_ac[0]
activation_145 (Activation)	(None, None, None, 1 0)	conv2d_145[0]
conv2d_146 (Conv2D)	(None, None, None, 1 143360)	activation_145[0]
batch_normalization_146 (BatchNormalizer)	(None, None, None, 1 480)	conv2d_146[0]
activation_146 (Activation)	(None, None, None, 1 0)	batch_normalization_146[0]
conv2d_144 (Conv2D)	(None, None, None, 1 208896)	block17_17_ac[0]
conv2d_147 (Conv2D)	(None, None, None, 1 215040)	activation_146[0]
batch_normalization_144 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_144[0]
batch_normalization_147 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_147[0]
activation_144 (Activation)	(None, None, None, 1 0)	batch_normalization_144[0]
activation_147 (Activation)	(None, None, None, 1 0)	batch_normalization_147[0]
block17_18_mixed (Concatenate)	(None, None, None, 3 0)	activation_144[0]
block17_18_conv (Conv2D)	(None, None, None, 1 418880)	activation_147[0]
block17_18 (Lambda)	(None, None, None, 1 0)	block17_18_mixed[0]
block17_18_ac (Activation)	(None, None, None, 1 0)	block17_17_ac[0]
conv2d_149 (Conv2D)	(None, None, None, 1 139264)	block17_18_conv[0]
batch_normalization_149 (BatchNormalizer)	(None, None, None, 1 384)	block17_18_ac[0]
activation_149 (Activation)	(None, None, None, 1 0)	conv2d_149[0]
conv2d_150 (Conv2D)	(None, None, None, 1 143360)	activation_149[0]
batch_normalization_150 (BatchNormalizer)	(None, None, None, 1 480)	conv2d_150[0]
activation_150 (Activation)	(None, None, None, 1 0)	batch_normalization_150[0]
conv2d_148 (Conv2D)	(None, None, None, 1 208896)	block17_18_ac[0]
conv2d_151 (Conv2D)	(None, None, None, 1 215040)	activation_150[0]
batch_normalization_148 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_148[0]
batch_normalization_151 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_151[0]
activation_148 (Activation)	(None, None, None, 1 0)	batch_normalization_148[0]
activation_151 (Activation)	(None, None, None, 1 0)	batch_normalization_151[0]
block17_19_mixed (Concatenate)	(None, None, None, 3 0)	activation_148[0]
block17_19_conv (Conv2D)	(None, None, None, 1 418880)	activation_151[0]
block17_19 (Lambda)	(None, None, None, 1 0)	block17_19_mixed[0]
block17_19_ac (Activation)	(None, None, None, 1 0)	block17_18_ac[0]
conv2d_153 (Conv2D)	(None, None, None, 1 139264)	block17_19_conv[0]
batch_normalization_153 (BatchNormalizer)	(None, None, None, 1 384)	block17_19_ac[0]
activation_153 (Activation)	(None, None, None, 1 0)	conv2d_153[0]
conv2d_154 (Conv2D)	(None, None, None, 1 143360)	activation_153[0]
batch_normalization_154 (BatchNormalizer)	(None, None, None, 1 480)	conv2d_154[0]
activation_154 (Activation)	(None, None, None, 1 0)	batch_normalization_154[0]
conv2d_152 (Conv2D)	(None, None, None, 1 208896)	block17_19_ac[0]
conv2d_155 (Conv2D)	(None, None, None, 1 215040)	activation_154[0]
batch_normalization_152 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_152[0]
batch_normalization_155 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_155[0]
activation_152 (Activation)	(None, None, None, 1 0)	batch_normalization_152[0]
activation_155 (Activation)	(None, None, None, 1 0)	batch_normalization_155[0]
block17_20_mixed (Concatenate)	(None, None, None, 3 0)	activation_152[0]
block17_20_conv (Conv2D)	(None, None, None, 1 418880)	activation_155[0]
block17_20 (Lambda)	(None, None, None, 1 0)	block17_20_mixed[0]
block17_20_ac (Activation)	(None, None, None, 1 0)	block17_19_ac[0]
conv2d_160 (Conv2D)	(None, None, None, 2 278528)	block17_20_conv[0]
batch_normalization_160 (BatchNormalizer)	(None, None, None, 2 768)	block17_20_ac[0]
activation_160 (Activation)	(None, None, None, 2 0)	conv2d_160[0]
conv2d_156 (Conv2D)	(None, None, None, 2 278528)	activation_160[0]
conv2d_158 (Conv2D)	(None, None, None, 2 278528)	block17_20_ac[0]
conv2d_161 (Conv2D)	(None, None, None, 2 663552)	activation_160[0]
batch_normalization_156 (BatchNormalizer)	(None, None, None, 2 768)	conv2d_156[0]
batch_normalization_158 (BatchNormalizer)	(None, None, None, 2 768)	conv2d_158[0]
activation_156 (Activation)	(None, None, None, 2 0)	batch_normalization_156[0]
activation_158 (Activation)	(None, None, None, 2 0)	batch_normalization_158[0]
block17_21_mixed (Concatenate)	(None, None, None, 3 0)	activation_156[0]
block17_21_conv (Conv2D)	(None, None, None, 1 418880)	activation_158[0]
block17_21 (Lambda)	(None, None, None, 1 0)	block17_21_mixed[0]
block17_21_ac (Activation)	(None, None, None, 1 0)	block17_20_ac[0]
conv2d_163 (Conv2D)	(None, None, None, 1 139264)	block17_21_conv[0]
batch_normalization_163 (BatchNormalizer)	(None, None, None, 1 384)	block17_21_ac[0]
activation_163 (Activation)	(None, None, None, 1 0)	conv2d_163[0]
conv2d_164 (Conv2D)	(None, None, None, 1 143360)	activation_163[0]
batch_normalization_164 (BatchNormalizer)	(None, None, None, 1 480)	conv2d_164[0]
activation_164 (Activation)	(None, None, None, 1 0)	batch_normalization_164[0]
conv2d_162 (Conv2D)	(None, None, None, 1 208896)	block17_21_ac[0]
conv2d_165 (Conv2D)	(None, None, None, 1 215040)	activation_164[0]
batch_normalization_162 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_162[0]
batch_normalization_165 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_165[0]
activation_162 (Activation)	(None, None, None, 1 0)	batch_normalization_162[0]
activation_165 (Activation)	(None, None, None, 2 0)	batch_normalization_165[0]
conv2d_163 (Conv2D)	(None, None, None, 1 399360)	mixed_7a[0]
conv2d_166 (Conv2D)	(None, None, None, 2 172032)	activation_165[0]
batch_normalization_163 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_163[0]
batch_normalization_166 (BatchNormalizer)	(None, None, None, 2 768)	conv2d_166[0]
activation_163 (Activation)	(None, None, None, 1 0)	batch_normalization_163[0]
activation_166 (Activation)	(None, None, None, 2 0)	batch_normalization_166[0]
block8_1_mixed (Concatenate)	(None, None, None, 4 0)	activation_163[0]
block8_1_conv (Conv2D)	(None, None, None, 2 933920)	activation_166[0]
block8_1 (Lambda)	(None, None, None, 2 0)	block8_1_mixed[0]
block8_1_ac (Activation)	(None, None, None, 2 0)	mixed_7a[0]
conv2d_168 (Conv2D)	(None, None, None, 1 399360)	block8_1_conv[0]
batch_normalization_168 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_168[0]
activation_168 (Activation)	(None, None, None, 1 0)	batch_normalization_168[0]
conv2d_169 (Conv2D)	(None, None, None, 2 129024)	activation_168[0]
batch_normalization_169 (BatchNormalizer)	(None, None, None, 2 672)	conv2d_169[0]
activation_169 (Activation)	(None, None, None, 2 0)	batch_normalization_169[0]
conv2d_167 (Conv2D)	(None, None, None, 1 399360)	block8_1_ac[0]
conv2d_170 (Conv2D)	(None, None, None, 2 172032)	activation_169[0]
batch_normalization_167 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_167[0]
batch_normalization_170 (BatchNormalizer)	(None, None, None, 2 768)	conv2d_170[0]
activation_167 (Activation)	(None, None, None, 1 0)	batch_normalization_170[0]
activation_170 (Activation)	(None, None, None, 2 0)	batch_normalization_170[0]
block8_2_mixed (Concatenate)	(None, None, None, 4 0)	activation_167[0]
block8_2_conv (Conv2D)	(None, None, None, 2 933920)	activation_170[0]
block8_2 (Lambda)	(None, None, None, 2 0)	block8_2_mixed[0]
block8_2_ac (Activation)	(None, None, None, 2 0)	block8_1_ac[0]
conv2d_172 (Conv2D)	(None, None, None, 1 399360)	block8_2_conv[0]
batch_normalization_172 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_172[0]
activation_172 (Activation)	(None, None, None, 1 0)	batch_normalization_172[0]
conv2d_173 (Conv2D)	(None, None, None, 2 129024)	activation_172[0]
batch_normalization_173 (BatchNormalizer)	(None, None, None, 2 672)	conv2d_173[0]
activation_173 (Activation)	(None, None, None, 2 0)	batch_normalization_173[0]
conv2d_171 (Conv2D)	(None, None, None, 1 399360)	block8_2_ac[0]
conv2d_174 (Conv2D)	(None, None, None, 2 172032)	activation_173[0]
batch_normalization_171 (BatchNormalizer)	(None, None, None, 1 576)	conv2d_171[0]
batch_normalization_174 (BatchNormalizer)	(None, None, None, 2 768)	conv2d_174[0]
activation_171 (Activation)	(None, None, None, 1 0)	batch_normalization_174[0]
activation_174 (Activation)	(None, None, None, 2 0)	batch_normalization_174[0]



block8_3_mixed (Concatenate)	(None, None, None, 4, 0)	activation_171[0][0]
block8_3_conv (Conv2D)	(None, None, None, 2, 933920)	activation_174[0][0]
block8_3 (Lambda)	(None, None, None, 2, 0)	block8_2_ac[0][0]
block8_3_ac (Activation)	(None, None, None, 2, 0)	block8_3_conv[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]
block8_4_conv (Conv2D)	(None, None, None, 2, 933920)	activation_178[0][0]
block8_4 (Lambda)	(None, None, None, 2, 0)	block8_3_ac[0][0]
block8_4_ac (Activation)	(None, None, None, 2, 0)	block8_4_conv[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]
block8_5_conv (Conv2D)	(None, None, None, 2, 933920)	activation_182[0][0]
block8_5 (Lambda)	(None, None, None, 2, 0)	block8_4_ac[0][0]
block8_5_ac (Activation)	(None, None, None, 2, 0)	block8_5_conv[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]
block8_6_conv (Conv2D)	(None, None, None, 2, 933920)	activation_186[0][0]
block8_6 (Lambda)	(None, None, None, 2, 0)	block8_5_ac[0][0]
block8_6_ac (Activation)	(None, None, None, 2, 0)	block8_6_conv[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]
block8_7_conv (Conv2D)	(None, None, None, 2, 933920)	activation_190[0][0]
block8_7 (Lambda)	(None, None, None, 2, 0)	block8_6_ac[0][0]
block8_7_ac (Activation)	(None, None, None, 2, 0)	block8_7_conv[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]
block8_8_conv (Conv2D)	(None, None, None, 2, 933920)	activation_194[0][0]
block8_8 (Lambda)	(None, None, None, 2, 0)	block8_7_ac[0][0]
block8_8_ac (Activation)	(None, None, None, 2, 0)	block8_8_conv[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]
block8_9_conv (Conv2D)	(None, None, None, 2, 933920)	activation_198[0][0]
block8_9 (Lambda)	(None, None, None, 2, 0)	block8_8_ac[0][0]
block8_9_ac (Activation)	(None, None, None, 2, 0)	block8_9_conv[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]
block8_10_conv (Conv2D)	(None, None, None, 2, 933920)	activation_202[0][0]
block8_10 (Lambda)	(None, None, None, 2, 0)	block8_9_ac[0][0]
conv_7b (Conv2D)	(None, None, None, 1, 3194880)	block8_10_conv[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)	0
dense (Dense)	(None, 128)	196736
dense_1 (Dense)	(None, 64)	8256
dense_2 (Dense)	(None, 32)	2080
dropout (Dropout)	(None, 32)	0
dense_3 (Dense)	(None, 3)	99

=====

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 camada do modelo
for l in model.layers:
    if l.name.split('.')[-1] == 'dense':
        l.trainable=False
    else:
        l.trainable=True
```

In [7]:

```
#iniciando objeto que apanhara todas as imagens de treino, processando as imagens com tf.keras.preprocessing.image.ImageDataGenerator(preprocessing_function=None)
train_data_gen = tf.keras.preprocessing.image.ImageDataGenerator(preprocessing_function=None)

#iniciando objeto que apanhara todas as imagens de teste, processando as imagens com tf.keras.preprocessing.image.ImageDataGenerator(preprocessing_function=None)
test_data_gen = tf.keras.preprocessing.image.ImageDataGenerator(preprocessing_function=None)
```

In [8]:

```
#definindo PRÓPRIO DATASET PARA USO

#definindo gerador de imagens de treino
train_generator = train_data_gen.flow_from_directory('shapes_split/train',
                                                    target_size=(224, 224), # tamanho da imagem
                                                    batch_size=batch_size,
                                                    class_mode='categorical',
                                                    shuffle=True)

#definindo gerador de imagens de teste
test_generator = test_data_gen.flow_from_directory('shapes_split/test',
                                                  target_size=(224, 224), # tamanho da imagem
                                                  batch_size=batch_size,
                                                  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]:

```
#definindo os steps
step_size_train = train_generator.n//train_generator.batch_size
step_size_test = test_generator.n//test_generator.batch_size
```

In [11]:

```
#treinando e testando o modelo
history = model.fit_generator(generator=train_generator,
                             steps_per_epoch=step_size_train,
                             epochs=epochs,
                             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:193: UserWarning: Model.fit_generator() is deprecated and will be removed in a future version. Please use Model.fit(), which supports generators.
warnings.warn('Model.fit_generator() is deprecated and ')

Epoch 1/10
7/7 [=====] - 43s 5s/step - loss: 1.8096 - accuracy: 0.4913 - val_loss: 0.1582 - val_accuracy: 0.9688
Epoch 2/10
7/7 [=====] - 30s 4s/step - loss: 0.4413 - accuracy: 0.8016 - val_loss: 0.0601 - val_accuracy: 1.0000
Epoch 3/10
7/7 [=====] - 31s 4s/step - loss: 0.1280 - accuracy: 0.9312 - val_loss: 0.0250 - val_accuracy: 1.0000
Epoch 4/10
7/7 [=====] - 35s 5s/step - loss: 0.1570 - accuracy: 0.9296 - val_loss: 0.0244 - val_accuracy: 0.9688
Epoch 5/10
7/7 [=====] - 38s 5s/step - loss: 0.0660 - accuracy: 0.9752 - val_loss: 0.1089 - val_accuracy: 0.9375
Epoch 6/10
7/7 [=====] - 31s 4s/step - loss: 0.0505 - accuracy: 0.9853 - val_loss: 0.0236 - val_accuracy: 1.0000
Epoch 7/10
7/7 [=====] - 31s 5s/step - loss: 0.0497 - accuracy: 0.9831 - val_loss: 0.0300 - val_accuracy: 0.9688
Epoch 8/10
7/7 [=====] - 31s 4s/step - loss: 0.0543 - accuracy: 0.9675 - val_loss: 0.0578 - val_accuracy: 0.9688
Epoch 9/10
7/7 [=====] - 31s 4s/step - loss: 0.0276 - accuracy: 0.9904 - val_loss: 6.5682e-04 - val_accuracy: 1.0000
Epoch 10/10
7/7 [=====] - 32s 5s/step - loss: 0.0245 - accuracy: 0.9918 - val_loss: 0.0028 - val_accuracy: 1.0000
```

In [12]:

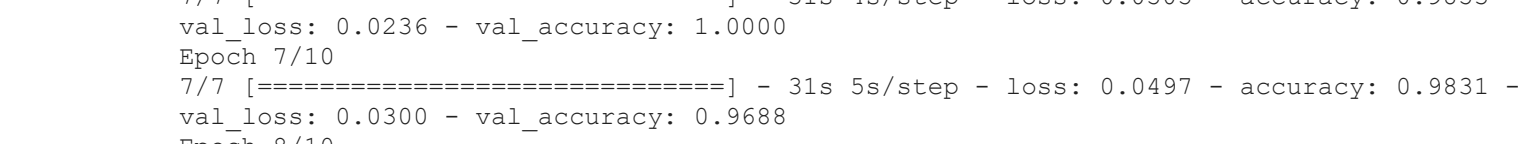
```
#avaliando o modelo
loss_train, train_acc = model.evaluate_generator(train_generator, steps=step_size_train)
loss_test, test_acc = model.evaluate_generator(test_generator, steps=step_size_test)
print('Train: %.3f, Test: %.3f' % (train_acc, test_acc))

c:\users\vinicius\appdata\local\programs\python\python39\lib\site-packages\tensorflow\python\keras\engine\training.py:193: UserWarning: Model.evaluate_generator() is deprecated and will be removed in a future version. Please use Model.evaluate(), which supports generators.
warnings.warn('Model.evaluate_generator() is deprecated and ')

Train: 1.000, Test: 1.000
```

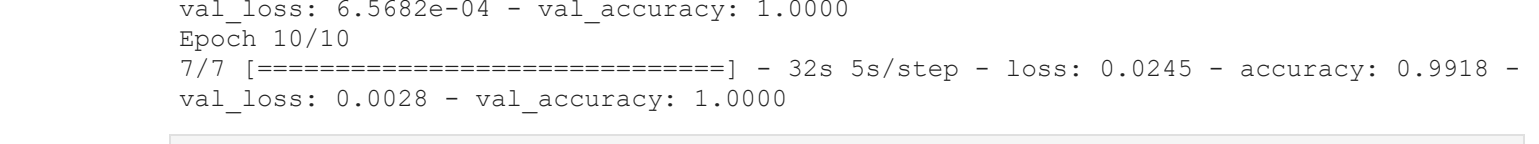
In [13]:

```
#Apresentando resultados em graficos
plt.title('Loss')
plt.plot(history.history['loss'], label='train')
plt.plot(history.history['val_loss'], label='test')
plt.legend()
plt.show()
```



In [14]:

```
# Criando graficos para visualização dos resultados
plt.title('Accuracy')
plt.plot(history.history['accuracy'], label='train')
plt.plot(history.history['val_accuracy'], label='test')
plt.legend()
plt.show()
```



In [15]:

```
print('Criando classificações..')
labels = os.listdir('shapes_split/test')
print('Rotulos', 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..

```
Rotulos ['circles', 'squares', 'triangles']
c:\users\vinicius\appdata\local\programs\python\python39\lib\site-packages\tensorflow\python\keras\engine\training.py:193: UserWarning: Model.predict_generator() is deprecated and will be removed in a future version. Please use Model.predict(), which supports generators.
warnings.warn('Model.predict_generator() is deprecated and ')

Preds Created
Preds ID created
```

In [16]:

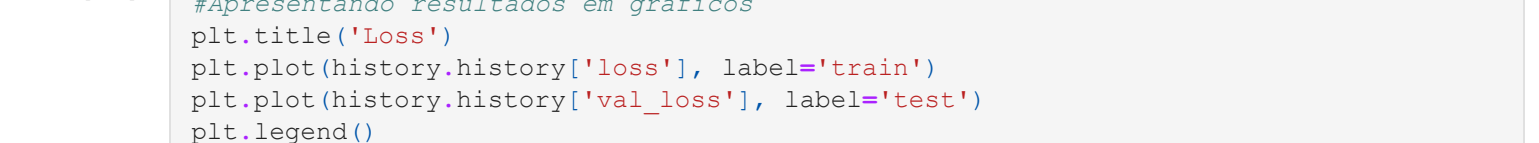
```
classification = classification_report(test_generator.classes, y_pred, target_names=labels)
print(classification)

-----CLASSIFICATION-----
precision    recall  f1-score   support

circles      0.35      0.35      0.35        20
squares      0.30      0.30      0.30        20
triangles     0.25      0.25      0.25        20

accuracy          0.30          0.30          0.30        60
macro avg         0.30          0.30          0.30        60
weighted avg      0.30          0.30          0.30        60

-----MATRIX-----
<AxesSubplot>
```



In [ ]: