

<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 = 500 # 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
```

```
def adiciona_apos_x_uma_camada_GlobalMaxPooling2D_e_atribui_este_no_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()
```

Model: "model"

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

input_1 (InputLayer)

conv2d (Conv2D)

batch_normalization (BatchNorma

activation (Activation)

conv2d_1 (Conv2D)

batch_normalization_1 (BatchNor

activation_1 (Activation)

conv2d_2 (Conv2D)

batch_normalization_2 (BatchNor

activation_2 (Activation)

max_pooling2d (MaxPooling2D)

conv2d_3 (Conv2D)

batch_normalization_3 (BatchNor

activation_3 (Activation)

conv2d_4 (Conv2D)

batch_normalization_4 (BatchNor

activation_4 (Activation)

max_pooling2d_1 (MaxPooling2D)

conv2d_8 (Conv2D)

batch_normalization_8 (BatchNor

activation_8 (Activation)

conv2d_6 (Conv2D)

conv2d_9 (Conv2D)

batch_normalization_6 (BatchNor

batch_normalization_9 (BatchNor

activation_6 (Activation)

activation_9 (Activation)

average_pooling2d (AveragePooli

conv2d_5 (Conv2D)

conv2d_7 (Conv2D)

conv2d_10 (Conv2D)

conv2d_11 (Conv2D)

batch_normalization_5 (BatchNor

batch_normalization_7 (BatchNor

batch_normalization_10 (BatchNo

batch_normalization_11 (BatchNo

activation_5 (Activation)

activation_7 (Activation)

activation_10 (Activation)

activation_11 (Activation)

mixed_5b (Concatenate)

conv2d_15 (Conv2D)

batch_normalization_15 (BatchNo

activation_15 (Activation)

conv2d_13 (Conv2D)

conv2d_16 (Conv2D)

batch_normalization_13 (BatchNo

batch_normalization_16 (BatchNo

activation_13 (Activation)

activation_16 (Activation)

conv2d_12 (Conv2D)

conv2d_14 (Conv2D)

conv2d_17 (Conv2D)

batch_normalization_12 (BatchNo

batch_normalization_14 (BatchNo

batch_normalization_17 (BatchNo

activation_12 (Activation)

activation_14 (Activation)

activation_17 (Activation)

block35_1_mixed (Concatenate)

block35_1_conv (Conv2D)

block35_1 (Lambda)

block35_1_ac (Activation)

conv2d_21 (Conv2D)

batch_normalization_21 (BatchNo

activation_21 (Activation)

conv2d_19 (Conv2D)

conv2d_22 (Conv2D)

batch_normalization_19 (BatchNo

batch_normalization_22 (BatchNo

activation_19 (Activation)

activation_22 (Activation)

conv2d_18 (Conv2D)

conv2d_20 (Conv2D)

conv2d_23 (Conv2D)

batch_normalization_18 (BatchNo

batch_normalization_20 (BatchNo

batch_normalization_23 (BatchNo

activation_18 (Activation)

activation_20 (Activation)

activation_23 (Activation)

block35_2_mixed (Concatenate)

block35_2_conv (Conv2D)

block35_2 (Lambda)

block35_2_ac (Activation)

conv2d_27 (Conv2D)

batch_normalization_27 (BatchNo

activation_27 (Activation)

conv2d_25 (Conv2D)

conv2d_28 (Conv2D)

batch_normalization_25 (BatchNo

batch_normalization_28 (BatchNo

activation_25 (Activation)

activation_28 (Activation)

conv2d_24 (Conv2D)

conv2d_26 (Conv2D)

conv2d_29 (Conv2D)

batch_normalization_24 (BatchNo

batch_normalization_26 (BatchNo

batch_normalization_29 (BatchNo

activation_24 (Activation)

activation_26 (Activation)

activation_29 (Activation)

block35_3_mixed (Concatenate)

block35_3_conv (Conv2D)

block35_3 (Lambda)

block35_3_ac (Activation)

conv2d_33 (Conv2D)

batch_normalization_33 (BatchNo

activation_33 (Activation)

conv2d_31 (Conv2D)

conv2d_34 (Conv2D)

batch_normalization_31 (BatchNo

batch_normalization_34 (BatchNo

activation_31 (Activation)

activation_34 (Activation)

conv2d_30 (Conv2D)

conv2d_32 (Conv2D)

conv2d_35 (Conv2D)

batch_normalization_30 (BatchNo

batch_normalization_32 (BatchNo

batch_normalization_35 (BatchNo

activation_30 (Activation)

activation_32 (Activation)

activation_35 (Activation)

block35_4_mixed (Concatenate)

block35_4_conv (Conv2D)

block35_4 (Lambda)

block35_4_ac (Activation)

conv2d_39 (Conv2D)

batch_normalization_39 (BatchNo

activation_39 (Activation)

conv2d_37 (Conv2D)

conv2d_40 (Conv2D)

batch_normalization_37 (BatchNo

batch_normalization_40 (BatchNo

activation_37 (Activation)

activation_40 (Activation)

conv2d_36 (Conv2D)

conv2d_38 (Conv2D)

conv2d_41 (Conv2D)

batch_normalization_36 (BatchNo

batch_normalization_38 (BatchNo

batch_normalization_41 (BatchNo

activation_36 (Activation)

activation_38 (Activation)

activation_41 (Activation)

block35_5_mixed (Concatenate)

block35_5_conv (Conv2D)

block35_5 (Lambda)

block35_5_ac (Activation)

conv2d_45 (Conv2D)

batch_normalization_45 (BatchNo

activation_45 (Activation)

conv2d_43 (Conv2D)

conv2d_46 (Conv2D)

batch_normalization_43 (BatchNo

batch_normalization_46 (BatchNo

activation_43 (Activation)

activation_46 (Activation)

conv2d_42 (Conv2D)

conv2d_44 (Conv2D)

conv2d_47 (Conv2D)

batch_normalization_42 (BatchNo

batch_normalization_44 (BatchNo

batch_normalization_47 (BatchNo

activation_42 (Activation)

activation_44 (Activation)

activation_47 (Activation)

block35_6_mixed (Concatenate)

block35_6_conv (Conv2D)

block35_6 (Lambda)

block35_6_ac (Activation)

conv2d_51 (Conv2D)

batch_normalization_51 (BatchNo

activation_51 (Activation)

conv2d_49 (Conv2D)

conv2d_52 (Conv2D)

batch_normalization_49 (BatchNo

batch_normalization_52 (BatchNo

activation_49 (Activation)

activation_52 (Activation)

conv2d_48 (Conv2D)

conv2d_50 (Conv2D)

conv2d_53 (Conv2D)

batch_normalization_48 (BatchNo

batch_normalization_50 (BatchNo

activation_48 (Activation)

activation_50 (Activation)

activation_53 (Activation)

block35_7_mixed (Concatenate)

block35_7_conv (Conv2D)

block35_7 (Lambda)

block35_7_ac (Activation)

conv2d_57 (Conv2D)

batch_normalization_57 (BatchNo

activation_57 (Activation)

conv2d_55 (Conv2D)

conv2d_58 (Conv2D)

batch_normalization_55 (BatchNo

batch_normalization_58 (BatchNo

activation_55 (Activation)

activation_58 (Activation)

conv2d_54 (Conv2D)

conv2d_56 (Conv2D)

conv2d_59 (Conv2D)

batch_normalization_54 (BatchNo

batch_normalization_56 (BatchNo

activation_54 (Activation)

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</	

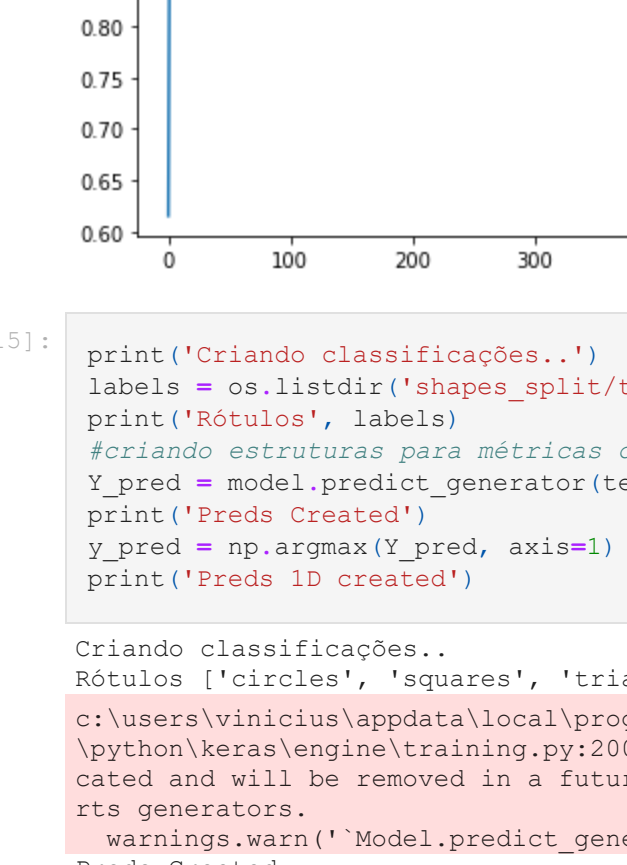
	74[0][0]		
block8_3_mixed (Concatenate)	(None, None, None, 4 0		activation_171[0][0]
			activation_174[0][0]
block8_3_conv (Conv2D)	(None, None, None, 2 933920		block8_3_mixed[0][0]
block8_3 (Lambda)	(None, None, None, 2 0		block8_2_ac[0][0]
			block8_3_conv[0][0]
block8_3_ac (Activation)	(None, None, 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_1
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_1
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_1
activation_178 (Activation)	(None, None, None, 2 0		batch_normalization_1
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_1
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_1
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_1
activation_182 (Activation)	(None, None, None, 2 0		batch_normalization_1
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_1
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_1
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_1
activation_186 (Activation)	(None, None, None, 2 0		batch_normalization_1
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_1
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_1
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_1
activation_190 (Activation)	(None, None, None, 2 0		batch_normalization_1
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_1
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_1
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_1
activation_194 (Activation)	(None, None, None, 2 0		batch_normalization_1
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_1
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_1
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_1
activation_198 (Activation)	(None, None, None, 2 0		batch_normalization_1
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_2
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_2
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_2
activation_202 (Activation)	(None, None, None, 2 0		batch_normalization_2
block8_10_mixed (Concatenate)	(None, None, None, 4 0		activation_199[0][0]


```
0 - val_loss: 3.7253e-09 - val_accuracy: 1.0000
7/7 ===== - 8s 1s/step - loss: 6.0887e-06 - accuracy: 1.000
0 - val_loss: 3.7253e-09 - val_accuracy: 1.0000
Epoch 442/500
7/7 ===== - 8s 1s/step - loss: 2.0685e-07 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 443/500
7/7 ===== - 9s 1s/step - loss: 7.8402e-04 - accuracy: 1.000
0 - val_loss: 3.7253e-09 - val_accuracy: 1.0000
Epoch 444/500
7/7 ===== - 8s 1s/step - loss: 1.4550e-07 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 445/500
7/7 ===== - 8s 1s/step - loss: 0.0070 - accuracy: 0.9931 -
val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 446/500
7/7 ===== - 8s 1s/step - loss: 6.7298e-06 - accuracy: 1.000
0 - val_loss: 3.7253e-09 - val_accuracy: 1.0000
Epoch 447/500
7/7 ===== - 8s 1s/step - loss: 1.2988e-05 - accuracy: 1.000
0 - val_loss: 3.7253e-09 - val_accuracy: 1.0000
Epoch 448/500
7/7 ===== - 8s 1s/step - loss: 2.4791e-04 - accuracy: 1.000
0 - val_loss: 3.7253e-09 - val_accuracy: 1.0000
Epoch 449/500
7/7 ===== - 8s 1s/step - loss: 5.8763e-04 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 450/500
7/7 ===== - 8s 1s/step - loss: 0.0012 - accuracy: 1.0000 -
val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 451/500
7/7 ===== - 9s 1s/step - loss: 1.3447e-04 - accuracy: 1.000
0 - val_loss: 3.7253e-09 - val_accuracy: 1.0000
Epoch 452/500
7/7 ===== - 8s 1s/step - loss: 1.6271e-04 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 453/500
7/7 ===== - 8s 1s/step - loss: 7.3006e-04 - accuracy: 1.000
0 - val_loss: 3.7253e-09 - val_accuracy: 1.0000
Epoch 454/500
7/7 ===== - 8s 1s/step - loss: 2.2128e-06 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 455/500
7/7 ===== - 8s 1s/step - loss: 0.0053 - accuracy: 0.9972 -
val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 456/500
7/7 ===== - 8s 1s/step - loss: 9.6035e-05 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 457/500
7/7 ===== - 8s 1s/step - loss: 0.0032 - accuracy: 1.0000 -
val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 458/500
7/7 ===== - 8s 1s/step - loss: 4.1174e-05 - accuracy: 1.000
0 - val_loss: 0.0020 - val_accuracy: 1.0000
Epoch 459/500
7/7 ===== - 8s 1s/step - loss: 0.0011 - accuracy: 1.0000 -
val_loss: 1.1176e-08 - val_accuracy: 1.0000
Epoch 460/500
7/7 ===== - 8s 1s/step - loss: 0.0016 - accuracy: 1.0000 -
val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 461/500
7/7 ===== - 8s 1s/step - loss: 8.6895e-05 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 462/500
7/7 ===== - 8s 1s/step - loss: 0.0017 - accuracy: 1.0000 -
val_loss: 7.4506e-09 - val_accuracy: 1.0000
Epoch 463/500
7/7 ===== - 8s 1s/step - loss: 0.0135 - accuracy: 0.9841 -
val_loss: 7.4506e-09 - val_accuracy: 1.0000
Epoch 464/500
7/7 ===== - 8s 1s/step - loss: 4.6514e-04 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 465/500
7/7 ===== - 8s 1s/step - loss: 0.0013 - accuracy: 1.0000 -
val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 466/500
7/7 ===== - 8s 1s/step - loss: 0.0038 - accuracy: 1.0000 -
val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 467/500
7/7 ===== - 8s 1s/step - loss: 2.7372e-05 - accuracy: 1.000
0 - val_loss: 7.4506e-09 - val_accuracy: 1.0000
Epoch 468/500
7/7 ===== - 8s 1s/step - loss: 6.3450e-04 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 469/500
7/7 ===== - 8s 1s/step - loss: 3.7689e-06 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 470/500
7/7 ===== - 8s 1s/step - loss: 0.0063 - accuracy: 0.9948 -
val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 471/500
7/7 ===== - 8s 1s/step - loss: 0.0016 - accuracy: 0.9988 -
val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 472/500
7/7 ===== - 9s 1s/step - loss: 1.6003e-08 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 473/500
7/7 ===== - 8s 1s/step - loss: 1.8480e-05 - accuracy: 1.000
0 - val_loss: 3.7253e-09 - val_accuracy: 1.0000
Epoch 474/500
7/7 ===== - 8s 1s/step - loss: 0.0030 - accuracy: 0.9981 -
val_loss: 3.7253e-09 - val_accuracy: 1.0000
Epoch 475/500
7/7 ===== - 8s 1s/step - loss: 1.6232e-04 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 476/500
7/7 ===== - 9s 1s/step - loss: 0.0208 - accuracy: 1.0000 -
val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 477/500
7/7 ===== - 8s 1s/step - loss: 4.8331e-04 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 478/500
7/7 ===== - 8s 1s/step - loss: 2.9830e-04 - accuracy: 1.000
0 - val_loss: 3.7253e-09 - val_accuracy: 1.0000
Epoch 479/500
7/7 ===== - 8s 1s/step - loss: 6.7962e-07 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 480/500
7/7 ===== - 8s 1s/step - loss: 0.0016 - accuracy: 0.9988 -
val_loss: 3.7253e-09 - val_accuracy: 1.0000
Epoch 481/500
7/7 ===== - 8s 1s/step - loss: 1.1395e-04 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 482/500
7/7 ===== - 8s 1s/step - loss: 9.3402e-06 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 483/500
7/7 ===== - 9s 1s/step - loss: 1.1041e-07 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 484/500
7/7 ===== - 9s 1s/step - loss: 0.0066 - accuracy: 1.0000 -
val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 485/500
7/7 ===== - 8s 1s/step - loss: 2.3385e-05 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 486/500
7/7 ===== - 8s 1s/step - loss: 8.4107e-06 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 487/500
7/7 ===== - 9s 1s/step - loss: 0.0066 - accuracy: 1.0000 -
val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 488/500
7/7 ===== - 8s 1s/step - loss: 1.4484e-07 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 489/500
7/7 ===== - 8s 1s/step - loss: 6.6466e-04 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 490/500
7/7 ===== - 8s 1s/step - loss: 9.0833e-08 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 491/500
7/7 ===== - 8s 1s/step - loss: 2.4534e-04 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 492/500
7/7 ===== - 8s 1s/step - loss: 0.0082 - accuracy: 1.0000 -
val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 493/500
7/7 ===== - 8s 1s/step - loss: 0.0078 - accuracy: 1.0000 -
val_loss: 3.7253e-09 - val_accuracy: 1.0000
Epoch 494/500
7/7 ===== - 8s 1s/step - loss: 4.1047e-05 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 495/500
7/7 ===== - 8s 1s/step - loss: 1.4328e-06 - accuracy: 1.000
0 - val_loss: 3.7253e-09 - val_accuracy: 1.0000
Epoch 496/500
7/7 ===== - 9s 1s/step - loss: 1.2805e-06 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 497/500
7/7 ===== - 8s 1s/step - loss: 0.0027 - accuracy: 0.9988 -
val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 498/500
7/7 ===== - 8s 1s/step - loss: 5.7896e-04 - accuracy: 1.000
0 - val_loss: 0.0000e+00 - val_accuracy: 1.0000
Epoch 499/500
7/7 ===== - 8s 1s/step - loss: 1.5522e-07 - accuracy: 1.000
0 - val_loss: 2.6077e-08 - val_accuracy: 1.0000
Epoch 500/500
7/7 ===== - 8s 1s/step - loss: 0.0012 - accuracy: 1.0000 -
val_loss: 2.9802e-08 - val_accuracy: 1.0000
```

```
In [12]: #Avaliando o modelo
train, train_acc = model.evaluate_generator(train_generator, steps=step_size_train,
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:1973: UserWarning: Model.evaluate_generator is depr
ecated and will be removed in a future version. Please use 'Model.evaluate', which sup
ports 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 visualiza  o 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 classifica  es..')
labels = os.listdir('shapes_split/test')
print('Rotulos', labels)
#criando estruturas para m tricas de avalia  o, 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 1D created')
```

```
Criando classifica  es..
Rotulos ['circles', 'squares', 'triangles']
c:\users\vinicius\appdata\local\programs\python\python39\lib\site-packages\tensorflow
\python\keras\engine\training.py:1973: UserWarning: Model.predict_generator is depr
ecated and will be removed in a future version. Please use 'Model.predict', which suppo
rts generators.
  warnings.warn('Model.predict_generator' is deprecated and '
Preds Created
Preds 1D created
```

```
In [16]: classification = classification_report(test_generator.classes, y_pred, target_names=la
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	0.35	0.35	0.35	20
triangles	0.30	0.30	0.30	20
accuracy		0.33	0.33	60
macro avg	0.33	0.33	0.33	60
weighted avg	0.33	0.33	0.33	60

```
Out[16]: <AxesSubplot>
```

