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        "from tensorflow.keras.models import Model\n",
        "from tensorflow.keras.preprocessing import image\n",
        "from tensorflow.keras.preprocessing.image import ImageDataGenerator, load_img\n",
        "from tensorflow.keras.applications.xception import Xception, preprocess_input\n",
        "from glob import glob\n",
        "import numpy as np\n",
        "import matplotlib.pyplot as plt"
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"train_datagen=ImageDataGenerator(rescale=1./255, shear_range=0.2, zoom_range=0.2, horizontal_flip=  
True)"  
  
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"Found 3662 images belonging to 5 classes.\n"  
  
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```

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        "x_train=train_datagen.flow_from_directory(r\"preprocessed dataset\\preprocessed
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target_size = ( 299 , 299 ) ,batch_size = 32,class_mode = 'categorical' )\n"

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applications/xception/xception_weights_tf_dim_ordering_tf_kernels_notop.h5\n",
"83689472/83683744 [=====] - 42s 1us/step\n",
"83697664/83683744 [=====] - 42s 1us/step\n"
]
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"xception = Xception ( input_shape = imageSize + [ 3 ] , weights = 'imagenet' , include_top = False )\n"
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"for layer in xception.layers :\n",

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"    layer.trainable = False"

]

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"x = Flatten ( ) ( xception.output )"

]

},

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"prediction = Dense ( 5 , activation = 'softmax' ) ( x )"

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Layer (type)	Output Shape	Param #	Connected to	\n",
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```

"=====
=====
"input_1 (InputLayer)      [(None, 299, 299, 3) 0      \n",

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        \n",

```

"block1_conv1 (Conv2D)	(None, 149, 149, 32) 864	input_1[0][0]	\n",
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"
_____ \n",
    "block1_conv1_bn (BatchNormaliza (None, 149, 149, 32) 128      block1_conv1[0][0]      \n",

"
_____ \n",
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"
_____ \n",
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"
_____ \n",
    "block1_conv2_bn (BatchNormaliza (None, 147, 147, 64) 256      block1_conv2[0][0]      \n",

"
_____ \n",
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"
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    "block2_sepconv1 (SeparableConv2 (None, 147, 147, 128 8768      block1_conv2_act[0][0]      \n",

"
_____ \n",
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"
_____ \n",
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"
_____ \n",

"block2_sepconv2 (SeparableConv2 (None, 147, 147, 128 17536    block2_sepconv2_act[0][0]
\n",

"
_____ \n",

"block2_sepconv2_bn (BatchNormal (None, 147, 147, 128 512    block2_sepconv2[0][0]    \n",

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"conv2d (Conv2D)          (None, 74, 74, 128) 8192    block1_conv2_act[0][0]    \n",

"
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"block2_pool (MaxPooling2D)  (None, 74, 74, 128) 0    block2_sepconv2_bn[0][0]    \n",

"
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"batch_normalization (BatchNorma (None, 74, 74, 128) 512    conv2d[0][0]    \n",

"
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"
          batch_normalization[0][0]    \n",

"
_____ \n",

"block3_sepconv1_act (Activation (None, 74, 74, 128) 0    add[0][0]    \n",

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"
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_____ \n",

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\n",

"
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"
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_____ \n",

"block3_sepconv2_act (Activation (None, 74, 74, 256) 0    block3_sepconv1_bn[0][0]    \n",

"
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_____ \n",

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\n",

"
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_____ \n",

"block3_sepconv2_bn (BatchNormal (None, 74, 74, 256) 1024    block3_sepconv2[0][0]    \n",

"
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_____ \n",

"conv2d_1 (Conv2D)    (None, 37, 37, 256) 32768    add[0][0]    \n",

"
_____
_____ \n",

"block3_pool (MaxPooling2D)    (None, 37, 37, 256) 0    block3_sepconv2_bn[0][0]    \n",

"
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"batch_normalization_1 (BatchNor (None, 37, 37, 256) 1024    conv2d_1[0][0]          \n",
"
_____ \n",
"add_1 (Add)          (None, 37, 37, 256) 0    block3_pool[0][0]          \n",
"
_____ batch_normalization_1[0][0]    \n",
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_____ \n",
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\n",
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"block4_sepconv2_act (Activation (None, 37, 37, 728) 0    block4_sepconv1_bn[0][0]          \n",
"
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\n",
"
_____ \n",
"block4_sepconv2_bn (BatchNormal (None, 37, 37, 728) 2912    block4_sepconv2[0][0]          \n",

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"
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"batch_normalization_2 (BatchNor (None, 19, 19, 728) 2912   conv2d_2[0][0]           \n",

"
_____ \n",

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"
                                batch_normalization_2[0][0]   \n",

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"
_____ \n",

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\n",

"
_____ \n",

"block5_sepconv1_bn (BatchNormal (None, 19, 19, 728) 2912   block5_sepconv1[0][0]     \n",

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\\n",

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"block5_sepconv2_bn (BatchNormal (None, 19, 19, 728) 2912      block5_sepconv2[0][0]      \\n",

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\\n",

"
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_____\\n",

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"
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_____ \n",

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"
_____
_____ \n",

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\n",

"
_____
_____ \n",

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"
_____
_____ \n",

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"
_____
_____ \n",

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\n",

"
_____
_____ \n",

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_____
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"
_____
_____ \n",
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```

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"
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_____ \n",
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\n",
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_____
_____ \n",
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_____ \n",
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```

```

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"
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"
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"
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```



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"
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"block8_sepconv3_bn (BatchNormal (None, 19, 19, 728) 2912    block8_sepconv3[0][0]    \n",
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```

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"
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_____ \n",

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"
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"
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"block9_sepconv2 (SeparableConv2 (None, 19, 19, 728) 536536      block9_sepconv2_act[0][0]
\n",

"
_____
_____ \n",

"block9_sepconv2_bn (BatchNormal (None, 19, 19, 728) 2912      block9_sepconv2[0][0]      \n",

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```

"
_____
_____ \n",

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"
_____
_____ \n",

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\n",

"
_____
_____ \n",

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_____
_____ \n",

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_____
_____ \n",

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"
_____
_____ \n",

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\n",

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```
"
_____\n",

"block10_sepconv2_act (Activatio (None, 19, 19, 728) 0      block10_sepconv1_bn[0][0]      \n",

"
_____\n",

"block10_sepconv2 (SeparableConv (None, 19, 19, 728) 536536      block10_sepconv2_act[0][0]
\n",

"
_____\n",

"block10_sepconv2_bn (BatchNorma (None, 19, 19, 728) 2912      block10_sepconv2[0][0]
\n",

"
_____\n",

"block10_sepconv3_act (Activatio (None, 19, 19, 728) 0      block10_sepconv2_bn[0][0]      \n",

"
_____\n",

"block10_sepconv3 (SeparableConv (None, 19, 19, 728) 536536      block10_sepconv3_act[0][0]
\n",

"
_____\n",

"block10_sepconv3_bn (BatchNorma (None, 19, 19, 728) 2912      block10_sepconv3[0][0]
\n",

"
_____\n",

"add_8 (Add)          (None, 19, 19, 728) 0      block10_sepconv3_bn[0][0]      \n",

"
_____\n",

"add_7[0][0]          \n",
```

```
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_____
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"block11_sepconv1_act (Activatio (None, 19, 19, 728) 0      add_8[0][0]      \n",

"
_____
_____ \n",

"block11_sepconv1 (SeparableConv (None, 19, 19, 728) 536536   block11_sepconv1_act[0][0]
\n",

"
_____
_____ \n",

"block11_sepconv1_bn (BatchNorma (None, 19, 19, 728) 2912    block11_sepconv1[0][0]
\n",

"
_____
_____ \n",

"block11_sepconv2_act (Activatio (None, 19, 19, 728) 0      block11_sepconv1_bn[0][0]    \n",

"
_____
_____ \n",

"block11_sepconv2 (SeparableConv (None, 19, 19, 728) 536536   block11_sepconv2_act[0][0]
\n",

"
_____
_____ \n",

"block11_sepconv2_bn (BatchNorma (None, 19, 19, 728) 2912    block11_sepconv2[0][0]
\n",

"
_____
_____ \n",

"block11_sepconv3_act (Activatio (None, 19, 19, 728) 0      block11_sepconv2_bn[0][0]    \n",
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"
_____ \n",

"block11_sepconv3 (SeparableConv (None, 19, 19, 728) 536536 block11_sepconv3_act[0][0]
\n",

"
_____ \n",

"block11_sepconv3_bn (BatchNorm (None, 19, 19, 728) 2912 block11_sepconv3[0][0]
\n",

"
_____ \n",

"add_9 (Add) (None, 19, 19, 728) 0 block11_sepconv3_bn[0][0] \n",
"
add_8[0][0] \n",

"
_____ \n",

"block12_sepconv1_act (Activation (None, 19, 19, 728) 0 add_9[0][0] \n",

"
_____ \n",

"block12_sepconv1 (SeparableConv (None, 19, 19, 728) 536536 block12_sepconv1_act[0][0]
\n",

"
_____ \n",

"block12_sepconv1_bn (BatchNorm (None, 19, 19, 728) 2912 block12_sepconv1[0][0]
\n",

"
_____ \n",

"block12_sepconv2_act (Activation (None, 19, 19, 728) 0 block12_sepconv1_bn[0][0] \n",

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"
_____
_____ \n",

"block12_sepconv2 (SeparableConv (None, 19, 19, 728) 536536    block12_sepconv2_act[0][0]
\n",

"
_____
_____ \n",

"block12_sepconv2_bn (BatchNorma (None, 19, 19, 728) 2912    block12_sepconv2[0][0]
\n",

"
_____
_____ \n",

"block12_sepconv3_act (Activatio (None, 19, 19, 728) 0    block12_sepconv2_bn[0][0]    \n",

"
_____
_____ \n",

"block12_sepconv3 (SeparableConv (None, 19, 19, 728) 536536    block12_sepconv3_act[0][0]
\n",

"
_____
_____ \n",

"block12_sepconv3_bn (BatchNorma (None, 19, 19, 728) 2912    block12_sepconv3[0][0]
\n",

"
_____
_____ \n",

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"
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"
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"
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"conv2d_3 (Conv2D)      (None, 10, 10, 1024) 745472    add_10[0][0]          \n",

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    "
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"
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