Emerging methods for early detection of forest fire

MODEL BUILDING

ADDING CNN LAYERS

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Project Name	Emerging methods for Early detection of forest fire

ADDING CNN LAYERS:

We will be adding three layers for CNN

- Convolution layer
- Pooling layer
- Flattening layer

Adding Convolutional Layer:

The convolutional layer is the first and core layer of CNN. It is one of the building blocks of a CNN and is used for extracting important features from the image.

In the Convolution operation, the input image will be convolved with the feature detector/filters to get a feature map. The important role of the feature detector is to extract the features from the image. The group of feature maps is called a feature layer.

Adding Pooling Layer

Max Pooling selects the maximum element from the region of the feature map covered by the filter. Thus, the output after max-pooling layer would be a feature map containing the most prominent features of the previous feature map.

After the convolution layer, a pooling layer is added. Max pooling layer can be added using MaxPooling2D class. It takes the pool size as a parameter. Efficient size of the pooling matrix is (2,2). It returns the pooled feature maps. (Note:Any number of convolution layers, pooling and dropout layers can be added)

Task 3: Adding Flatten Layer

Now the pooled feature map from the pooling layer will be converted into one single dimension matrix or map, where each pixel in one single column, nothing but flattening. The flattening layer converts the multi-dimension matrix to one single dimension layer.

IMPORT LIBRARIES:

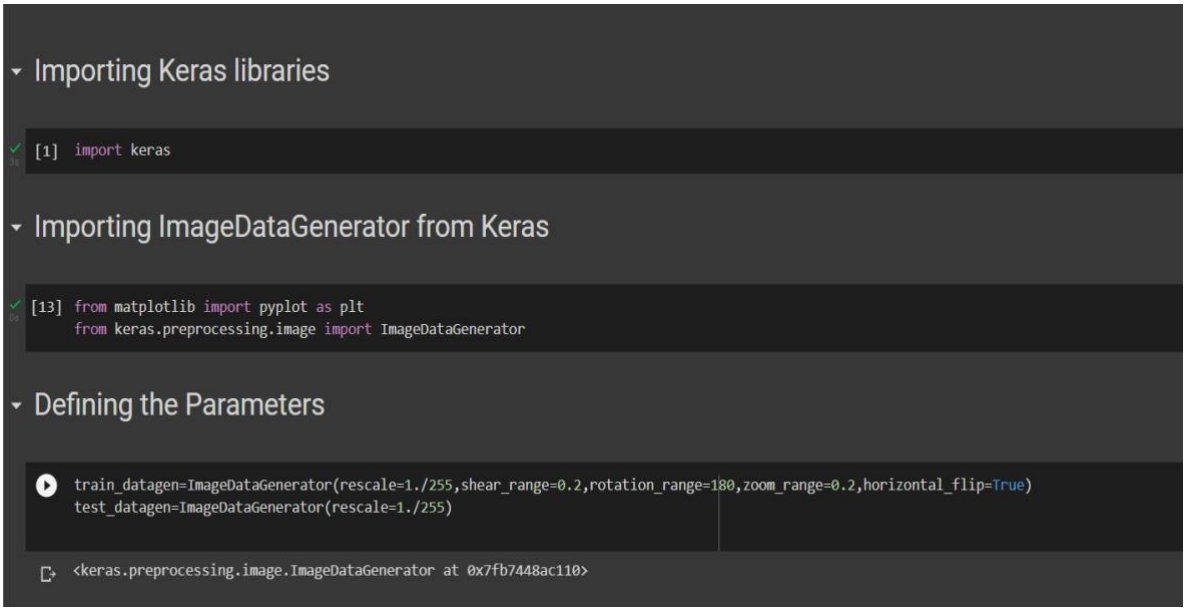
Importing Keras libraries

```
import keras
```

Importing ImageDataGenerator from Keras

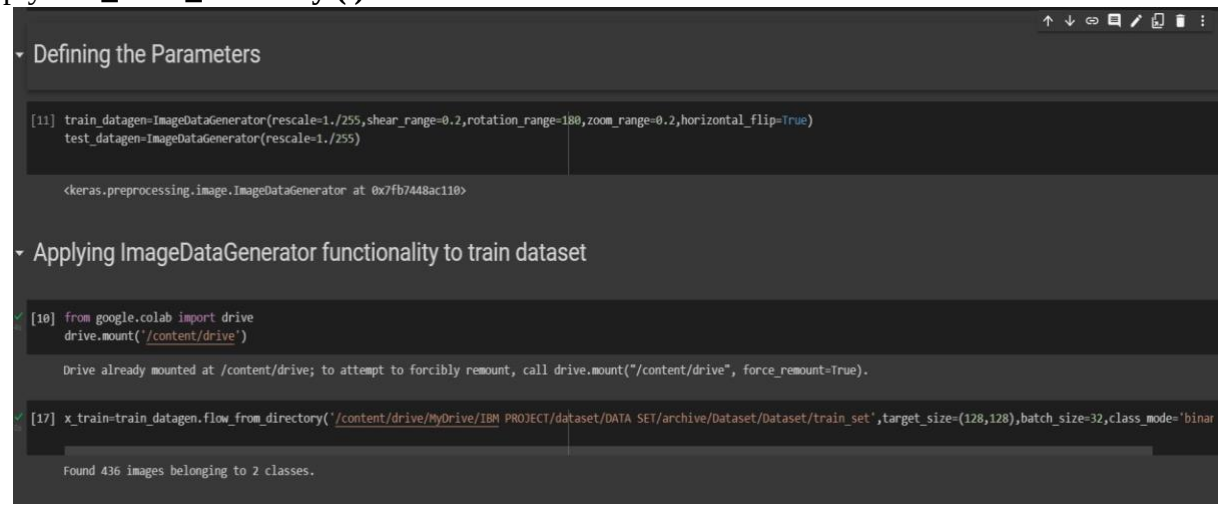
```
from keras.preprocessing.image import ImageDataGenerator
```

IMPORT DataGenerator FROM KERAS:



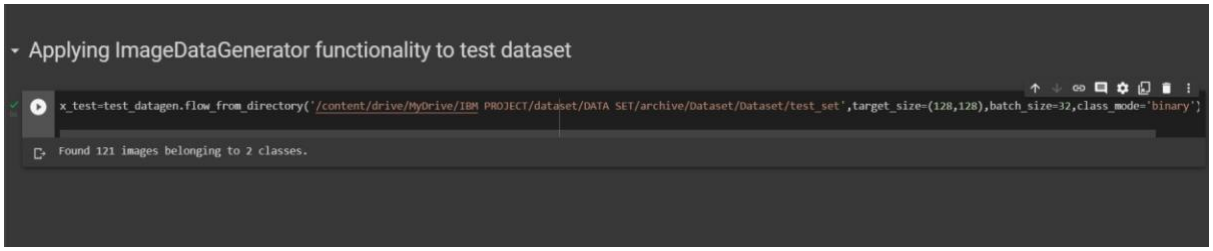
APPLYING ImageDataGenerator to train dataset:

ply**flow_from_directory ( )**methodfor Train folder.



APPLYING ImageDataGenerator to test dataset:

Applying the **flow_from_directory ( )** methodfortest folder.



IMPORTING MODEL BUILDING LIBRARIES:


```
#to define the linear Initialisation import sequential
from keras.models import Sequential
#to add layers import Dense
from keras.layers import Dense
#to create Convolutional kernel import convolution2D
from keras.layers import Convolution2D
#import Maxpooling layer
from keras.layers import MaxPooling2D
#import flatten layer
from keras.layers import Flatten
import warnings
warnings.filterwarnings('ignore')
```

INITIALIZING THE MODEL:

▾ Initializing the model

```
model=Sequential()
```

ADDING CNN LAYERS:

▾ Adding CNN Layers

```
model.add(Convolution2D(32,(3,3),input_shape=(128,128,3),activation='relu'))
#add maxpooling layers
model.add(MaxPooling2D(pool_size=(2,2)))
#add faltten layer
model.add(Flatten())
```