EARLY DETECTION OF FOREST FIRE USING DEEP LEARNING

MODEL BUILDING

TRAINING THE MODEL

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Project Name	Project-Early detection of forest fire using deep learning

TRAINING THE MODEL:

At this point, you have training data and a fully configured neural network to use for training. Now all that's left is to pass the data to the model and start the training process. This process is completed by iterating over the training data. Training starts by calling the fit() method..

Since you're using 'adam', the argument is the stack size (bad gradient descent and epochs: no: how many times the model needs to be trained).

steps_per_epoch:

- This indicates the total number of steps the generator will take when one epoch ends and the next epoch begins. The steps_per_epoch value can be calculated as the total number of samples in the training folder divided by the batch size
- Epochs: Integer and number of epochs to train the model.

Validation data is either the input of the Input and Target List Generator, the target, and a weight list of samples available for evaluation.

- Loss and metrics for each model after the end of the epoch.
- Validation_steps:

This argument can only be used if the validation data is a generator. Indicates the total number of steps the generator has taken before stopping at each epoch, its value is calculated as the total number of validation data points in the dataset divided by the validation batch size.IMPORT LIBRARIES:

11/7/22, 12:35 AM

Untitled8.ipynb - Colaboratory

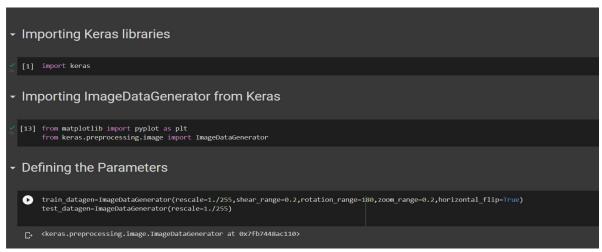
Importing Keras libraries

import keras

Importing ImageDataGenerator from Keras

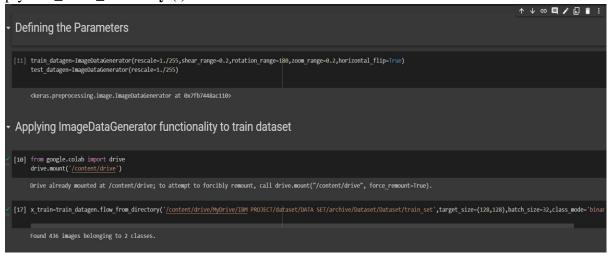
from keras.preprocessing.image import ImageDataGenerator

IMPORT ImageDataGenerator FROM KERAS:



APPLYING ImageDataGenerator to train dataset:

plyflow_from_directory ()methodfor Train folder.



APPLYING ImageDataGenerator to test dataset:

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



IMPORTING MODEL BUILDING LIBRARIES:

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Main code - Colaboratory

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())
```

ADDING DENSE LAYERS:

Add Dense layers

```
#add hidden layers
model.add(Dense(150,activation='relu'))
#add output layer
model.add(Dense(1,activation='sigmoid'))
```

CONFIGURING THE LEARNING PROCESS:

configuring the learning process

```
model.compile(loss='binary_crossentropy',optimizer="adam",metrics=["accuracy"])
```

TRAINING THE MODEL:

Training the model

```
model.fit\_generator(x\_train, steps\_per\_epoch=14, epochs=10, validation\_data=x\_test, validation\_data=
           Epoch 2/10
           Epoch 3/10
           Epoch 4/10
           Epoch 5/10
           Epoch 6/10
           Epoch 7/10
           Epoch 9/10
           Epoch 10/10
           14/14 [============== ] - 27s 2s/step - loss: 0.2593 - accuracy: 0.889
           <keras.callbacks.History at 0x7fd537101390>
```