EMERGING METHODS FOR EARLY DETECTION OF FORESTFIRES

MODEL BUILDINGPREDIC TIONS

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|-------------|--|
| ProjectName | Project-Emerging Methods For Early detection of forest fires |

PREDICTIONS:

The last and final step is to make use of our saved model to do predictions. For that we have aclass in keras called load_model. Load_model is used to load our saved model h5 file(alert.h5).

IMPORTLIBRARIES:

11/7/22, 12:35 AM Untitled8.ipynb - Colaboratory

→ Importing Keras libraries

import keras

▼ Importing ImageDataGenerator from Keras

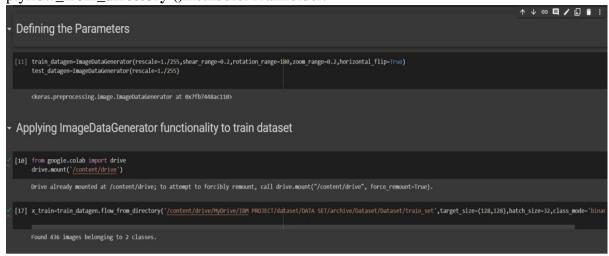
from keras.preprocessing.image import ImageDataGenerator

IMPORTImageDataGenerator FROMKERAS:



APPLYINGImageDataGeneratortotraindataset:

plyflow_from_directory ()methodforTrainfolder.



APPLYINGImageDataGeneratortotestdataset:

Applying the flow_from_directory() method for test folder.



IMPORTINGMODELBUILDINGLIBRARIES:

11/8/22, 1:16 AM

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')
```

INITIALIZINGTHEMODEL:

Initializing the model

```
model=Sequential()
```

ADDINGCNNLAYERS:

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())
```

ADDINGDENSELAYERS:

Add Dense layers

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

CONFIGURING THELEARNING PROCESS:

configuring the learning process

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

TRAININGTHEMODEL:

Training the model

```
model.fit generator(x train, steps per epoch=14, epochs=10, validation data=x test, validation
   Fnoch 1/10
   14/14 [============== ] - 322s 19s/step - loss: 1.5998 - accuracy: 0.7
   Epoch 2/10
   Epoch 3/10
   14/14 [============= ] - 32s 2s/step - loss: 0.2979 - accuracy: 0.885
   Fnoch 4/10
   14/14 [=========================== ] - 29s 2s/step - loss: 0.2585 - accuracy: 0.89%
   Epoch 5/10
   Epoch 6/10
   Epoch 7/10
   14/14 [============== ] - 32s 2s/step - loss: 0.1781 - accuracy: 0.928
   Epoch 8/10
   14/14 [=========================== ] - 30s 2s/step - loss: 0.1796 - accuracy: 0.924
   Epoch 9/10
   14/14 [============= ] - 31s 2s/step - loss: 0.2306 - accuracy: 0.896
   Epoch 10/10
   <keras.callbacks.History at 0x7fd537101390>
  4
```

SAVETHE MODEL:

- Save the model

```
model.save("forest.h5")
```

PREDICTIONS:

Predictions

```
#import load model from keras.model
from keras.models import load_model
#import image from keras
from tensorflow.keras.preprocessing import image
import numpy as np
#import cv2
import cv2
#load the saved model
model=load_model('forest.h5')
img=image.load_img('/content/drive/MyDrive/IBM PROJECT/dataset/DATA SET/archive/Dataset/Da
x=image.img_to_array(img)
res=cv2.resize(x,dsize=(128,128),interpolation=cv2.INTER_CUBIC)
#expand the image shape
x=np.expand_dims(res,axis=0)
```