

EARLY DETECTION OF FOREST FIRE USING DEEP LEARNING

MODEL BUILDING

CONFIGURE THE LEARNING

PROCESS

Team ID	PNT2022TMID18327
Project Name	Project-Early detection of forest fire using deep learning

CONFIGURING THE LEARNING PROCESS

With both the training data defined and model defined, it's time to configure the learning process. This is accomplished with a call to the `compile()` method of the `Sequential` model class. Compilation requires 3 arguments: an optimizer, a loss function, and a list of metrics.

```
In [ ]: #configure the learning process
        model.compile(loss = 'binary_crossentropy',
                      optimizer = "adam",
                      metrics = ["accuracy"])
```

Note: In our project, we have 2 classes in the output, so the loss is `binary_crossentropy`.

If you more than two classes in output put “`loss = categorical_crossentropy`”.

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:

▼ Importing Keras libraries

```
✓ [1] import keras
```

▼ Importing ImageDataGenerator from Keras

APPLYING ImageDataGenerator to train dataset:

`flow_from_directory()` method for Train folder.

```

Defining the Parameters

[11] train_datagen=ImageDataGenerator(rescale=1./255, shear_range=0.2, rotation_range=180, zoom_range=0.2, horizontal_flip=True)
     test_datagen=ImageDataGenerator(rescale=1./255)

<keras.preprocessing.image.ImageDataGenerator at 0x7fb7448ac110>

Applying ImageDataGenerator functionality to train dataset

[10] from google.colab import drive
     drive.mount('/content/drive')

Drive already mounted at /content/drives; to attempt to forcibly remount, call drive.mount("/content/drive", force_remount=True).

[17] x_train=train_datagen.flow_from_directory('/content/drive/MyDrive/IBM PROJECT/dataset/DATA SET/archive/Dataset/Dataset/train_set', target_size=(128,128), batch_size=32, class_mode='binary')

Found 436 images belonging to 2 classes.
```

APPLYING ImageDataGenerator to test dataset:

Applying the `flow_from_directory()` method for test folder.

```

Applying ImageDataGenerator functionality to test dataset

x_test=test_datagen.flow_from_directory('/content/drive/MyDrive/IBM PROJECT/dataset/DATA SET/archive/Dataset/Dataset/test_set', target_size=(128,128), batch_size=32, class_mode='binary')

Found 121 images belonging to 2 classes.
```

IMPORTING MODEL BUILDING LIBRARIES:

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')
```

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"])
```

