

# EMERGING METHODS FOR EARLY DETECTION OF FOREST FIRES

## MODEL BUILDING

### CONFIGURING THE LEARNING PROCESS

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#### *Importing The ImageDataGenerator Library*

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

#### *Define the parameters/arguments for ImageDataGenerator class*

```
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)
```

#### *Applying ImageDataGenerator functionality to trainset*

```
x_train=train_datagen.flow_from_directory(r'/content/drive/MyDrive/Dataset/train_set',  
target_size=(128,128), batch_size=32, class_mode='binary')
```

Found 436 images belonging to 2 classes.

#### *Applying ImageDataGenerator functionality to testset*

```
x_test=test_datagen.flow_from_directory(r'/content/drive/MyDrive/Dataset/test_set',
target_size=(128,128),batch_size=32, class_mode='binary')
```

Found 121 images belonging to 2 classes.

### ***Import model building libraries***

```
#To define Linear initialisation import Sequential
from keras.models import Sequential
#To add layers import Dense
from keras.layers import Dense
#To create Convolution 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***

```
model=Sequential()
```

### ***Add CNN Layer***

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

### ***Add Dense Layer***

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

### ***Configure the learning process***

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