

PROJECT DEVELOPMENT PHASE

SPRINT-III

MODEL BUILDING

Date	19 November 2022
Team ID	PNT2022TMID47227
Project Name	Emerging Methods for Early Detection of Forest Fires
Maximum Marks	4 Marks

Import model building libraries

```
#import keras libraries import numpy as np
import tensorflow from tensorflow.keras.models
import Sequential from tensorflow.keras import
layers from keras.layers import Dense from
keras.layers import Conv2D from keras.layers
import MaxPooling2D,Dropout from keras.layers
import Flatten
```

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 Hidden Layer

```
#add hidden layer
```

```
model.add(Dense(units=128,activation='relu'))
```

```
#add output layer
```

```
model.add(Dense(units=46,activation='softmax'))
```

Configure the learning process

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

Train the model

```
model.fit(x_train,epochs=10,steps_per_epochs=len((x_train)
```

```
from google.colab import drive drive.mount('/content/drive')
```

Save The Model

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

Predictions

```
# import load_model from keras.model from
keras.models import load_model # import image
class from keras from
tensorflow.keras.preprocessing import image

# import numpy
import numpy as np
# import cv2 import
cv2

#load the saved model model =
load_model("forestwithfire.h5")

#give any random image path

img=image.load_img(r'/content/drive/MyDrive/DataCollection/training/F
orest with fire/with fire (10).jpg') 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)
pred= model.predict(x_train)
pred
```