

PROJECT DEVELOPMENT PHASE

SPRINT-III

MODEL BUILDING

Date	16 November 2022
Team ID	PNT2022TMID51523
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
```