PROJECT DEVELOPMENT PHASE
SPRINT-III

MODEL BUILDING

[Click Here to view the Project(Hyperlink)](#)

Date	04 November 2022
Team ID	PNT2022TMID28047
Project Name	Emerging Methods for Early Detection of Forest Fires
MaximumMarks	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

```python
model=Sequential()
```

Add CNN Layer

```python
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

```python
 #add hidden layer
model.add(Dense(units=128,activation='relu'))
#add output layer
model.add(Dense(units=46,activation='softmax')
```

Configure the learning process

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

Train the model

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

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

Save The Model

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

Predictions

```python
# 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/Forest 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
```