PROJECT DEVELOPMENT PHASE

DELIVERY OF SPRINT-1

Date	11 November 2022
Team ID	PNT2022TMID44251
Project Name	Emerging methods for the early detection of forest fires

Executable Program

```
from tensorflow.keras.preprocessing.image import ImageDataGenerator
train_datagen=ImageDataGenerator(rescale=1./255,shear_range=0.2,rotation_range=180,z
oom_range=0.2,horizontal_flip=True)
test_datagen=ImageDataGenerator(rescale=1./255)
x_train=train_datagen.flow_from_directory(r'C:\Users\USER\Documents\Sem7\Naalaiyathir
an\Dataset\Dataset\train_set', target_size=(128,128),
                                          batch_size=32,
                                          class_mode='bi
                                          nary')
x_test=train_datagen.flow_from_directory(r'C:\Users\USER\Documents\Sem7\Naalaiyathira
n\Dataset\Dataset\test_set', target_size=(128,128),
                                          batch_size=32,
                                          class_mode='bi
                                          nary')
x_train.class_indices
from tensorflow.keras.models import
Sequentialfrom tensorflow.keras.layers
import Dense
from tensorflow.keras.layers import Convolution2D,MaxPooling2D,
Flattenimport warnings
warnings.filterwarnings('ignore')
model=Sequential()
model.add(MaxPooling2D(pool_size=(2,2)))
model.add(Flatten())
model.summary()
```

In [1]:
```
from tensorflow.keras.preprocessing.image import ImageDataGenerator
```

```
C:\anaconda\lib\site-packages\scipy\__init__.py:146: UserWarning: A NumPy version >=1.16.5 and <1.23.0 is required for this ver
sion of SciPy (detected version 1.23.3
  warnings.warn(f"A NumPy version >={np_minversion} and <{np_maxversion}"
```

In [2]:
```
train_datagen=ImageDataGenerator(rescale=1./255,shear_range=0.2,rotation_range=180,zoom_range=0.2,horizontal_flip=True)
```

In [3]:
```
test_datagen=ImageDataGenerator(rescale=1./255)
```

In [5]:
```
x_train=train_datagen.flow_from_directory(r'C:\Users\USER\Documents\Sem7\Naalaiyathiran\Dataset\Dataset\train_set', target_size=(
                                          batch_size=32,
                                          class_mode='binary')
```

```
Found 436 images belonging to 2 classes.
```

In [6]:
```
x_test=train_datagen.flow_from_directory(r'C:\Users\USER\Documents\Sem7\Naalaiyathiran\Dataset\Dataset\test_set', target_size=(12
                                          batch_size=32,
                                          class_mode='binary')
```

```
Found 121 images belonging to 2 classes.
```

In [7]:
```
x_train.class_indices
```

Out[7]:
```
{'forest': 0, 'with fire': 1}
```

In [8]:
```
from tensorflow.keras.models import Sequential
```

In [8]:
```
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense
```

In [9]:
```
from tensorflow.keras.layers import Convolution2D,MaxPooling2D, Flatten
```

In [10]:
```
import warnings
warnings.filterwarnings('ignore')
```

In [11]:
```
model=Sequential()
```

In [13]:
```
model.add(MaxPooling2D(pool_size=(2,2)))
```

In [14]:
```
model.add(Flatten())
```

In [70]:
```
model.summary()
```

```
Model: "sequential_3"
_________________________________________________________________
 Layer (type)                Output Shape              Param #
=================================================================
 conv2d_4 (Conv2D)           (None, 126, 126, 32)      896

 max_pooling2d_4 (MaxPooling  (None, 63, 63, 32)       0
 2D)

 flatten_4 (Flatten)         (None, 127008)            0

=================================================================
Total params: 896
```