

## PROJECT DEVELOPMENT PHASE

### DELIVERY OF SPRINT-1

Date	07 November 2022
Team Leader	Arun Vignesh S
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
,zoom_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\Naalaiyathiran\Dataset\Dataset\train_set', target_size=(128,128),
                                         batch_size=32,
                                         class_mode='binary')
x_test=train_datagen.flow_from_directory(r'C:\Users\USER\Documents\Sem7\Naalaiyathiran\Dataset\Dataset\test_set', target_size=(128,128),
                                         batch_size=32,
                                         class_mode='binary')
x_train.class_indices
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense
from tensorflow.keras.layers import Convolution2D,MaxPooling2D,Flatten
import 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 version 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=(128,
        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
```