

PROJECT DEVOLPMENT PHASE
DELIVERY OF SPRINT-2

Date	03 November 2022
Team ID	PNT2022TMID23880
Project Name	Emerging methods for the early detection of forest fires

Executable Program

Building:

```
model.add(Dense(150,activation='relu')) model.add(Dense(1,activation='sigmoid'))
model.compile(loss='binary_crossentropy',optimizer='adam',metrics=['accuracy'])
len(x_train)
len(x_test) model.fit_generator(x_train,steps_per_epoch=len(x_train),epochs=10,
                                validation_data=x_test,validation_steps=len(x_test)) import
tensorflow as tf
from keras.models import load_model
from tensorflow.keras.preprocessing import imageimport
numpy as np
import cv2 model.save('forestfire.h5')
model=load_model('forestfire.h5')testImg =
image.load_img(r'C:\Users\win\Desktop\Project_NT\test_set\forest\_101542074_g
ettyimages_956391468.jpg')s
testImgarrayImg = image.img_to_array(testImg)
arrayImg
x = np.expand_dims(arrayImg , axis = 0)X
images = np.vstack([x])
pred=model.predict(images)
Pred x_train.class_indicesif
(pred[0] > 0.5):
    print("forest with fire")else:
    print("forest without fire")
```

```

14/14 [=====] - 46s 3s/step - loss: 3.7642 - accuracy 0.5850 - val_loss: 8.932 - val_accuracy: 8.508
14/14 [=====] - 21s 2s/step - loss: 8.4287 - accuracy 0.5859 - val_loss: 8.1168 - val_accuracy: 8.9%
Epoch 3/10
14/14 [=====] - 22s 2s/step - loss: 0.2191 - accuracy 0.9083 - val_loss: 0.1111 - val_accuracy: 8.158
14/14 [=====] - 22s 2s/step - loss: 0.2520 - accuracy: 0.8991 - val_loss: 0.1058 - val_accuracy: 0.975
14/14 [=====] - 22s 2s/step - loss: 0.2192 - accuracy 0.9014 - val_loss: 0.1005 - val_accuracy: 0.960
14/14 [=====] - 22s 2s/step - loss: 0.1642 - accuracy: 0.9165 - val_loss: 0.0938 - val_accuracy: 0.975
14/14 [=====] - 21s 2s/step - loss: 0.1580 - accuracy 0.9334 - val_loss: 0.1111 - val_accuracy: 0.942
14/14 [=====] - 22s 2s/step - loss: 0.1516 - accuracy: 0.9268 - val_loss: 0.1111 - val_accuracy: 0.900
Epoch 9/10
14/14 [=====] - 25s 2s/step - loss: 0.1643 - accuracy 0.9311 - val_loss: 0.0874 - val_accuracy: 0.983
14/14 [=====] - 62s 5s/step - loss: 0.1640 - accuracy: 0.9220 - val_loss: 0.0889 - val_accuracy: 0.975

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[[ii, iam, i7P],

[ i6., 7?., %j,

[221., 223., 212.]]], dtype=float32)

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In [28]: if (pred[0] > 0.5):
          print("forest with fire")

```