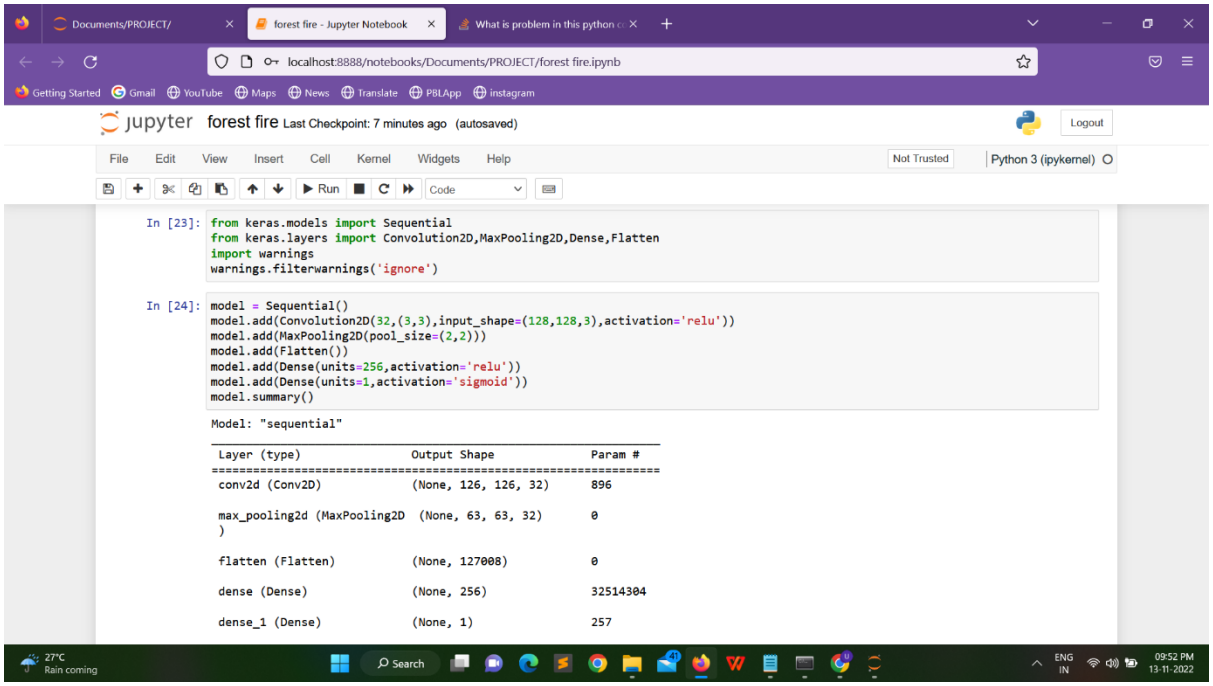
SPRINT – 2

MODEL BUILDING:



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In [23]:
```
from keras.models import Sequential
from keras.layers import Convolution2D,MaxPooling2D,Dense,Flatten
import warnings
warnings.filterwarnings('ignore')
```

In [24]:
```
model = Sequential()
model.add(Convolution2D(32,(3,3),input_shape=(128,128,3),activation='relu'))
model.add(MaxPooling2D(pool_size=(2,2)))
model.add(Flatten())
model.add(Dense(units=256,activation='relu'))
model.add(Dense(units=1,activation='sigmoid'))
model.summary()
```

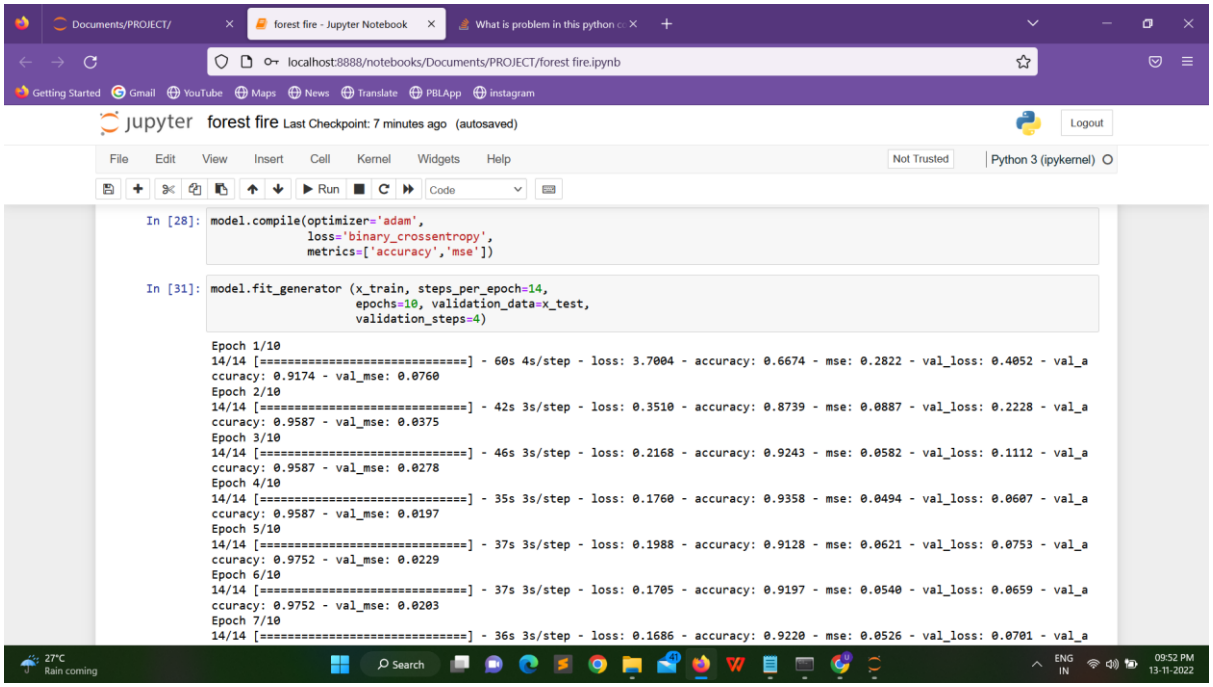
```
Model: "sequential"
_________________________________________________________________
 Layer (type)                Output Shape              Param #
=================================================================
 conv2d (Conv2D)             (None, 126, 126, 32)      896

 max_pooling2d (MaxPooling2D  (None, 63, 63, 32)       0
 )

 flatten (Flatten)           (None, 127008)            0

 dense (Dense)               (None, 256)               32514304

 dense_1 (Dense)             (None, 1)                 257
```



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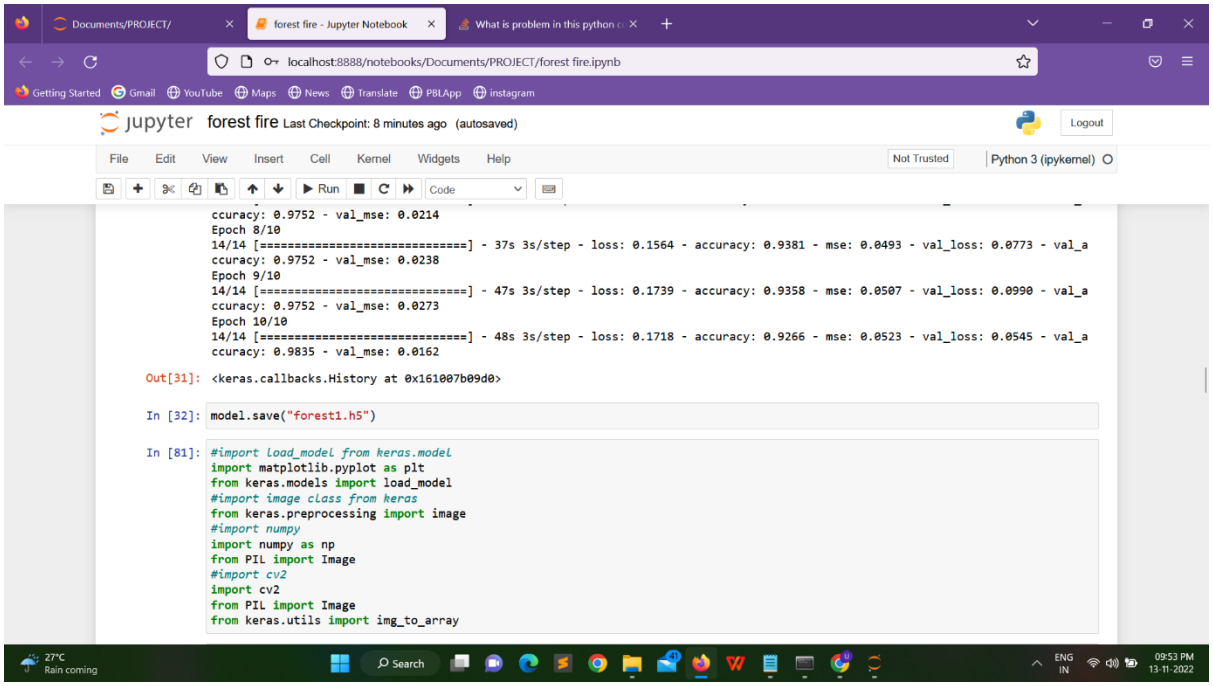
In [28]:
```
model.compile(optimizer='adam',
              loss='binary_crossentropy',
              metrics=['accuracy','mse'])
```

In [31]:
```
model.fit_generator (x_train, steps_per_epoch=14,
                     epochs=10, validation_data=x_test,
                     validation_steps=4)
```

```
Epoch 1/10
14/14 [==============================] - 60s 4s/step - loss: 3.7004 - accuracy: 0.6674 - mse: 0.2822 - val_loss: 0.4052 - val_a
ccuracy: 0.9174 - val_mse: 0.0760
Epoch 2/10
14/14 [==============================] - 42s 3s/step - loss: 0.3510 - accuracy: 0.8739 - mse: 0.0887 - val_loss: 0.2228 - val_a
ccuracy: 0.9587 - val_mse: 0.0375
Epoch 3/10
14/14 [==============================] - 46s 3s/step - loss: 0.2168 - accuracy: 0.9243 - mse: 0.0582 - val_loss: 0.1112 - val_a
ccuracy: 0.9587 - val_mse: 0.0278
Epoch 4/10
14/14 [==============================] - 35s 3s/step - loss: 0.1760 - accuracy: 0.9358 - mse: 0.0494 - val_loss: 0.0607 - val_a
ccuracy: 0.9587 - val_mse: 0.0197
Epoch 5/10
14/14 [==============================] - 37s 3s/step - loss: 0.1988 - accuracy: 0.9128 - mse: 0.0621 - val_loss: 0.0753 - val_a
ccuracy: 0.9752 - val_mse: 0.0229
Epoch 6/10
14/14 [==============================] - 37s 3s/step - loss: 0.1705 - accuracy: 0.9197 - mse: 0.0540 - val_loss: 0.0659 - val_a
ccuracy: 0.9752 - val_mse: 0.0203
Epoch 7/10
14/14 [==============================] - 36s 3s/step - loss: 0.1686 - accuracy: 0.9220 - mse: 0.0526 - val_loss: 0.0701 - val_a
```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Code
ccuracy: 0.9752 - val_mse: 0.0214
Epoch 8/10
14/14 [==============================] - 37s 3s/step - loss: 0.1564 - accuracy: 0.9381 - mse: 0.0493 - val_loss: 0.0773 - val_a
ccuracy: 0.9752 - val_mse: 0.0238
Epoch 9/10
14/14 [==============================] - 47s 3s/step - loss: 0.1739 - accuracy: 0.9358 - mse: 0.0507 - val_loss: 0.0990 - val_a
ccuracy: 0.9752 - val_mse: 0.0273
Epoch 10/10
14/14 [==============================] - 48s 3s/step - loss: 0.1718 - accuracy: 0.9266 - mse: 0.0523 - val_loss: 0.0545 - val_a
ccuracy: 0.9835 - val_mse: 0.0162
Out[31]: <keras.callbacks.History at 0x161007b09d0>
In [32]: model.save("forest1.h5")
In [81]: #import load_model from keras.model
import matplotlib.pyplot as plt
from keras.models import load_model
#import image class from keras
from keras.preprocessing import image
#import numpy
import numpy as np
from PIL import Image
#import cv2
import cv2
from PIL import Image
from keras.utils import img_to_array
27°C
Rain coming
Search
ENG
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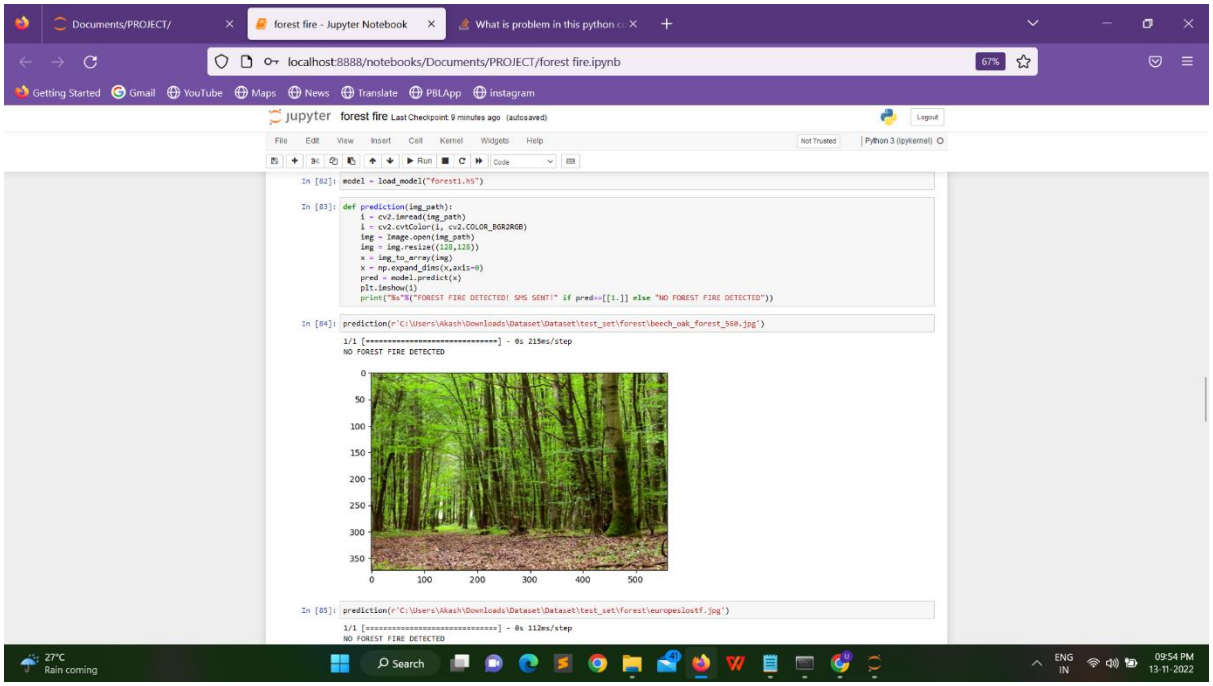
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Python 3 (ipykernel)
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Code
In [82]: model = load_model("forest1.h5")
In [83]: def prediction(img_path):
i = cv2.imread(img_path)
i = cv2.cvtColor(i, cv2.COLOR_BGR2RGB)
img = Image.open(img_path)
img = img.resize((128,128))
x = img_to_array(img)
x = np.expand_dims(x,axis=0)
pred = model.predict(x)
plt.imshow(i)
print("%s"%("FOREST FIRE DETECTED! SMS SENT!" if pred==[[1.]] else "NO FOREST FIRE DETECTED"))
In [84]: prediction(r'C:\Users\Akash\Downloads\Dataset\Dataset\test_set\forest\beech_oak_forest_560.jpg')
1/1 [==============================] - 0s 215ms/step
NO FOREST FIRE DETECTED
0
50
100
150
200
250
300
350
0
100
200
300
400
500
In [85]: prediction(r'C:\Users\Akash\Downloads\Dataset\Dataset\test_set\forest\europeslostf.jpg')
1/1 [==============================] - 0s 112ms/step
NO FOREST FIRE DETECTED
27°C
Rain coming
Search
ENG
IN
09:54 PM
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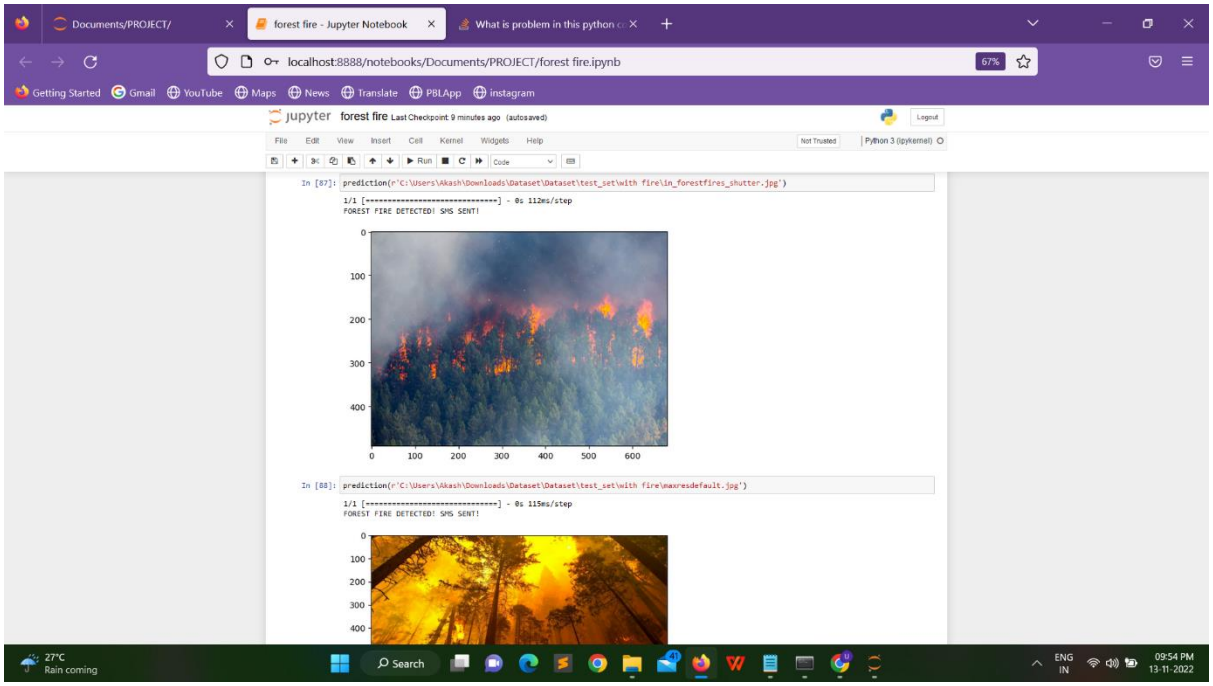
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Python 3 (ipykernel)
Run
Code
In [87]: prediction(r'C:\Users\Akash\Downloads\Dataset\Dataset\test_set\with fire\in_forestfires_shutter.jpg')
1/1 [==============================] - 0s 112ms/step
FOREST FIRE DETECTED! SMS SENT!
0
100
200
300
400
0
100
200
300
400
500
600
In [88]: prediction(r'C:\Users\Akash\Downloads\Dataset\Dataset\test_set\with fire\maxresdefault.jpg')
1/1 [==============================] - 0s 115ms/step
FOREST FIRE DETECTED! SMS SENT!
0
100
200
300
400
27°C
Rain coming
Search
ENG
IN
09:54 PM
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