Project Development Phase
SPRINT-2

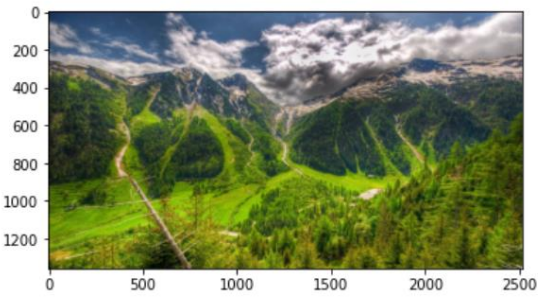
Team ID	PNT2022TMID21552
Project Name	EMERGING METHODS FOR EARLY DETECTION OF FOREST FIRES

In this sprint, forest fire has been detected through a live video stream and a message has been sent through Twilio if forest fire is detected.

```
In [1]: import cv2
        import numpy as np
        from PIL import Image
        from keras.models import load_model
        from twilio.rest import Client
        from playsound import playsound
        from tensorflow.keras.preprocessing import image
        import matplotlib.pyplot as plt
        from keras.preprocessing import image

In [3]: model=load_model('./forests.h5')

In [4]: account_sid='AC33e4f23328753859047817ac8815083b'
        auth_token ='ec85f2a8b7e067400404fd9c0c565797'
        client=Client(account_sid,auth_token)
```

```
In [5]: 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)
            if(pred==[[1.]]) :
                message=client.messages \
                .create(
                  body='FOREST FIRE IS DECTECTED IN AREA,stay alert',
                  #use twilio free number
                  from_='+12535288281',
                  #to number
                  to='+918610505460')
                print(message.sid)
                print('Fire Detected')
                print('SMS sent!')
            else:
                 print("NO FOREST FIRE DETECTED")
                 print("no message sent")

In [6]: from google.colab import drive
        drive.mount("/content/gdrive")
```

```
In [28]: prediction(r'/content/gdrive/My Drive/Dataset/test_set/forest/146019.jpg')

1/1 [==============================] - 0s 43ms/step
NO FOREST FIRE DETECTED
no message sent
```



In [29]:
```
prediction(r'/content/gdrive/My Drive/Dataset/test_set/forest/1170x500_Ireland_web.jpg')
```

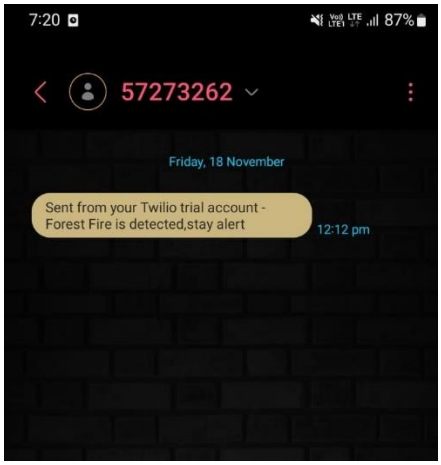
```
1/1 [==============================] - 0s 42ms/step
NO FOREST FIRE DETECTED
no message sent
```

In [30]:
```
prediction(r'/content/gdrive/My Drive/Dataset/test_set/with fire/599857.jpg')
```

```
1/1 [==============================] - 0s 26ms/step
SMdaad03de6c7e484d0e8ff50b957dae71
Fire Detected
SMS sent!
```

In [31]:
```
prediction(r'/content/gdrive/My Drive/Dataset/test_set/with fire/RED7_May29_1986.jpg')
```

```
1/1 [==============================] - 0s 31ms/step
SM468e1ea64a342cadaa02cf04b6396c85
Fire Detected
SMS sent!
```



In [1]:
```
import cv2
import numpy as np
from PIL import Image
from keras.models import load_model
from twilio.rest import Client
from playsound import playsound
from tensorflow.keras.preprocessing import image
import matplotlib.pyplot as plt
from keras.preprocessing import image
from datetime import timedelta
import os
```

In [2]:
```
model=load_model('./forests.h5')
```

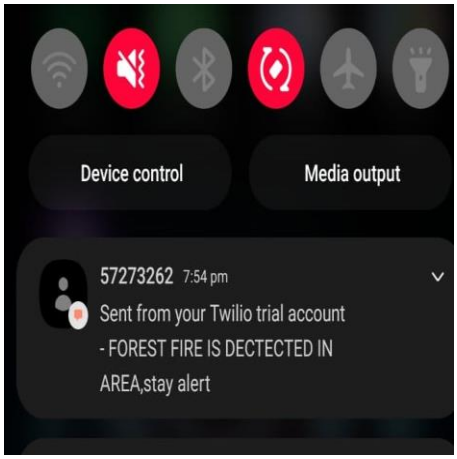
In [3]:
```
account_sid='AC33e4f23328753859047817ac8815083b'
auth_token ='c0ddc5b5ba7ac492f064a3c2bf78615e'
client=Client(account_sid,auth_token)
```

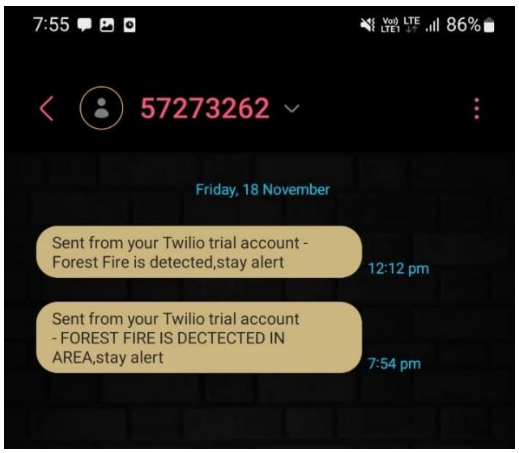
In [4]:
```
def prediction(img_path):
    i = cv2.imread(img_path)
    i = cv2.cvtColor(i, cv2.COLOR_BGR2RGB)
    img = Image.open(img_path)
    img = img.resize((128,128))
    x = image.img_to_array(img)
    x = np.expand_dims(x,axis=0)
    pred = model.predict(x)
    plt.imshow(i)
    if(pred==[[1.]]) :
        message=client.messages \
        .create(
          body='FOREST FIRE IS DECTECTED IN AREA,stay alert',
          #use twilio free number
          from_='+12535288281',
          #to number
          to='+918610505460')
        print(message.sid)
        msg='Fire Detected'

    else:
         msg= "NO FIRE DETECTED"
    return msg
```

In [12]:
```
vc = cv2.VideoCapture(0)
rval, frame = vc.read()
old_text = ''
pred_text = ''
count_frames = 0
total_str = ''
flag = False
while True:
    if frame is not None:
        frame = cv2.flip(frame, 1)
        frame = cv2.resize( frame, (400,400) )
        crop_img = frame[100:300, 100:300]
        blackboard = np.zeros(frame.shape, dtype=np.uint8)
        cv2.putText(blackboard, predict(frames), (30, 40), cv2.FONT_HERSHEY_TRIPLEX, 1, (255, 255, 0))
        res = np.hstack((frame, blackboard))

        cv2.imshow("image", res)

    rval, frame = vc.read()
    keypress = cv2.waitKey(1)
    if keypress == ord('c'):
        flag = True
    if keypress == ord('q'):
        break

vc.release()
cv2.destroyAllWindows()
cv2.waitKey(1)
```


image
Fire Detected


image
NO FIRE DETECTED


Device control
Media output
57273262 7:54 pm
Sent from your Twilio trial account
- FOREST FIRE IS DECTECTED IN
AREA,stay alert


7:55
86%
57273262
Friday, 18 November
Sent from your Twilio trial account -
Forest Fire is detected,stay alert
12:12 pm
Sent from your Twilio trial account
- FOREST FIRE IS DECTECTED IN
AREA,stay alert
7:54 pm