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Data Collection
In [1]:
from google.colab import drive
drive.mount('/content/drive')
Mounted at /content/drive
In [2]:
!unzip '/content/drive/MyDrive/ibm/archive.zip'
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```

Image Preprocessing

```
In [3]:
```

```
# import keras library
import keras
#import ImageDataGenerator from keras.preprocessing.image
from keras.preprocessing.image import ImageDataGenerator
```

In [4]:

```
import tensorflow as tf
import numpy as np
import matplotlib.pyplot as plt
from tensorflow import keras
from tensorflow.keras.preprocessing import image_dataset_from_directory
```

In [5]:

In [6]:

```
test_datagen = ImageDataGenerator(rescale=1./255)
```

In [7]:

Found 436 images belonging to 2 classes.

Found 121 images belonging to 2 classes.

Model Building

1. Import the Model Builing Libraries

```
In [9]:
```

```
import warnings
warnings.filterwarnings('ignore')
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense
from tensorflow.keras.layers import Convolution2D
from tensorflow.keras.layers import MaxPooling2D
from tensorflow.keras.layers import Flatten
```

1. Initialize the Model

```
In [10]:
model = Sequential()
```

1. Adding CNN Layers

```
In [11]:
```

```
#Convolution Layer
model.add(Convolution2D(32,(3,3),activation='relu',input_shape=(64,64,3)))
```

```
In [12]:
```

```
#MaxPooling Layer
model.add(MaxPooling2D(pool_size=(2, 2)))
```

```
In [13]:
```

```
#Flatten Layer
model.add(Flatten())
```

1. Adding Dense Layer

```
In [14]:
```

```
#Hidden Layer
model.add(Dense(350,activation='relu')) # Hidden layer 1
model.add(Dense(200,activation='relu')) # Hidden layer 2
```

```
In [15]:
```

```
#Output Layer
model.add(Dense(1,activation='softmax'))
```

1. Configuring The Learning Process

```
In [16]:
```

```
model.compile(optimizer='adam',loss='binary crossentropy',metrics=['accuracy'])
```

1. Training the Model

```
In [ ]:
```

```
model.fit generator(xtrain,
         steps per epoch=len(xtrain),
         epochs=10,
         validation data=xtest,
         validation steps=len(xtest))
Epoch 1/10
1_loss: 0.5062 - val_accuracy: 0.4050
Epoch 2/10
1 loss: 0.3663 - val accuracy: 0.4050
Epoch 3/10
1 loss: 0.2793 - val accuracy: 0.4050
Epoch 4/10
1 loss: 0.2003 - val accuracy: 0.4050
Epoch 5/10
l loss: 0.1575 - val accuracy: 0.4050
Epoch 6/10
l loss: 0.1290 - val accuracy: 0.4050
Epoch 7/10
l loss: 0.1571 - val accuracy: 0.4050
Epoch 8/10
l loss: 0.1045 - val accuracy: 0.4050
Epoch 9/10
5/5 [=========== ] - 15s 3s/step - loss: 0.1986 - accuracy: 0.3555 - va
1 loss: 0.0923 - val accuracy: 0.4050
Epoch 10/10
1 loss: 0.0798 - val accuracy: 0.4050
1. Saving the Model
In [18]:
model.save('Forest fire.h5')
1. Prediction
```

```
In [19]:
```

```
from tensorflow.keras.models import load_model
from tensorflow.keras.preprocessing import image
```

```
In [22]:
```

```
img = image.load_img('/content/Fire-Forest.jpg',target_size=(64,64))
```

In [23]:

img

Out[23]:



```
In [24]:
x=image.img_to_array(img)
#expand the image shape
x=np.expand dims(x,axis=0)
In [25]:
pred=model.predict(x)
1/1 [======= ] - Os 125ms/step
In [26]:
print (pred)
[[1.]]
Video Analysis
OpenCV For Video Processing
1: Capture Video from Camera
In [27]:
import cv2
import numpy as np
from keras.preprocessing import image
from keras.models import load model
In [29]:
pip install twilio
Looking in indexes: https://pypi.org/simple, https://us-python.pkg.dev/colab-wheels/publi
c/simple/
Collecting twilio
  Downloading twilio-7.15.1-py2.py3-none-any.whl (1.4 MB)
                                      | 1.4 MB 19.0 MB/s
Collecting PyJWT<3.0.0,>=2.0.0
  Downloading PyJWT-2.6.0-py3-none-any.whl (20 kB)
Requirement already satisfied: pytz in /usr/local/lib/python3.7/dist-packages (from twili
0) (2022.5)
Requirement already satisfied: requests>=2.0.0 in /usr/local/lib/python3.7/dist-packages
(from twilio) (2.23.0)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.7/dist-packag
es (from requests>=2.0.0->twilio) (2022.9.24)
Requirement already satisfied: idna<3,>=2.5 in /usr/local/lib/python3.7/dist-packages (fr
om requests>=2.0.0->twilio) (2.10)
Requirement already satisfied: chardet<4,>=3.0.2 in /usr/local/lib/python3.7/dist-package
s (from requests>=2.0.0->twilio) (3.0.4)
Requirement already satisfied: urllib3!=1.25.0,!=1.25.1,<1.26,>=1.21.1 in /usr/local/lib/
python3.7/dist-packages (from requests>=2.0.0->twilio) (1.24.3)
Installing collected packages: PyJWT, twilio
Successfully installed PyJWT-2.6.0 twilio-7.15.1
In [30]:
from twilio.rest import Client
In [31]:
pip install playsound
Looking in indexes: https://pypi.org/simple, https://us-python.pkg.dev/colab-wheels/publi
c/simple/
Collecting playsound
  Downloading playsound-1.3.0.tar.gz (7.7 kB)
```

```
Building wheels for collected packages: playsound
  Building wheel for playsound (setup.py) ... done
  Created wheel for playsound: filename=playsound-1.3.0-py3-none-any.whl size=7035 sha256
=b288d3136966667575bd1739c4951e140fc7b17285c535dc3f7b39dc91af604b
  Stored in directory: /root/.cache/pip/wheels/ba/f8/bb/ea57c0146b664dca3a0ada4199b0ecb5f
9dfcb7b7e22b65ba2
Successfully built playsound
Installing collected packages: playsound
Successfully installed playsound-1.3.0
In [32]:
pip install pygobject
Looking in indexes: https://pypi.org/simple, https://us-python.pkg.dev/colab-wheels/publi
c/simple/
Requirement already satisfied: pygobject in /usr/lib/python3/dist-packages (3.26.1)
In [33]:
from playsound import playsound
WARNING:playsound:playsound is relying on another python subprocess. Please use `pip inst
all pygobject` if you want playsound to run more efficiently.
3: Loading our saved model file using load_model from Keras library
In [35]:
model = load model(r'forest1.h5')
In [36]:
video = cv2.VideoCapture(0)
In [37]:
name = ['forest', 'with fire']
openCV intergeration
In [46]:
account sid = 'ACe316932976f5aff487f6cdcab9a13579'
auth token= '2388b1f10e88371fd6ebeabc00fd3ebf'
client = Client (account sid, auth token)
message = client.messages\
.create(
    body='Forest Fire is detected, stay alert',
    from = '+12183043886',
    to='+916374835017')
```

print (message.sid)

SM6e87d843df48e379caa471b1d2fa85a6