Sprint 1 - Data Collection Completed and Uploaded All the Data on drive and Connected with colab

```python
from google.colab import drive
drive.mount('/content/drive')
```

```
Mounted at /content/drive
```

```python
!pip install tensorflow
!pip install opencv-python
!pip install opencv-contrib-python
import tensorflow as tf
import numpy as np
from tensorflow import keras
import os
import cv2
from tensorflow.keras.preprocessing.image import ImageDataGenerator
from tensorflow.keras.preprocessing import image
```

```
Looking in indexes: https://pypi.org/simple, https://us-python.pkg.dev/colab-wheels/pub
Requirement already satisfied: tensorflow in /usr/local/lib/python3.7/dist-packages (2.9
Requirement already satisfied: h5py>=2.9.0 in /usr/local/lib/python3.7/dist-packages (fr
Requirement already satisfied: keras<2.10.0,>=2.9.0rc0 in /usr/local/lib/python3.7/dist-
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Requirement already satisfied: tensorboard<2.10,>=2.9 in /usr/local/lib/python3.7/dist-p
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Requirement already satisfied: requests<3,>=2.21.0 in /usr/local/lib/python3.7/dist-pack
Requirement already satisfied: tensorboard-data-server<0.7.0,>=0.6.0 in /usr/local/lib/p
Requirement already satisfied: google-auth<3,>=1.6.3 in /usr/local/lib/python3.7/dist-pa
Requirement already satisfied: markdown>=2.6.8 in /usr/local/lib/python3.7/dist-packages
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Requirement already satisfied: werkzeug>=1.0.1 in /usr/local/lib/python3.7/dist-packages
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Requirement already satisfied: pyasn1-modules>=0.2.1 in /usr/local/lib/python3.7/dist-pa
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Requirement already satisfied: opencv-python in /usr/local/lib/python3.7/dist-packages (
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Requirement already satisfied: opencv-contrib-python in /usr/local/lib/python3.7/dist-pa
Requirement already satisfied: numpy>=1.14.5 in /usr/local/lib/python3.7/dist-packages (
```

```python
train=ImageDataGenerator(rescale=1./255,
                         shear_range=0.2,
                         rotation_range=180,
                         zoom_range=0.2,
                         horizontal_flip=True)
train = ImageDataGenerator(rescale=1/255)
test = ImageDataGenerator(rescale=1/255)
```

```python
train_dataset = train.flow_from_directory("/content/drive/MyDrive/Dataset/train_set",
                                          target_size=(128,128),
                                          batch_size = 32,
                                          class_mode = 'binary' )
```

```
Found 436 images belonging to 2 classes.
```

```python
test_dataset = test.flow_from_directory("/content/drive/MyDrive/Dataset/test_set",
                                        target_size=(128,128),
                                        batch_size = 32,
                                        class_mode = 'binary' )
```

```
Found 121 images belonging to 2 classes.
```

```python
test_dataset.class_indices
```

```
{'forest': 0, 'with fire': 1}
```

```python
#to define linear initialisation import sequential
from keras.models import Sequential
#to add layer import Dense
```

```python
from keras.layers import Dense
#to create convolution kernel import convolution2D
from keras.layers import Convolution2D
#import Maxpooling layer
from keras.layers import MaxPooling2D
#import flatten layer
from keras.layers import Flatten
import warnings
warnings.filterwarnings('ignore')
```

```python
model = keras.Sequential()
model.add(Convolution2D(32,(3,3),input_shape=(128,128,3),activation='relu'))
model.add(MaxPooling2D(pool_size=(2,2)))
model.add(Convolution2D(32,(3,3),activation='relu'))
model.add(MaxPooling2D(pool_size=(2,2)))
model.add(Convolution2D(32,(3,3),activation='relu'))
model.add(MaxPooling2D(pool_size=(2,2)))
model.add(Convolution2D(32,(3,3),activation='relu'))
model.add(MaxPooling2D(pool_size=(2,2)))
model.add(Flatten())


model.add(Dense(150,activation='relu'))

model.add(Dense(1,activation='sigmoid'))


model.compile(loss = 'binary_crossentropy',
              optimizer = "adam",
              metrics = ["accuracy"])


r = model.fit(train_dataset, epochs = 5, validation_data = test_dataset)
```

```
    Epoch 1/5
    14/14 [==============================] - 156s 11s/step - loss: 0.5944 - accuracy: 0.6468
    Epoch 2/5
    14/14 [==============================] - 25s 2s/step - loss: 0.3399 - accuracy: 0.8372 ·
    Epoch 3/5
    14/14 [==============================] - 25s 2s/step - loss: 0.2371 - accuracy: 0.8945 ·
    Epoch 4/5
    14/14 [==============================] - 29s 2s/step - loss: 0.1780 - accuracy: 0.9358 ·
    Epoch 5/5
    14/14 [==============================] - 27s 2s/step - loss: 0.2064 - accuracy: 0.9151 ·
```

```python
predictions = model.predict(test_dataset)
predictions = np.round(predictions)
```

```
    4/4 [==============================] - 5s 1s/step
```

predictions

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```

```
       [-.]),
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       [1.],
       [0.]], dtype=float32)
```

```python
print(len(predictions))
```

```
121
```

✓ 0s   completed at 7:26 AM   ● ✕