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AI based Natural Disaster Analysis



Cyclone

cyclone, large system of winds that circulates counterclockwise direction north of the Equator and clockwise direction to the south.

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Earthquake

A sudden violent shaking of the ground, causing great destruction, as a result of movements within the earth's crust.

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Flood

An overflow of a large amount of water beyond its normal limits, especially over what is normally dry land.

[know more](#)



Wild Fire

A wildfire is an unplanned, uncontrolled and unpredictable fire in an area of combustible vegetation starting in rural and urban areas.

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AI based Natural Disaster Analysis

China, India and the United States are among the countries in the world most affected by natural disasters. Natural disasters have the potential to wreck and even end the lives of those people, who stand in their way.

However, whether or not you are likely to be affected by a natural disaster dramatically depends on where in the world you live, The

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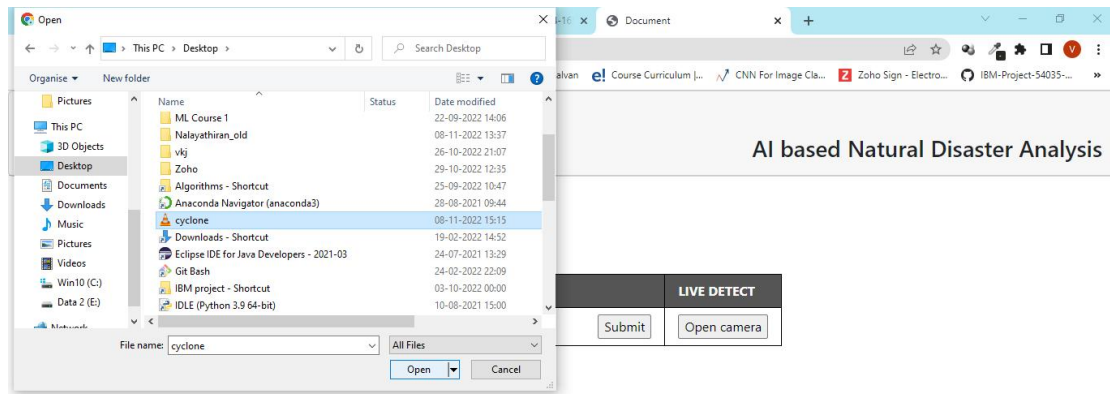
UPLOAD VIDEO	LIVE DETECT
<input type="button" value="Choose File"/> No file chosen <input type="button" value="Submit"/>	<input type="button" value="Open camera"/>

Enter 'q' to quit

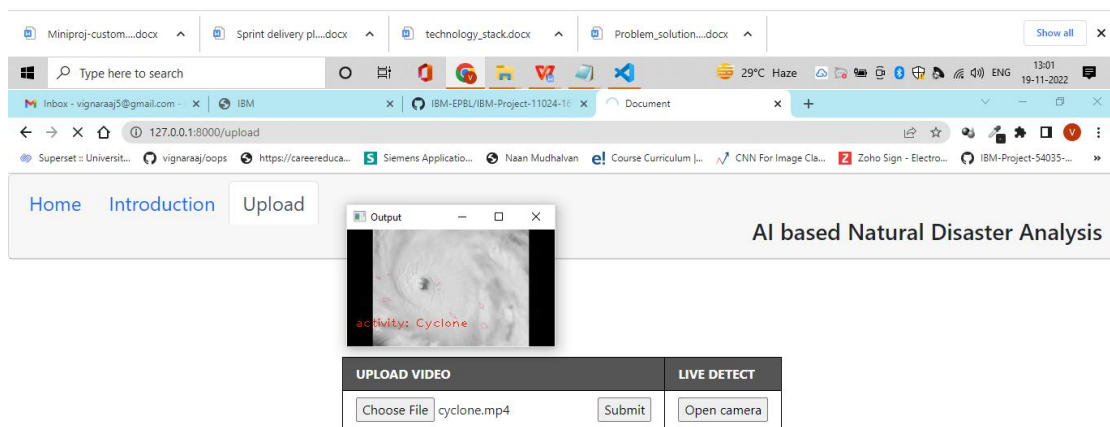
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```
[ ] from tensorflow.keras.preprocessing.image import ImageDataGenerator
train_datagen = ImageDataGenerator(rescale=1./255, zoom_range=0.2, horizontal_flip=True, shear_range=0.2)
test_datagen = ImageDataGenerator(rescale=1./255)

[ ] x_train=train_datagen.flow_from_directory("/content/drive/MyDrive/dataset/train_set", target_size=(64,64), class_mode='categorical', batch_size=5, color_mode='rgb')
x_test=test_datagen.flow_from_directory("/content/drive/MyDrive/dataset/test_set", target_size=(64,64), class_mode='categorical', batch_size=5, color_mode='rgb')

Found 742 images belonging to 4 classes.
Found 198 images belonging to 4 classes.

import numpy as np
import tensorflow
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense, Conv2D, MaxPooling2D, Flatten

[ ] model=Sequential()
model.add(Conv2D(32,(3,3),input_shape=(64,64,3),activation='relu'))
model.add(MaxPooling2D(pool_size=(2,2)))
model.add(Conv2D(32,(3,3),activation='relu'))
model.add(MaxPooling2D(pool_size=(2,2)))
model.add(Flatten())
```

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```
[ ] model.fit_generator(generator=x_train,steps_per_epoch=len(x_train),validation_data=x_test,validation_steps=len(x_test),epochs=20)
```

Epoch 1/20
/usr/local/lib/python3.7/dist-packages/ipykernel_launcher.py:1: UserWarning: `Model.fit_generator` is deprecated and will be removed in a future version. Please use
"""Entry point for launching an IPython kernel.
149/149 [-----] - 44s 293ms/step - loss: 1.1635 - accuracy: 0.4798 - val_loss: 0.9364 - val_accuracy: 0.6566
Epoch 2/20
149/149 [-----] - 41s 273ms/step - loss: 0.8416 - accuracy: 0.6429 - val_loss: 0.8283 - val_accuracy: 0.6717
Epoch 3/20
149/149 [-----] - 41s 273ms/step - loss: 0.6678 - accuracy: 0.7655 - val_loss: 0.7795 - val_accuracy: 0.7323
Epoch 4/20
149/149 [-----] - 41s 273ms/step - loss: 0.6775 - accuracy: 0.7493 - val_loss: 0.6493 - val_accuracy: 0.7626
Epoch 5/20
149/149 [-----] - 41s 273ms/step - loss: 0.5995 - accuracy: 0.7749 - val_loss: 0.6781 - val_accuracy: 0.7879
Epoch 6/20
149/149 [-----] - 41s 273ms/step - loss: 0.5397 - accuracy: 0.7817 - val_loss: 0.8131 - val_accuracy: 0.7172
Epoch 7/20
149/149 [-----] - 42s 285ms/step - loss: 0.4696 - accuracy: 0.8275 - val_loss: 0.6780 - val_accuracy: 0.7879
Epoch 8/20
149/149 [-----] - 41s 272ms/step - loss: 0.4959 - accuracy: 0.8194 - val_loss: 0.8018 - val_accuracy: 0.7576
Epoch 9/20
149/149 [-----] - 41s 273ms/step - loss: 0.3969 - accuracy: 0.8544 - val_loss: 0.6865 - val_accuracy: 0.7828
Epoch 10/20
149/149 [-----] - 41s 273ms/step - loss: 0.3885 - accuracy: 0.8652 - val_loss: 0.8218 - val_accuracy: 0.7677

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```
[ ] model.add(Dense(units=128,activation='relu'))  
model.add(Dense(units=4,activation='softmax'))  
model.compile(loss='categorical_crossentropy',optimizer='adam',metrics=['accuracy'])  
  
[ ] model.summary()
```

Model: "sequential_1"

Layer (type)	Output Shape	Param #
conv2d_2 (Conv2D)	(None, 62, 62, 32)	896
max_pooling2d_2 (MaxPooling2D)	(None, 31, 31, 32)	0
conv2d_3 (Conv2D)	(None, 29, 29, 32)	9248
max_pooling2d_3 (MaxPooling2D)	(None, 14, 14, 32)	0
flatten_1 (Flatten)	(None, 6272)	0
dense_2 (Dense)	(None, 128)	802944

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```
{ 'Cyclone': 0, 'Earthquake': 1, 'Flood': 2, 'Wildfire': 3}
```

```
img = image.load_img(r"/content/drive/MyDrive/dataset/test_set/Earthquake/1347.jpg",target_size=(64,64))
x=image.img_to_array(img)
x=np.expand_dims(x,axis=0)
index=['Cyclone','Earthquake','Flood','Wildfire']
y=np.argmax(model.predict(x),axis=1)
print(index[int(y)])
```

1/1 [=====] - 0s 82ms/step
Earthquake

```
img = image.load_img(r"/content/drive/MyDrive/dataset/test_set/Cyclone/918.jpg",target_size=(64,64))
x=image.img_to_array(img)
x=np.expand_dims(x,axis=0)
index=['Cyclone','Earthquake','Flood','Wildfire']
y=np.argmax(model.predict(x),axis=1)
print(index[int(y)])
```

1/1 [=====] - 0s 23ms/step
Cyclone

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