


```
In [1]: import pandas as pd
import numpy as np
from collections import Counter
from matplotlib import pyplot as plt
import os
import cv2
%matplotlib inline

def load_filepaths():
    imdir_ideology = 'ideology_image_dataset/'
    ideology_files=os.listdir('ideology_image_dataset/')
    ideology_files_path=[os.path.join(imdir_ideology,file) for file in ideology_files]

    return ideology_files_path

ideology_files_path=load_filepaths()
len(ideology_files_path)

def showClustering(predicted_labels,label):
    label_indexes= np.where(predicted_labels==label)[0]
    print("CLUSTER--> ",label,"TOTAL IMAGES--> ",len(label_indexes))
    if(len(label_indexes)>=500):
        fig=plt.figure(figsize=(10, 400))

    elif(len(label_indexes)>100 and len(label_indexes)<500):
        fig=plt.figure(figsize=(10, 70))
    elif(len(label_indexes)>=50 and len(label_indexes)<100):
        fig=plt.figure(figsize=(10, 30))

    elif(len(label_indexes)>=20 and len(label_indexes)<50):
        fig=plt.figure(figsize=(10, 20))

    elif(len(label_indexes)>=0 and len(label_indexes)<20):
        fig=plt.figure(figsize=(10, 8))

    for i,index in enumerate(label_indexes):

        image = cv2.imread(ideology_files_path[index])
        image= cv2.cvtColor(image, cv2.COLOR_BGR2RGB)

        columns = 4
        rows = np.ceil(len(label_indexes)/float(columns))

        fig.add_subplot(rows,columns, i+1)
        plt.imshow(image)

    plt.show()
```

```
In [2]: results_df=pd.read_csv('D://Himani-work/gsoc2020/code/image-results-updateGrid/ideology_model_xception.npy-tsne.csv')  
results_df
```

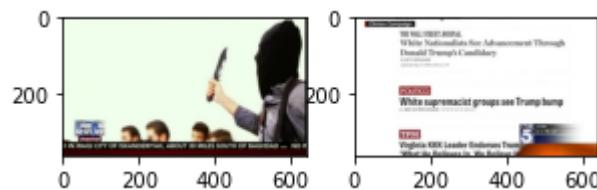
Out[2]:

	Unnamed: 0	n_clusters	silhouette	calinski	davies
0	HDBSCAN	659	0.027179	5.209009	1.322633
1	DBSCAN	642	0.345378	38.253635	1.233234
2	Mean-shift	2	0.340356	1939.205617	1.162815
3	Optics	452	0.091873	12.228006	1.238951

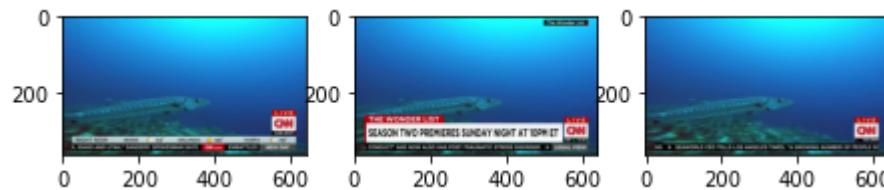
HDBSCAN

```
In [3]: predicted_Labels=np.load('D://Himani-work/gsoc2020/code/image-results-updateGr  
id/ideology_model_xception.npy-pca-tsne_hdbscan_labels.npy')  
unique_labels=set(predicted_Labels)  
for label in unique_labels:  
    if(label!=-1):  
        showClustering(predicted_Labels,label)
```

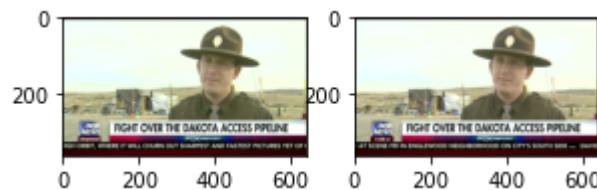
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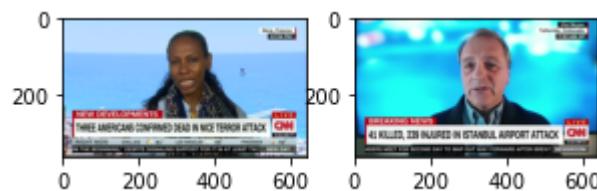
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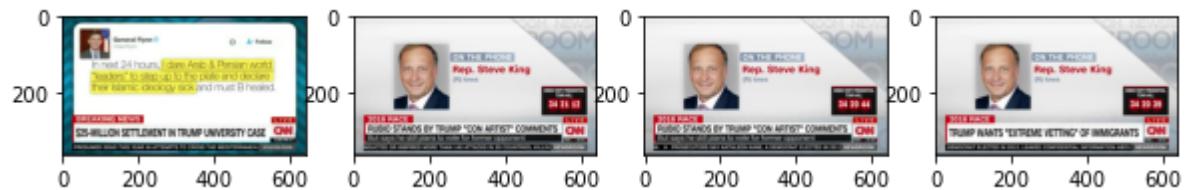
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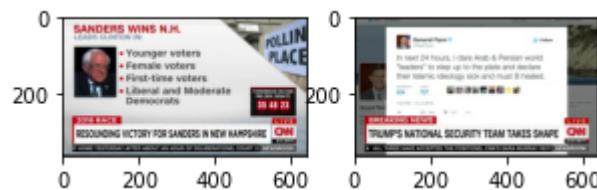
CLUSTER--> 3 TOTAL IMAGES--> 2



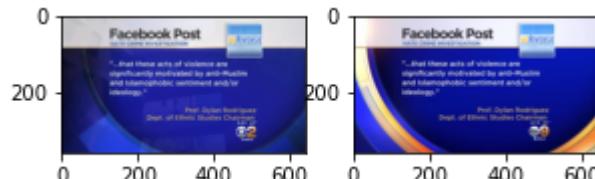
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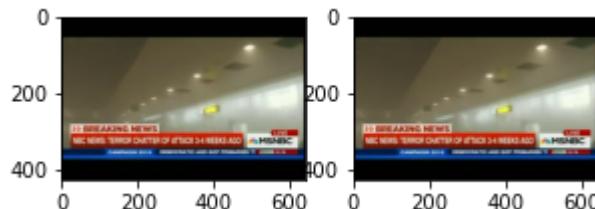
CLUSTER--> 5 TOTAL IMAGES--> 2



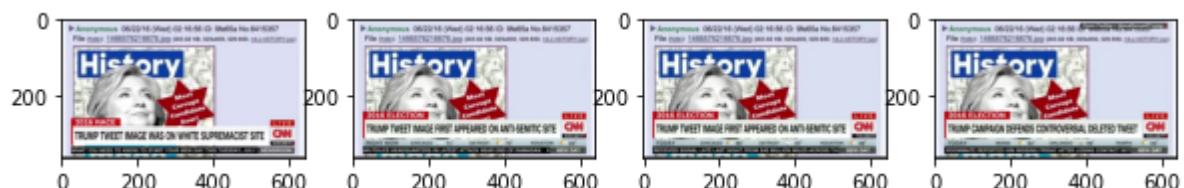
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CLUSTER--> 7 TOTAL IMAGES--> 2



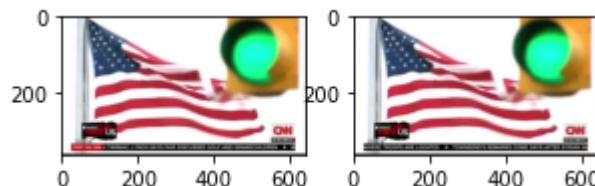
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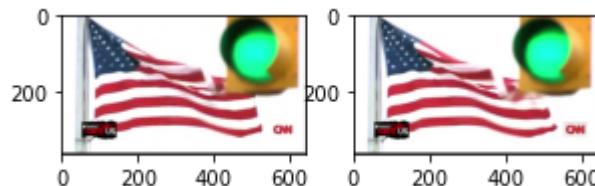
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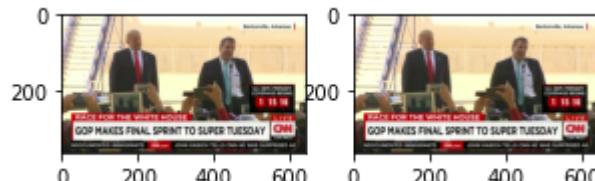
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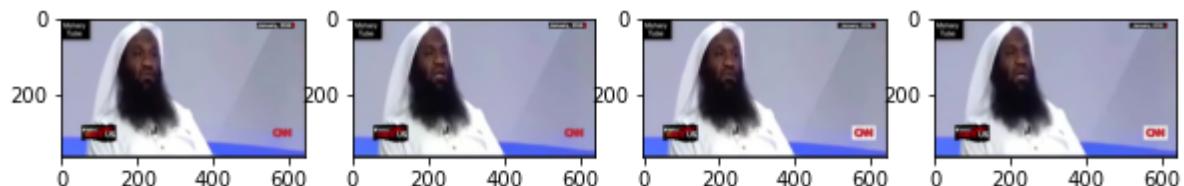
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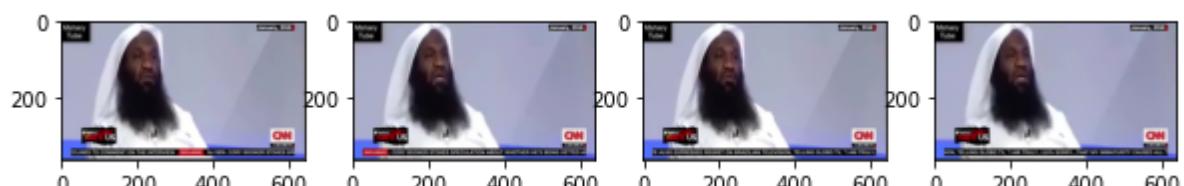
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CLUSTER--> 13 TOTAL IMAGES--> 7



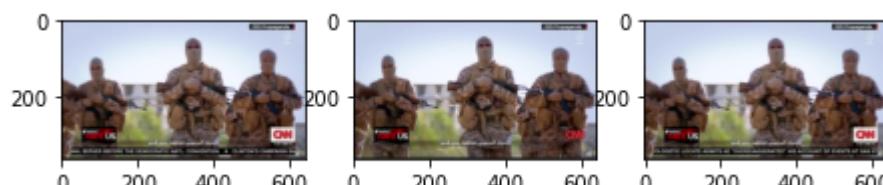
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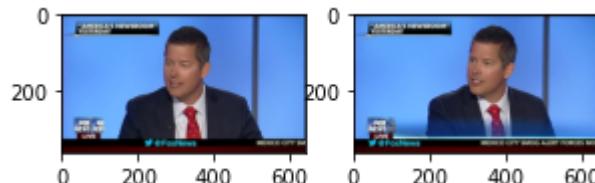
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CLUSTER--> 16 TOTAL IMAGES--> 3



CLUSTER--> 17 TOTAL IMAGES--> 2



CLUSTER--> 18 TOTAL IMAGES--> 3



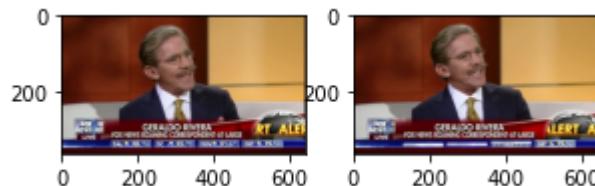
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CLUSTER--> 20 TOTAL IMAGES--> 2



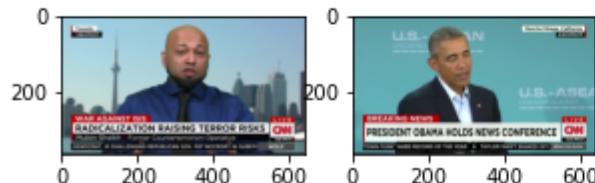
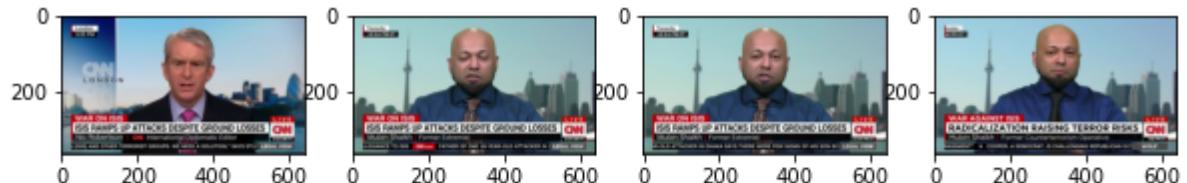
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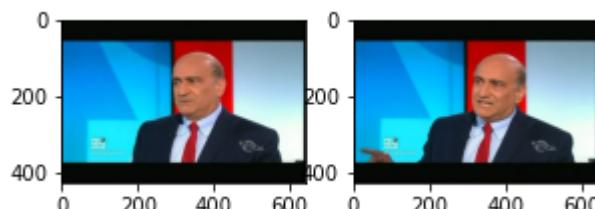
CLUSTER--> 22 TOTAL IMAGES--> 3



CLUSTER--> 23 TOTAL IMAGES--> 6



CLUSTER--> 24 TOTAL IMAGES--> 2



CLUSTER--> 25 TOTAL IMAGES--> 3



CLUSTER--> 26 TOTAL IMAGES--> 7



CLUSTER--> 27 TOTAL IMAGES--> 4



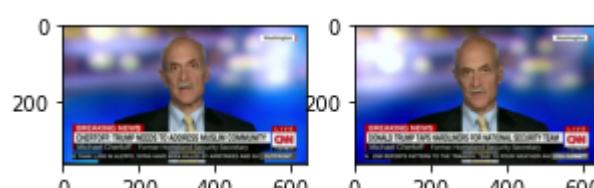
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CLUSTER--> 29 TOTAL IMAGES--> 2



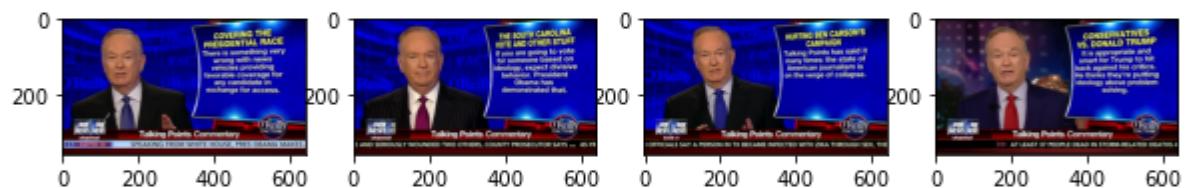
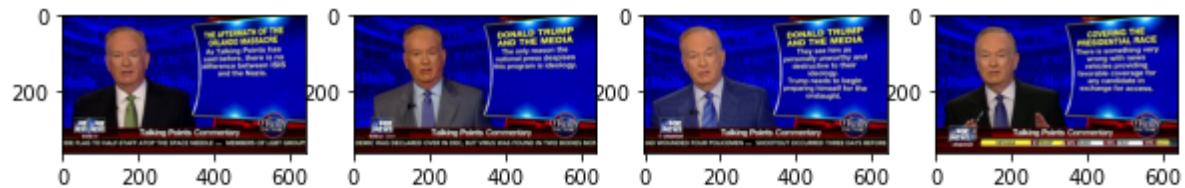
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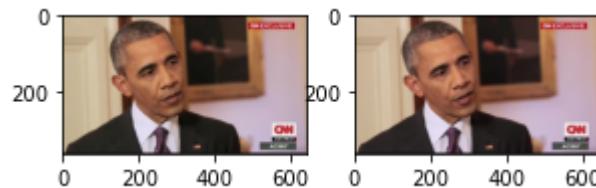
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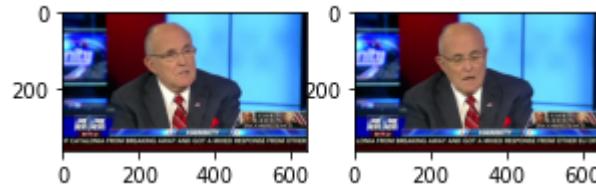
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CLUSTER--> 33 TOTAL IMAGES--> 2



CLUSTER--> 34 TOTAL IMAGES--> 2



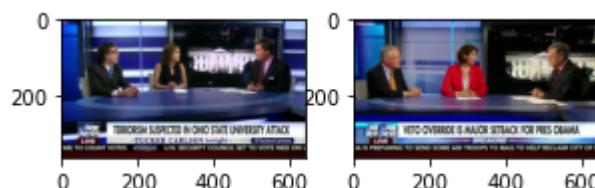
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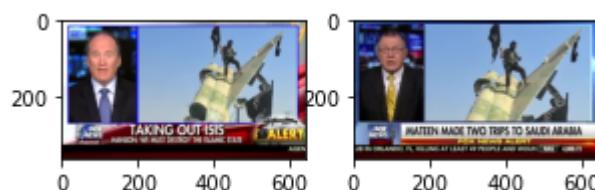
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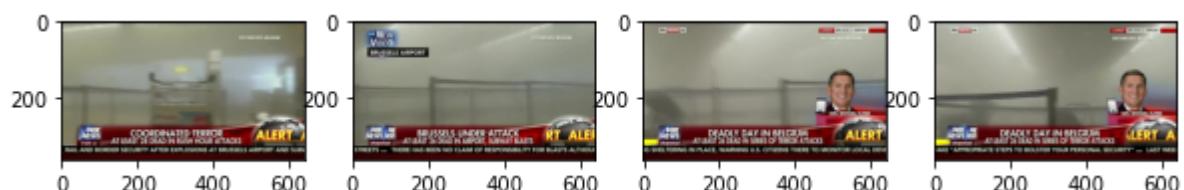
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CLUSTER--> 39 TOTAL IMAGES--> 2



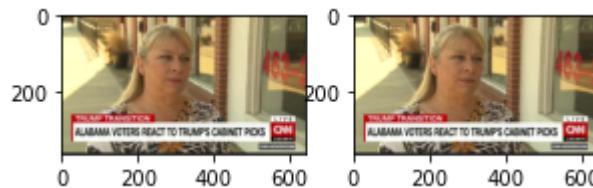
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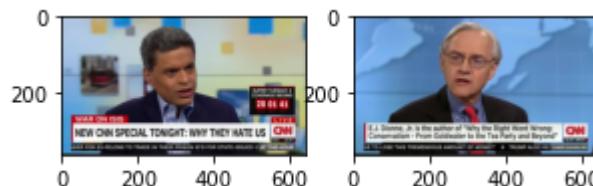
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CLUSTER--> 42 TOTAL IMAGES--> 2



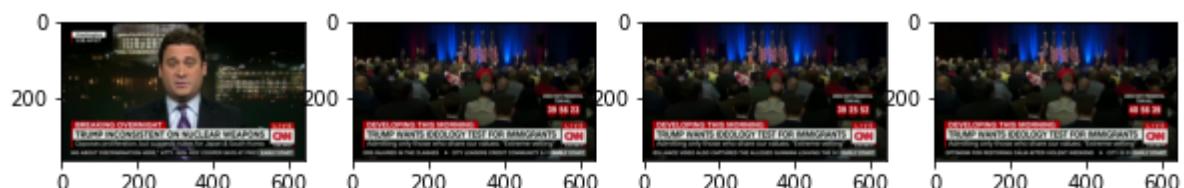
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CLUSTER--> 44 TOTAL IMAGES--> 2



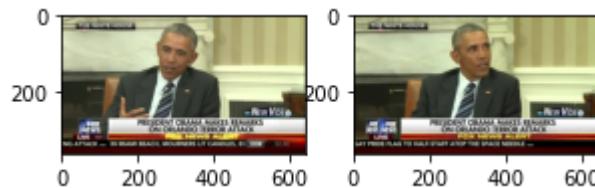
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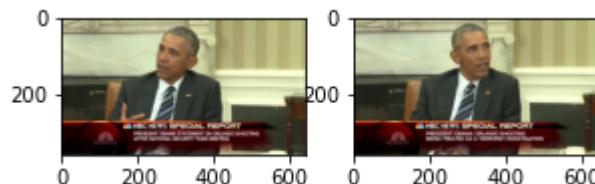
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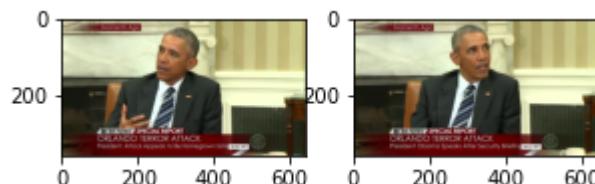
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CLUSTER--> 48 TOTAL IMAGES--> 2



CLUSTER--> 49 TOTAL IMAGES--> 2



CLUSTER--> 50 TOTAL IMAGES--> 3



CLUSTER--> 51 TOTAL IMAGES--> 2



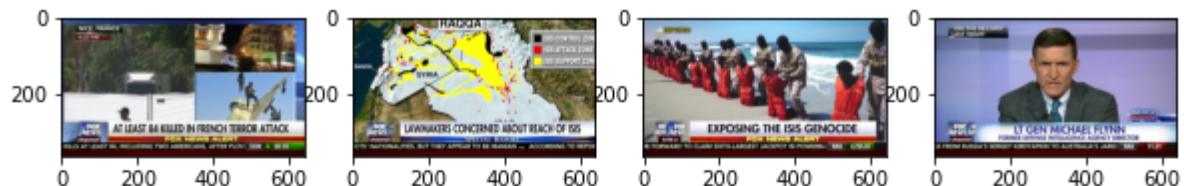
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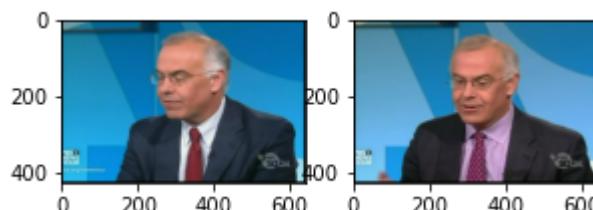
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CLUSTER--> 54 TOTAL IMAGES--> 7



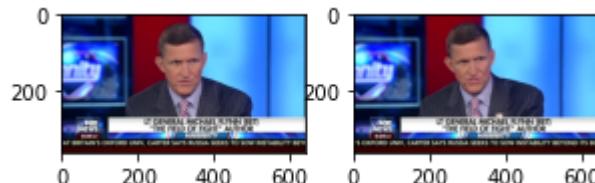
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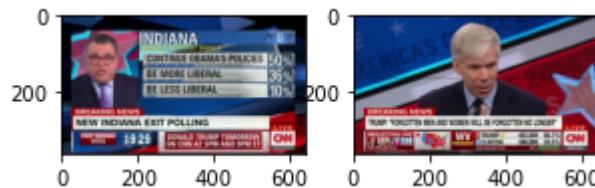
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CLUSTER--> 57 TOTAL IMAGES--> 2



CLUSTER--> 58 TOTAL IMAGES--> 2



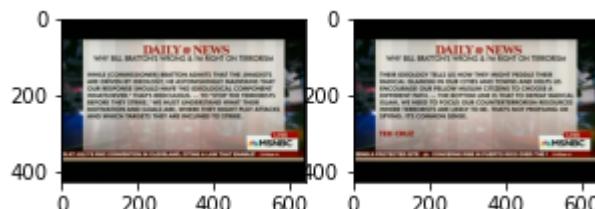
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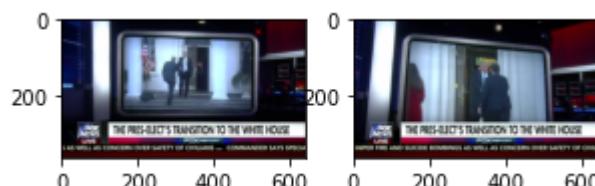
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CLUSTER--> 61 TOTAL IMAGES--> 2



CLUSTER--> 62 TOTAL IMAGES--> 2



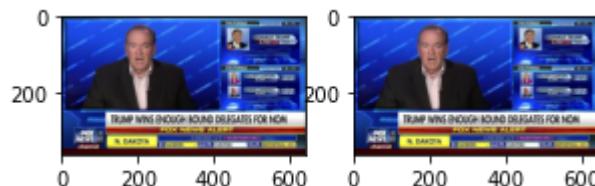
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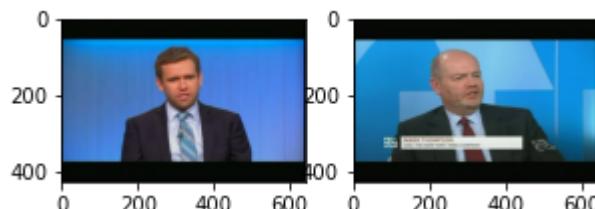
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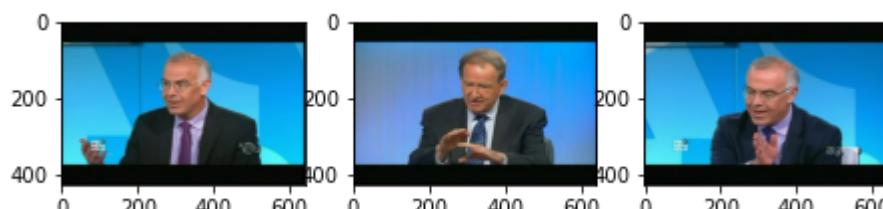
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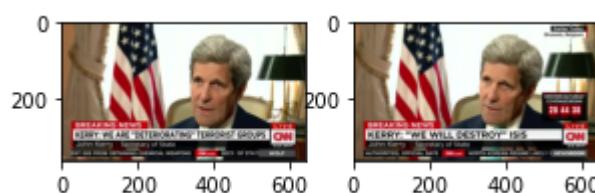
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CLUSTER--> 67 TOTAL IMAGES--> 3



CLUSTER--> 68 TOTAL IMAGES--> 2



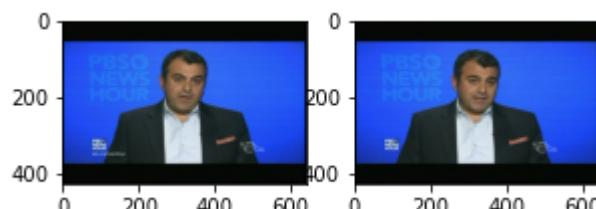
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CLUSTER--> 70 TOTAL IMAGES--> 2



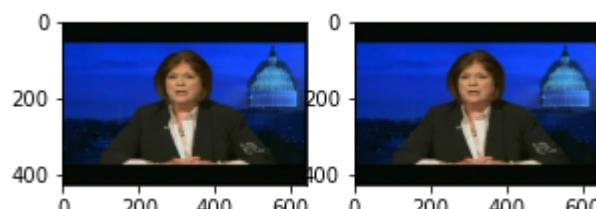
CLUSTER--> 71 TOTAL IMAGES--> 2



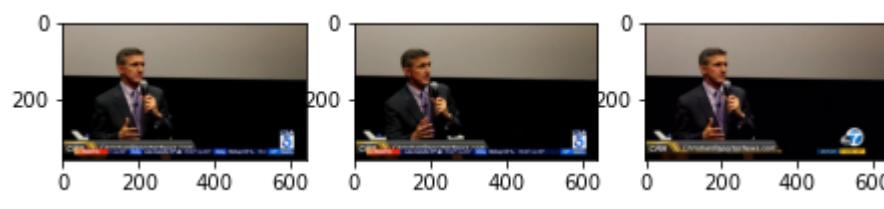
CLUSTER--> 72 TOTAL IMAGES--> 3



CLUSTER--> 73 TOTAL IMAGES--> 2



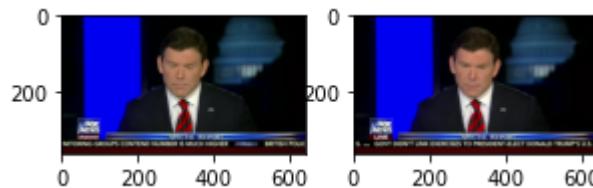
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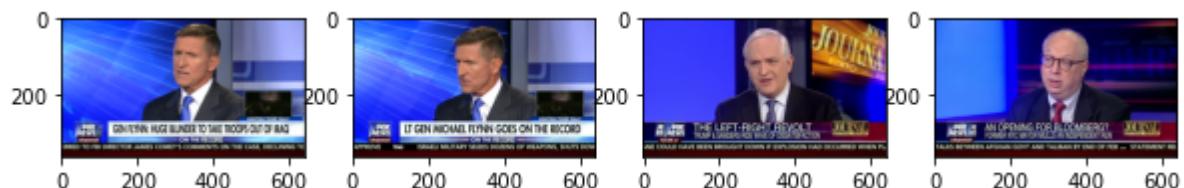
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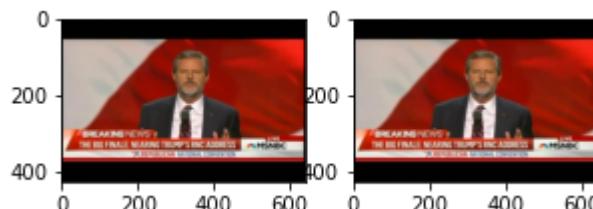
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CLUSTER--> 78 TOTAL IMAGES--> 2



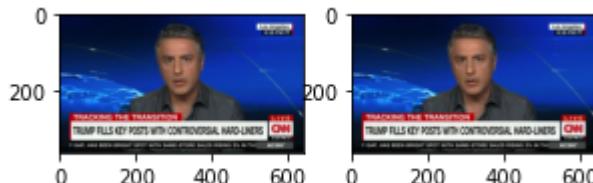
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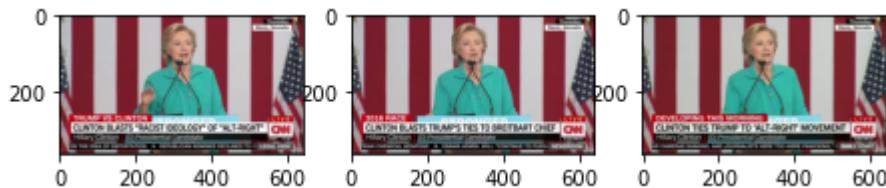
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CLUSTER--> 81 TOTAL IMAGES--> 2



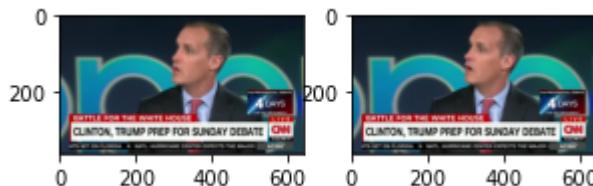
CLUSTER--> 82 TOTAL IMAGES--> 3



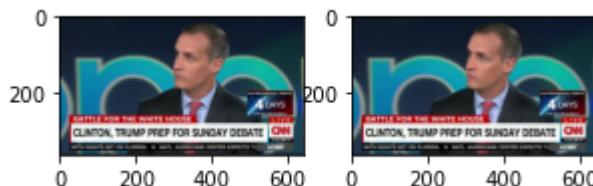
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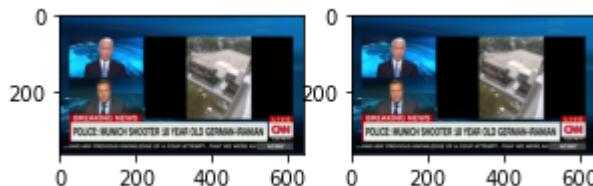
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CLUSTER--> 85 TOTAL IMAGES--> 2



CLUSTER--> 86 TOTAL IMAGES--> 2



CLUSTER--> 87 TOTAL IMAGES--> 2



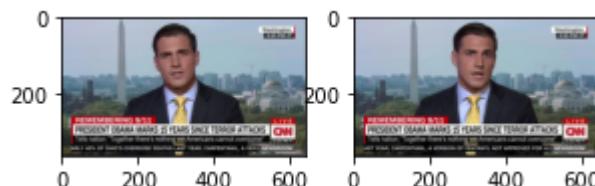
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CLUSTER--> 89 TOTAL IMAGES--> 3



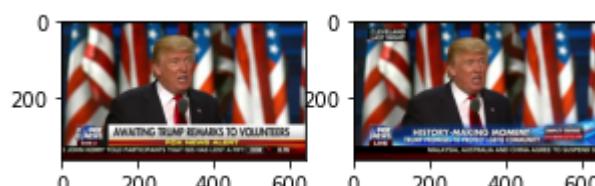
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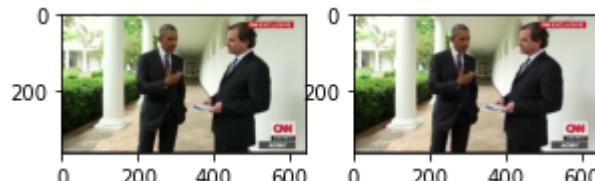
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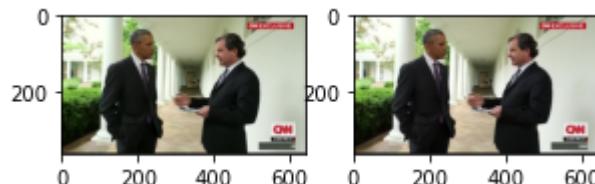
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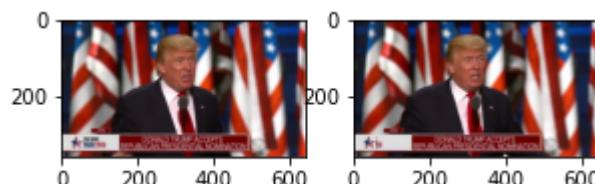
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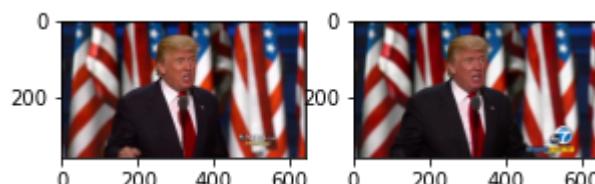
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CLUSTER--> 95 TOTAL IMAGES--> 2



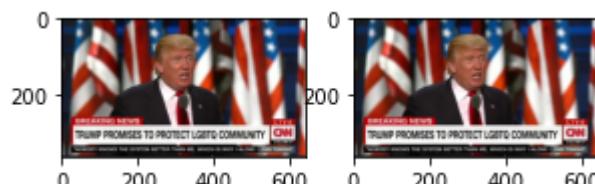
CLUSTER--> 96 TOTAL IMAGES--> 2



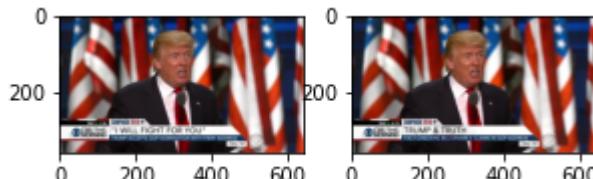
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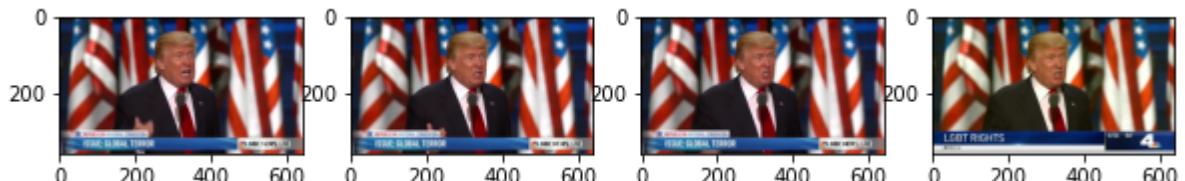
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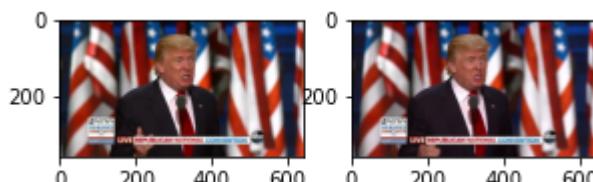
CLUSTER--> 99 TOTAL IMAGES--> 2



CLUSTER--> 100 TOTAL IMAGES--> 4



CLUSTER--> 101 TOTAL IMAGES--> 2



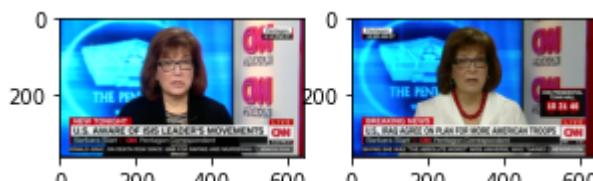
CLUSTER--> 102 TOTAL IMAGES--> 3



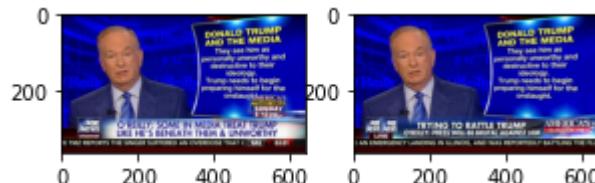
CLUSTER--> 103 TOTAL IMAGES--> 2



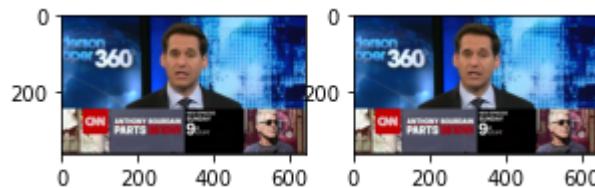
CLUSTER--> 104 TOTAL IMAGES--> 2



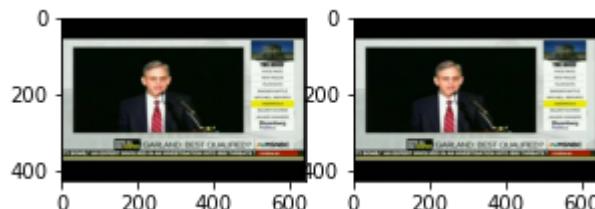
CLUSTER--> 105 TOTAL IMAGES--> 2



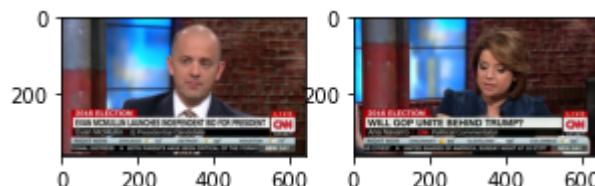
CLUSTER--> 106 TOTAL IMAGES--> 2



CLUSTER--> 107 TOTAL IMAGES--> 2



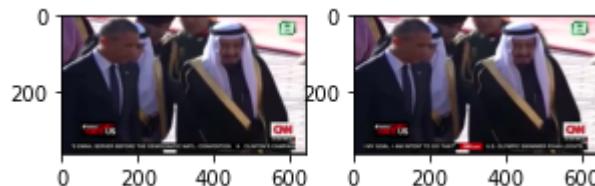
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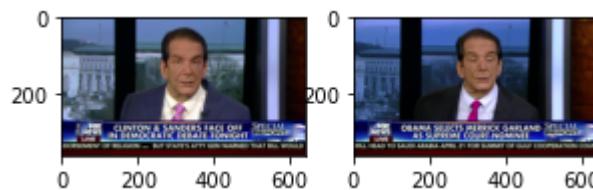
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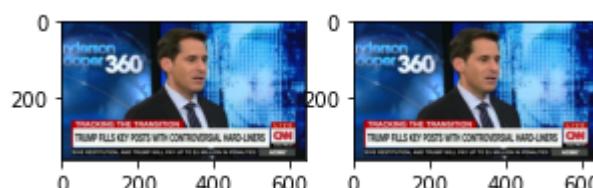
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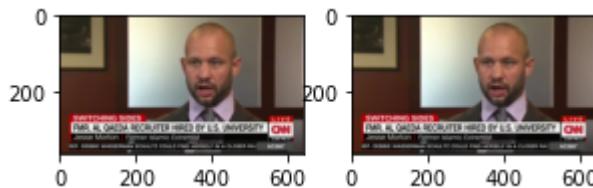
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CLUSTER--> 119 TOTAL IMAGES--> 2



CLUSTER--> 120 TOTAL IMAGES--> 3



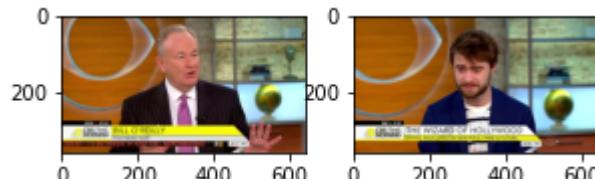
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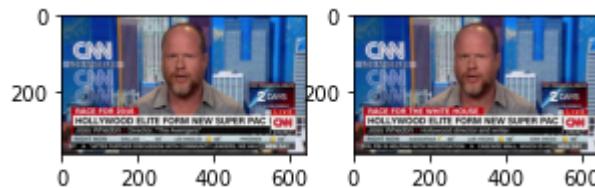
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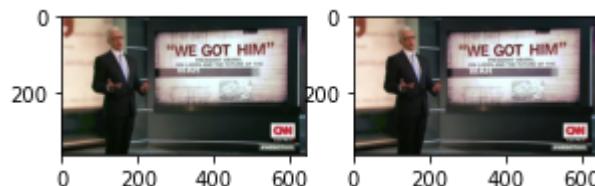
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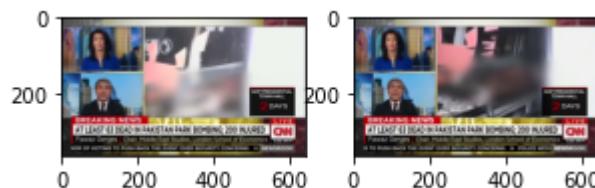
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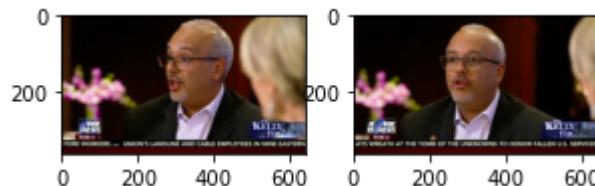
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CLUSTER--> 128 TOTAL IMAGES--> 5



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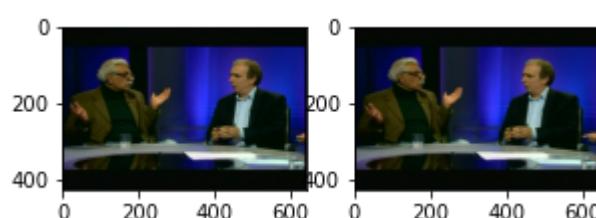
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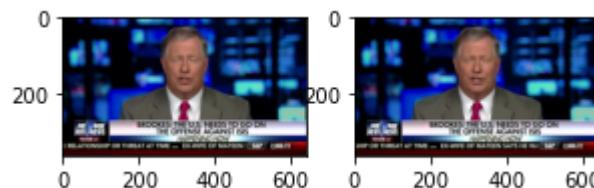
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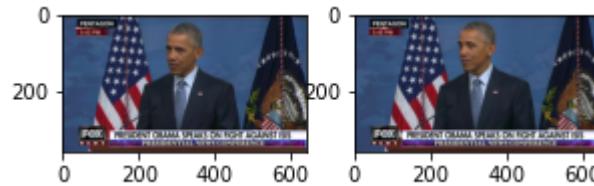
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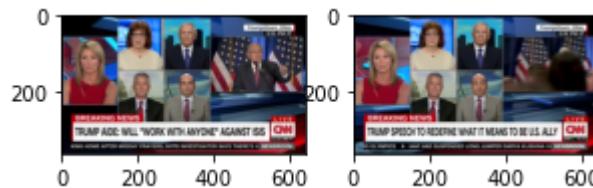
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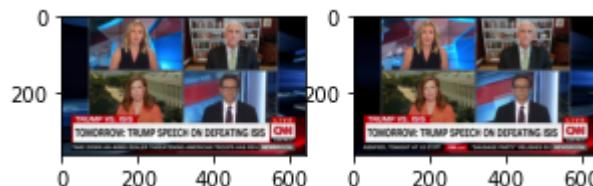
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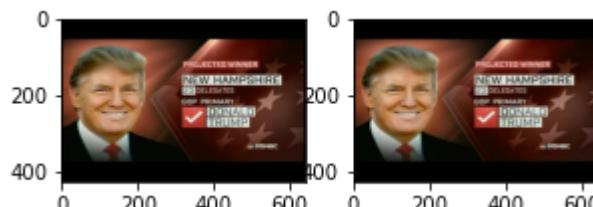
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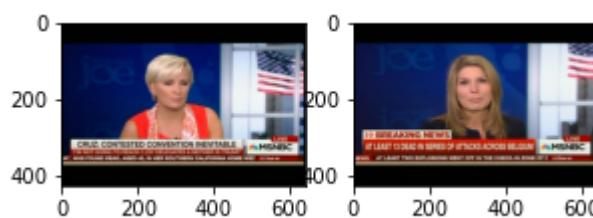
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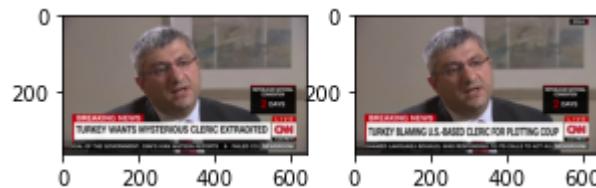
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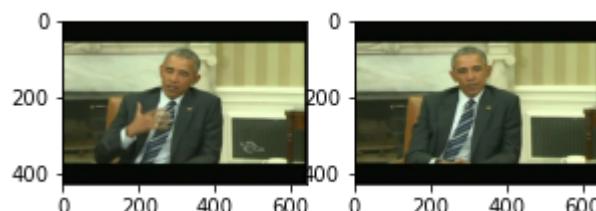
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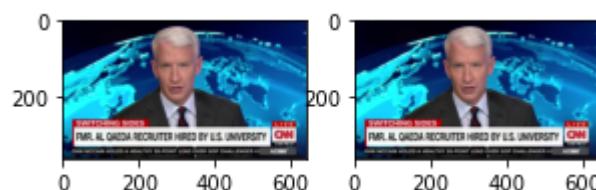
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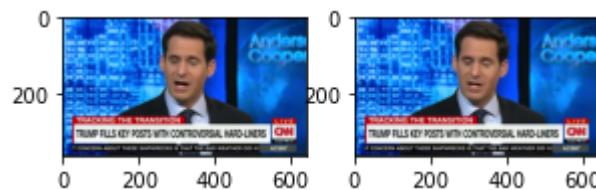
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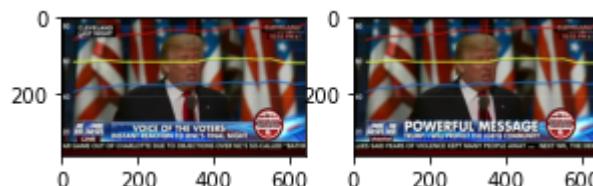
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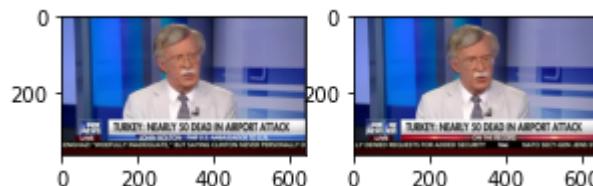
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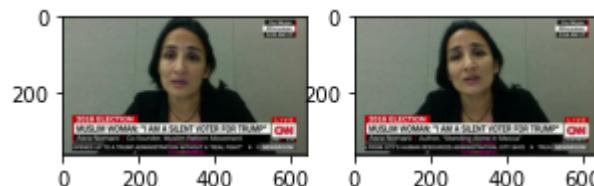
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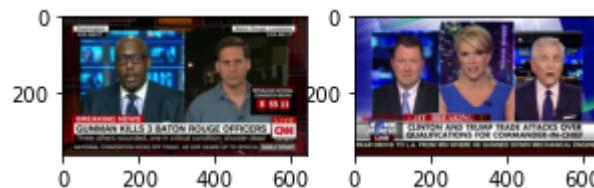
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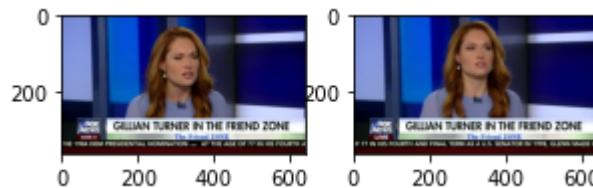
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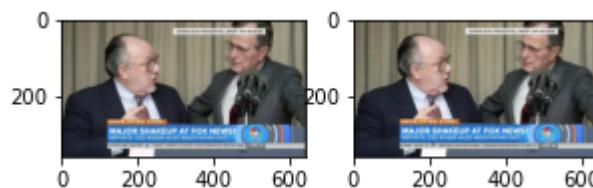
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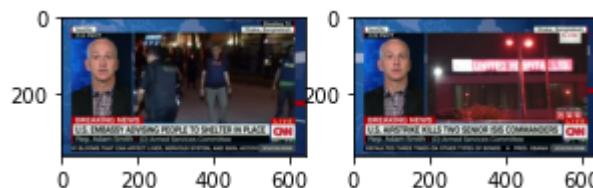
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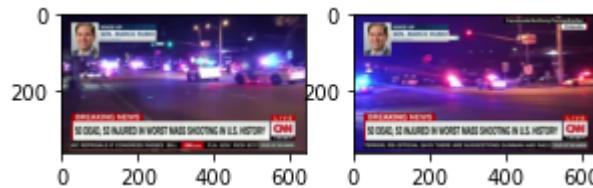
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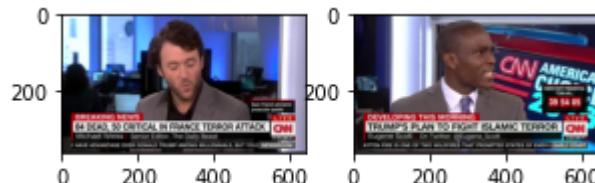
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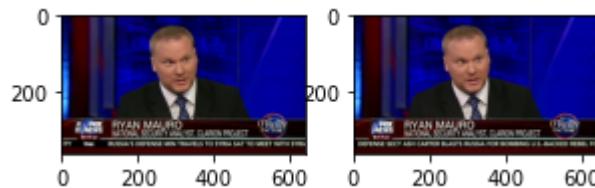
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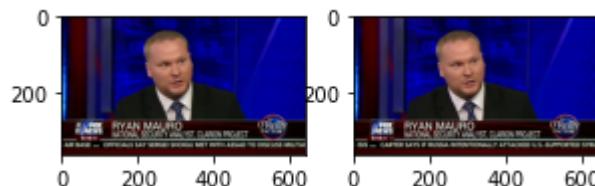
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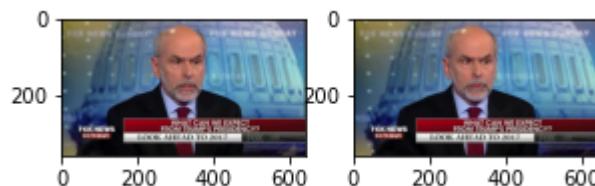
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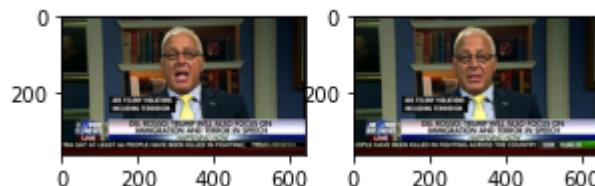
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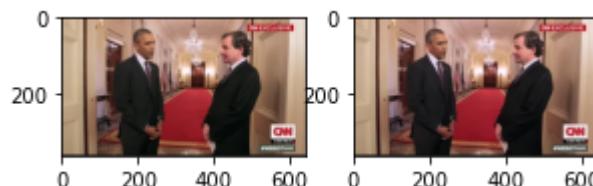
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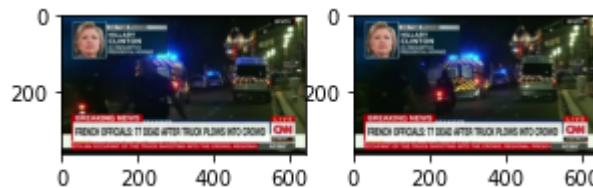
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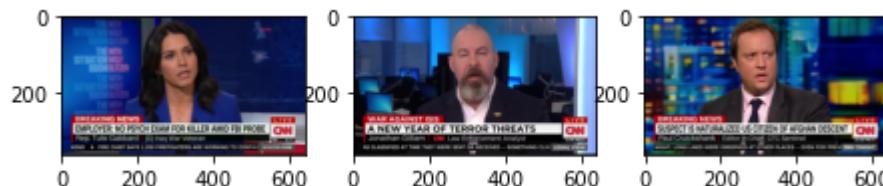
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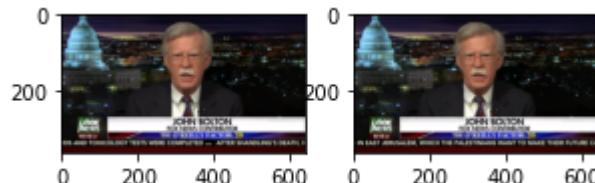
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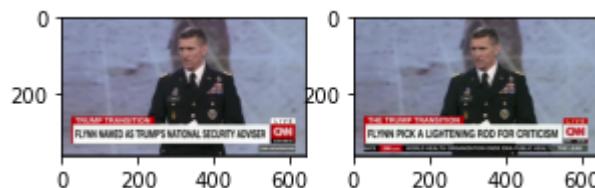
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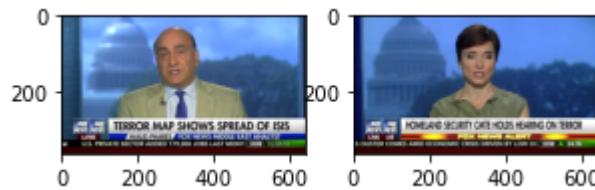
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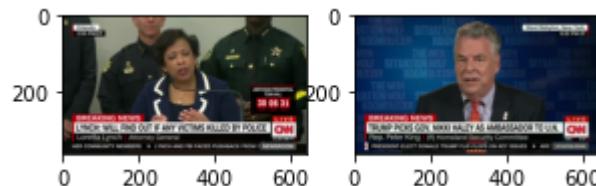
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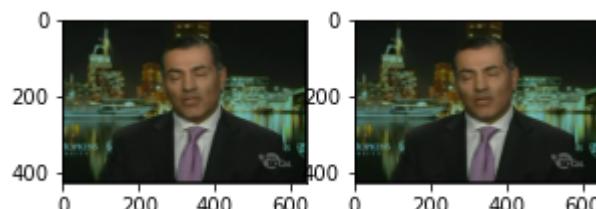
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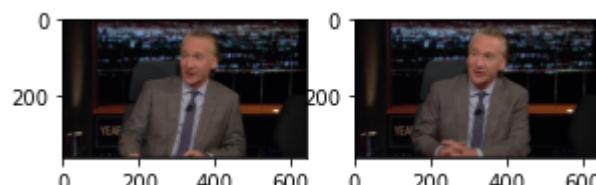
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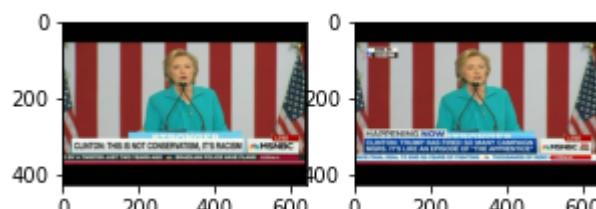
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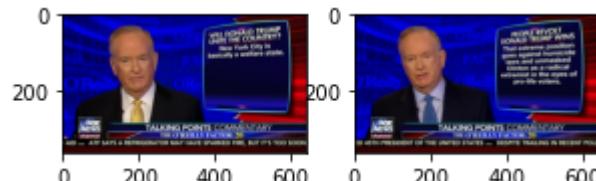
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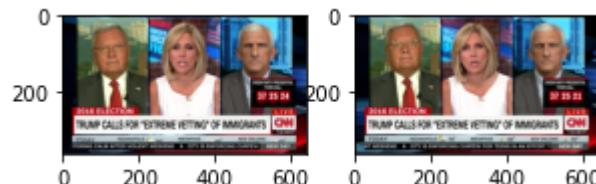
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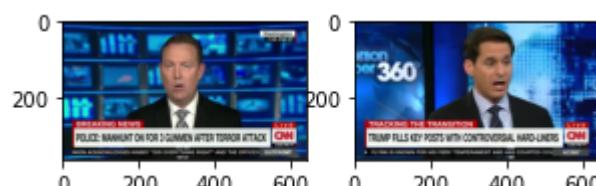
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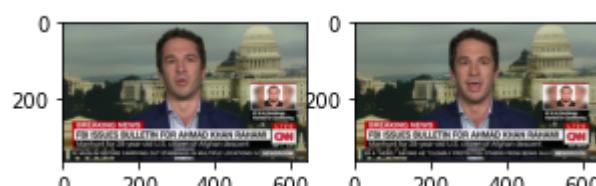
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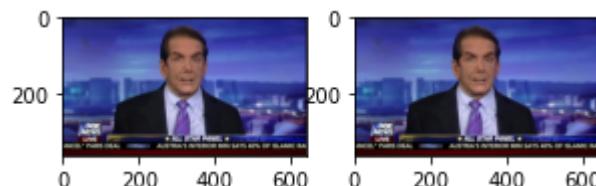
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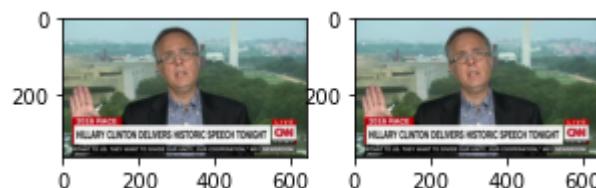
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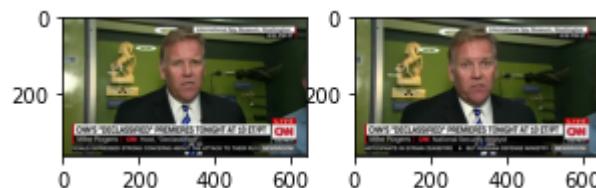
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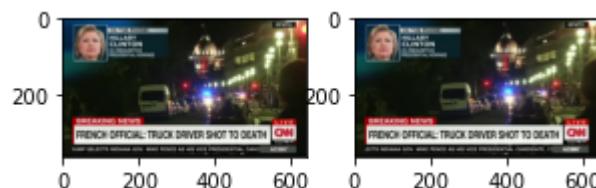
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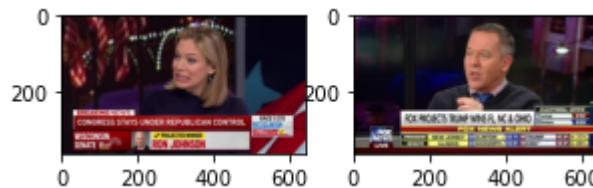
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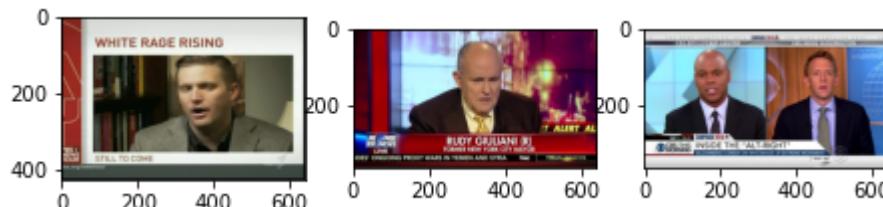
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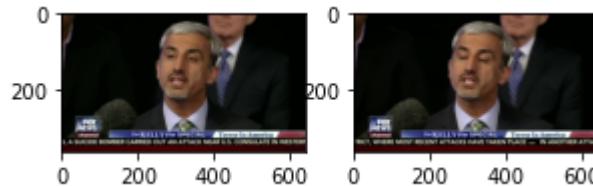
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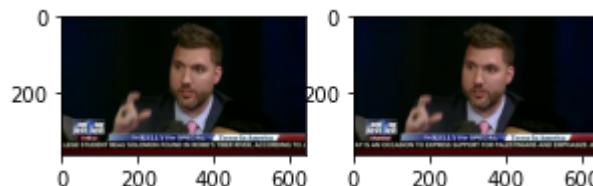
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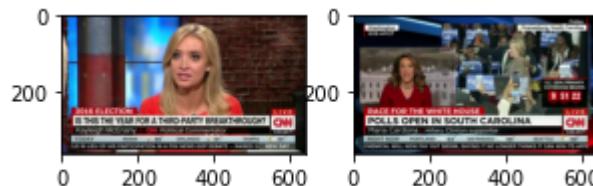
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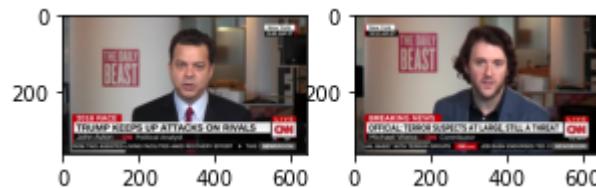
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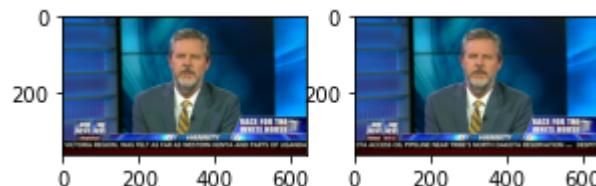
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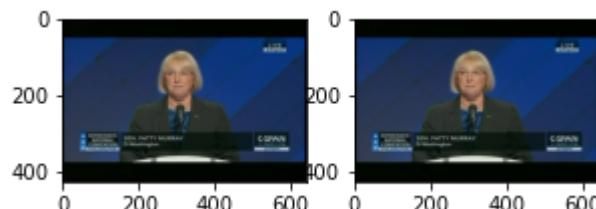
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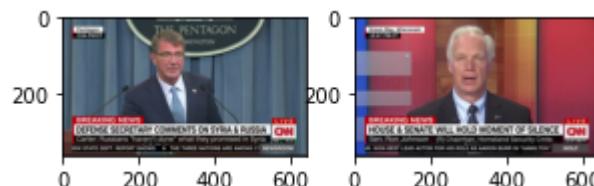
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CLUSTER--> 222 TOTAL IMAGES--> 2



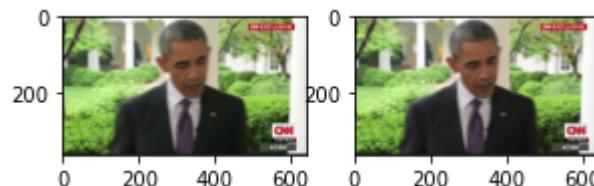
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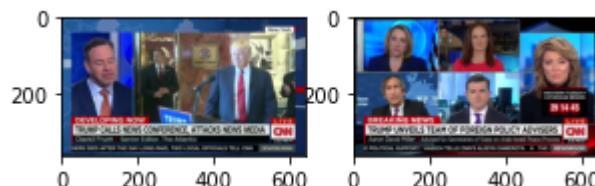
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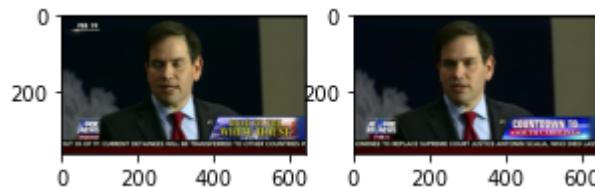
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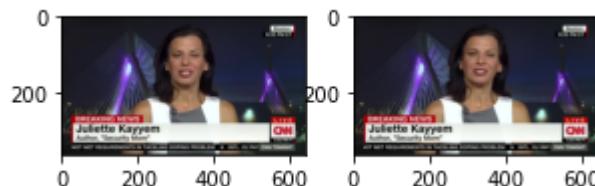
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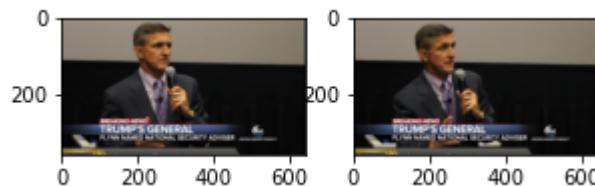
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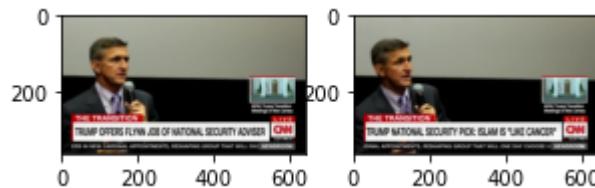
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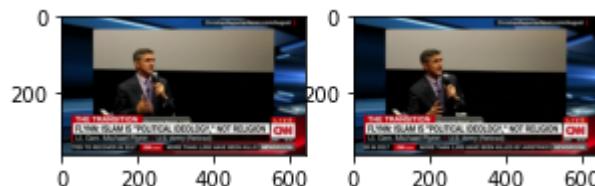
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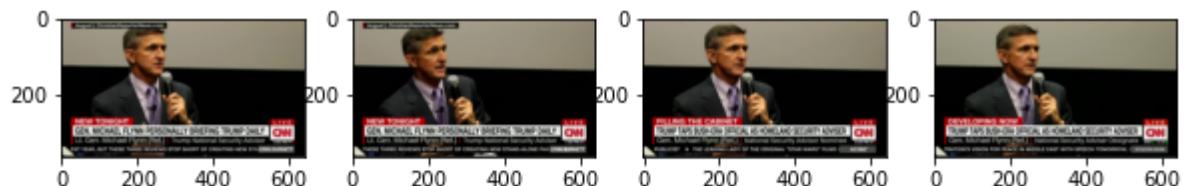
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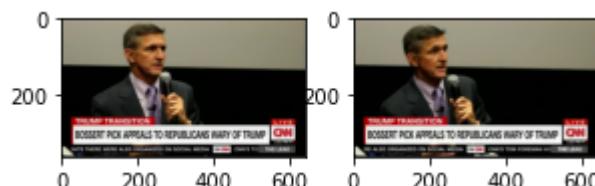
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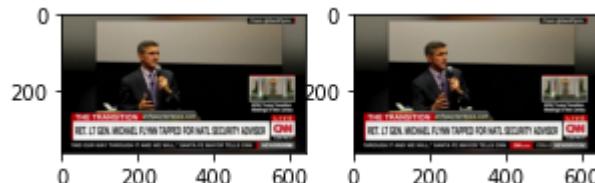
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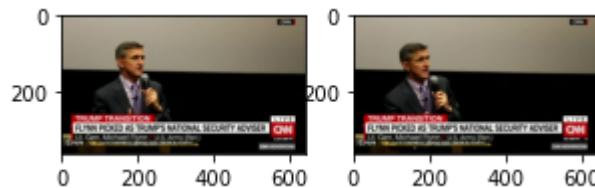
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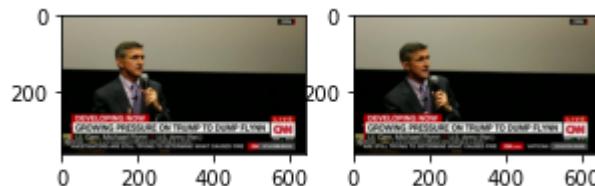
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CLUSTER--> 243 TOTAL IMAGES--> 4



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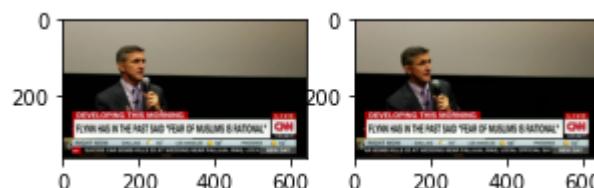
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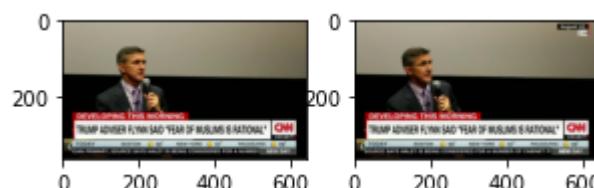
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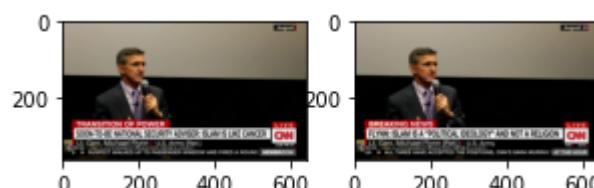
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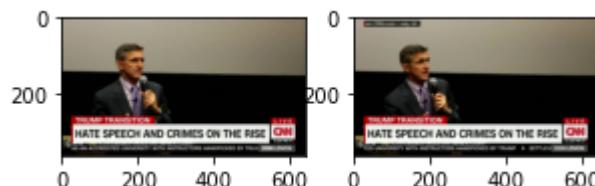
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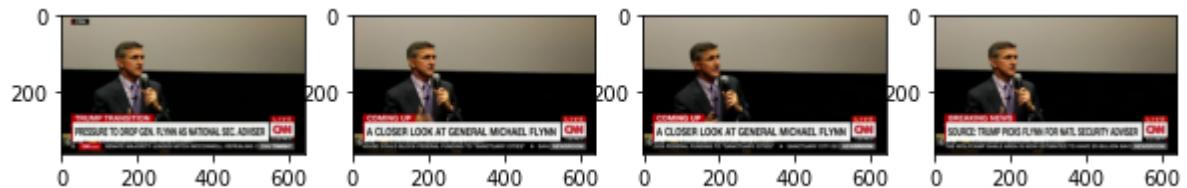
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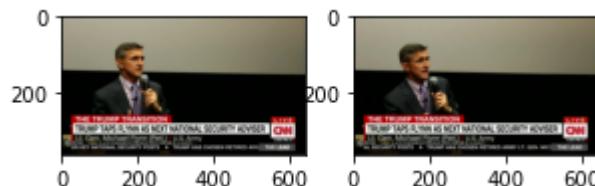
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CLUSTER--> 253 TOTAL IMAGES--> 4



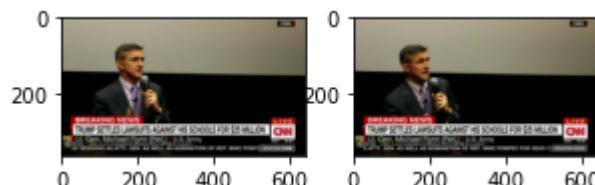
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CLUSTER--> 255 TOTAL IMAGES--> 2



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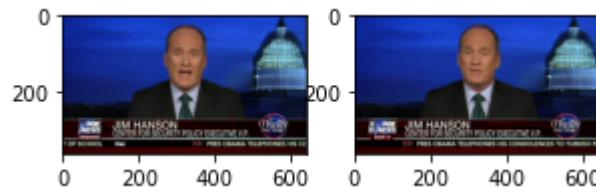
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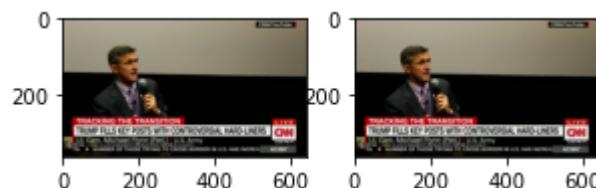
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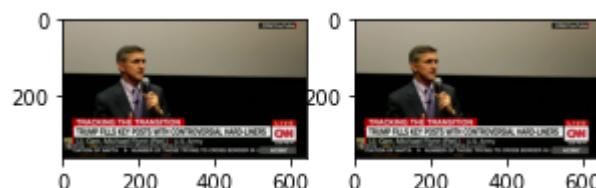
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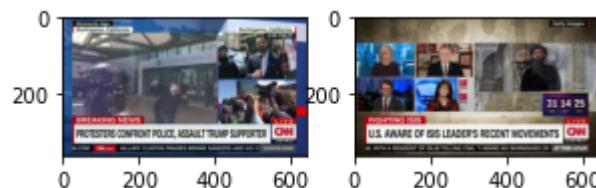
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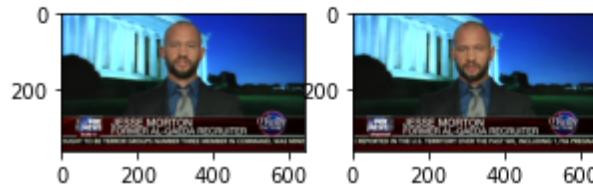
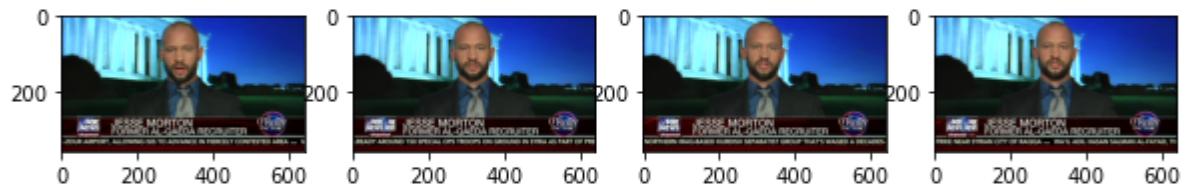
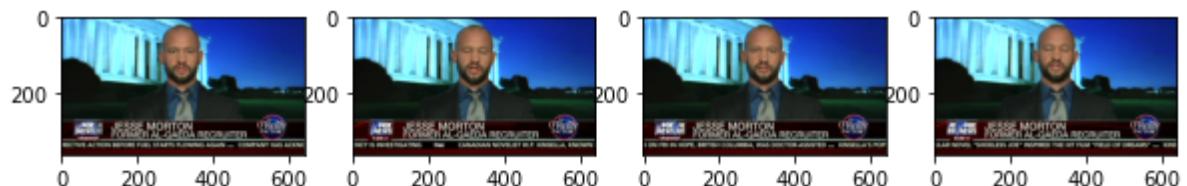
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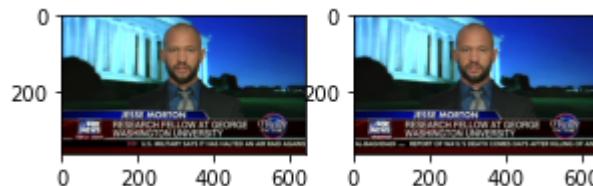
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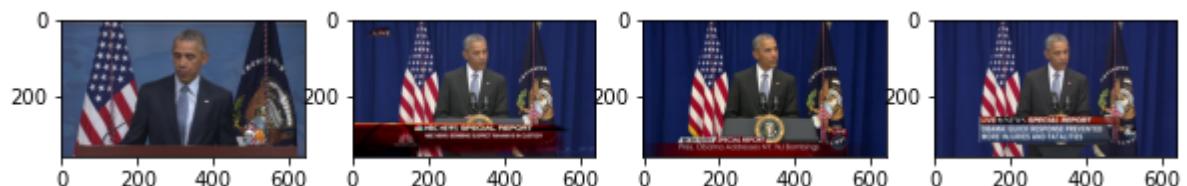
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CLUSTER--> 264 TOTAL IMAGES--> 2



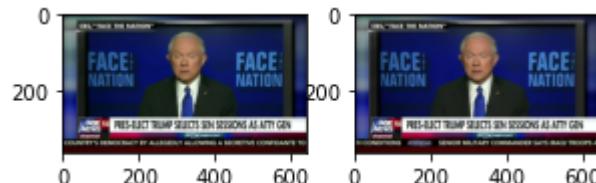
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CLUSTER--> 266 TOTAL IMAGES--> 2



CLUSTER--> 267 TOTAL IMAGES--> 2



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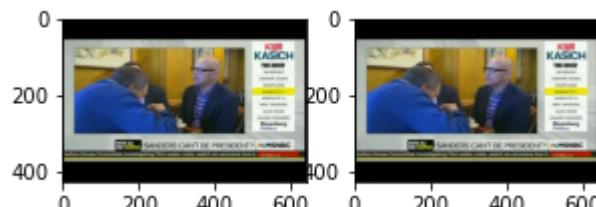
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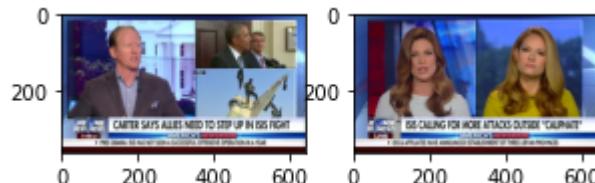
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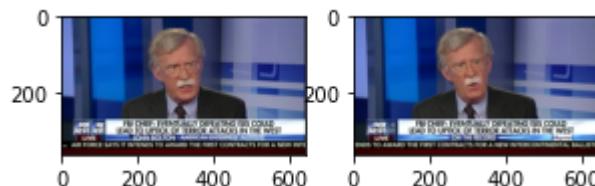
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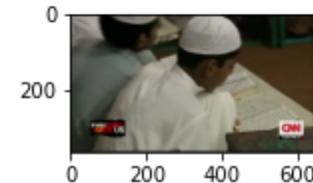
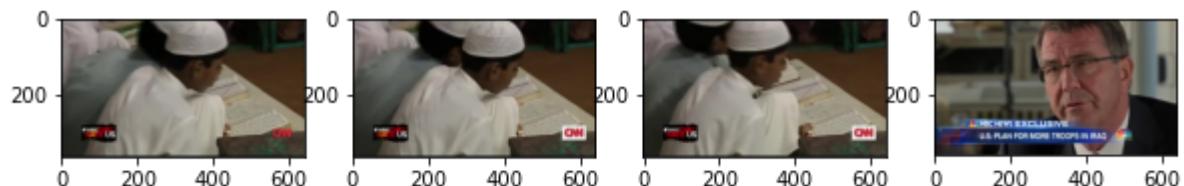
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CLUSTER--> 278 TOTAL IMAGES--> 5



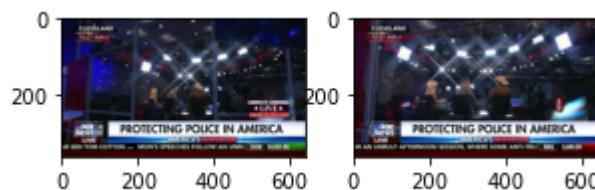
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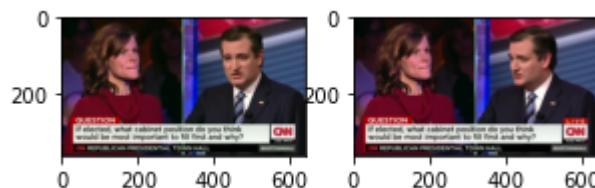
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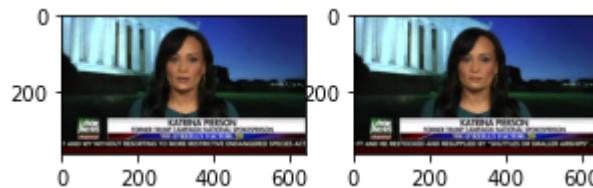
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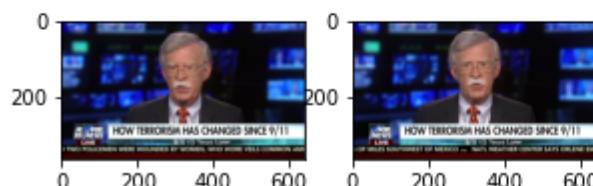
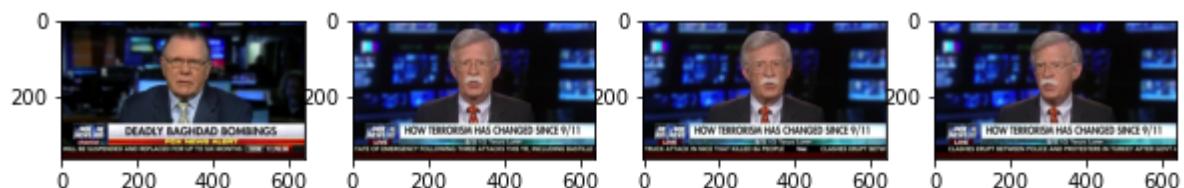
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CLUSTER--> 285 TOTAL IMAGES--> 2



CLUSTER--> 286 TOTAL IMAGES--> 6



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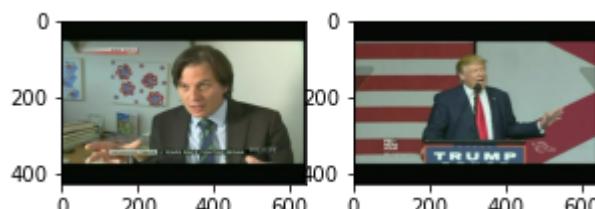
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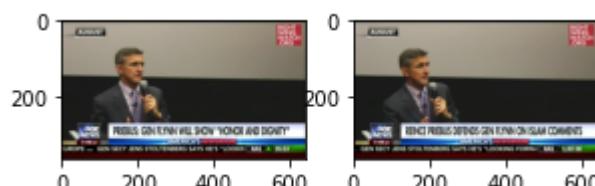
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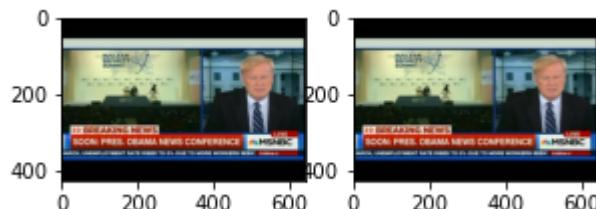
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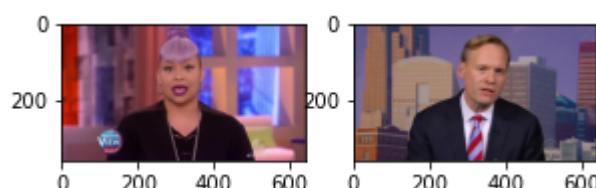
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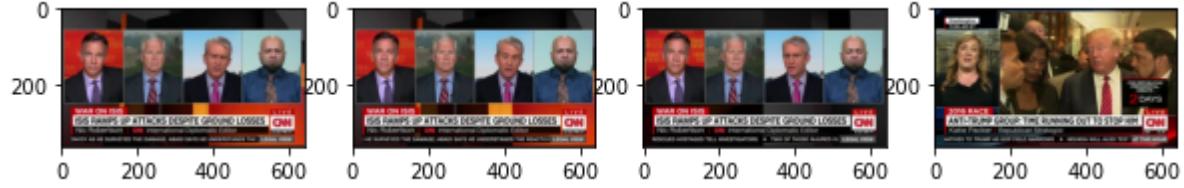
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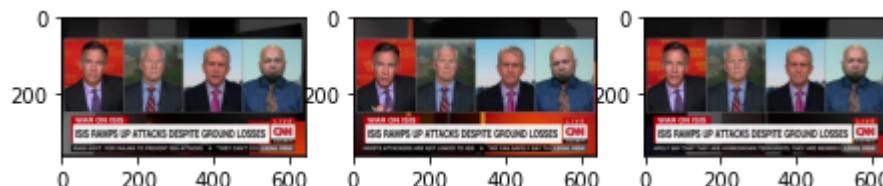
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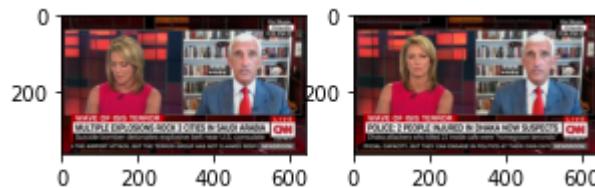
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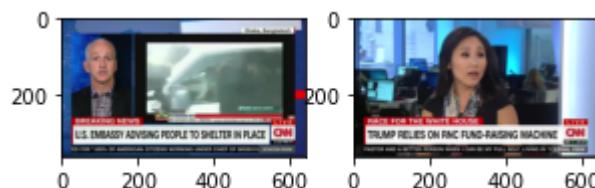
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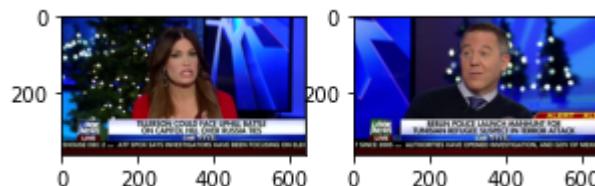
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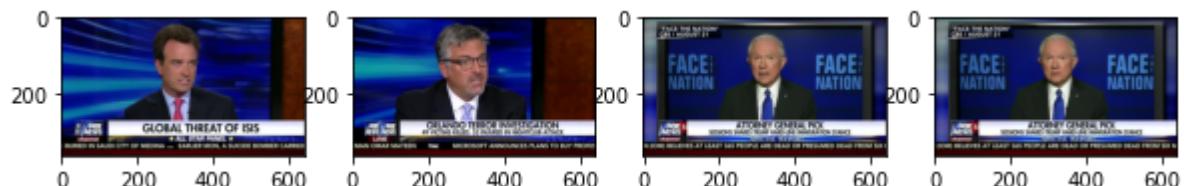
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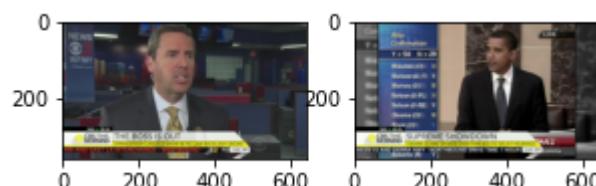
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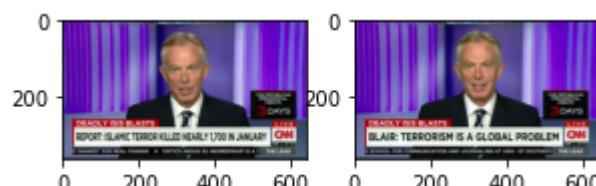
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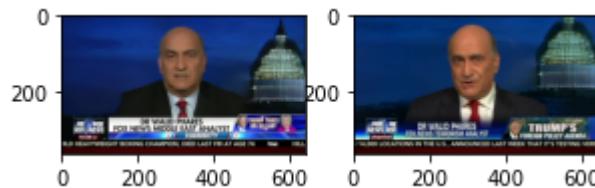
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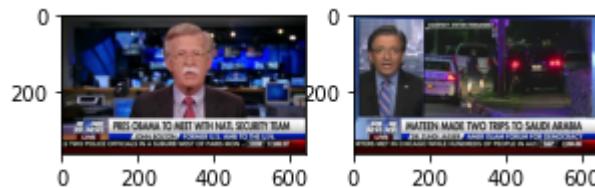
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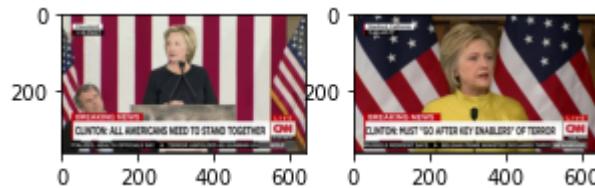
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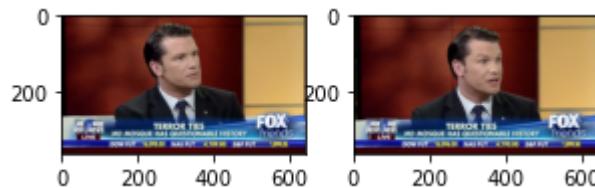
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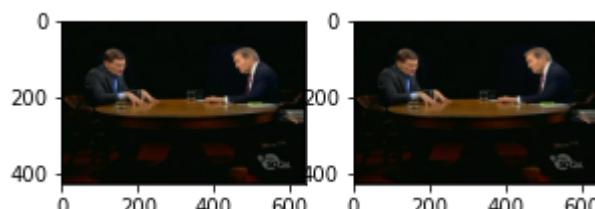
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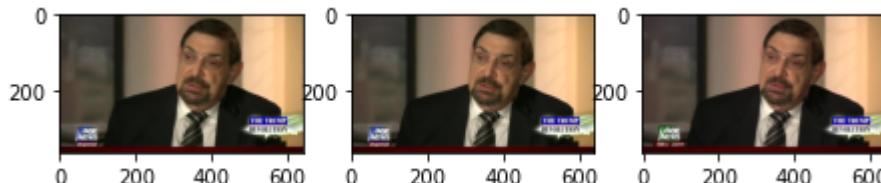
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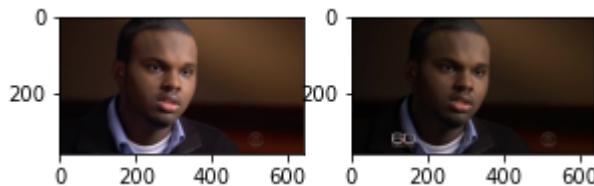
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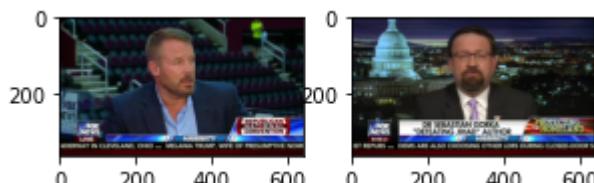
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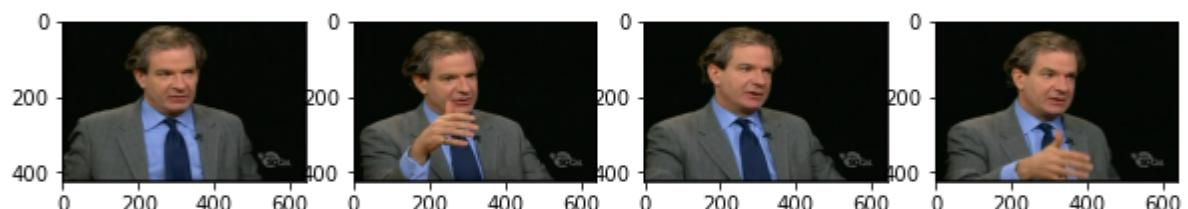
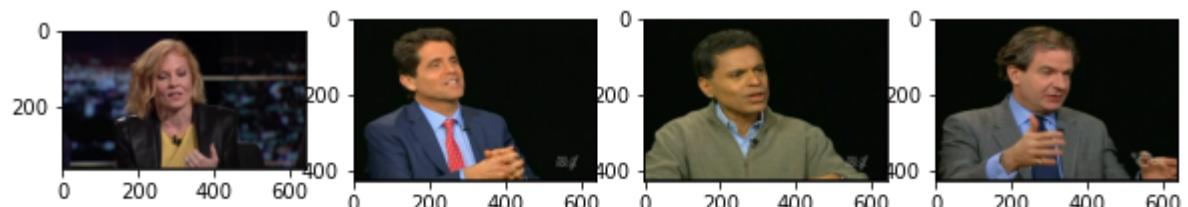
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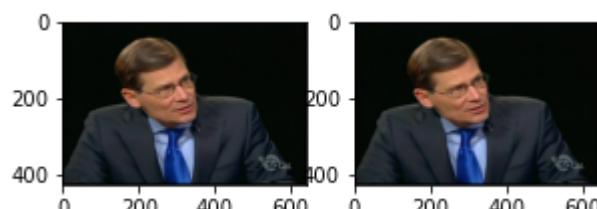
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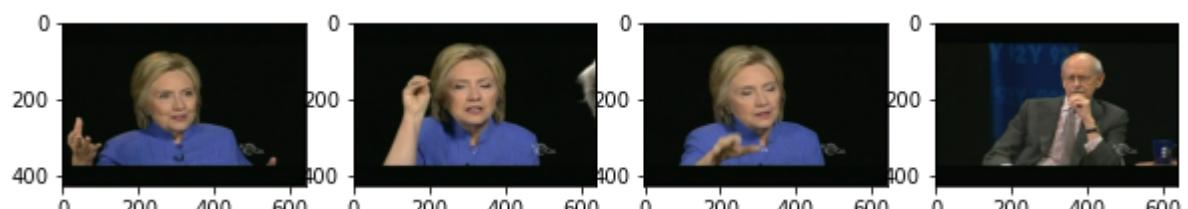
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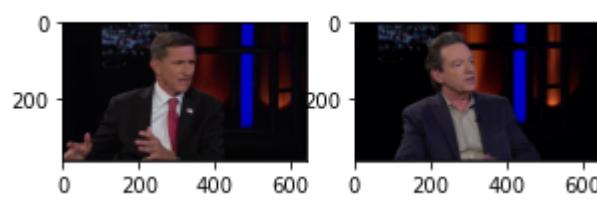
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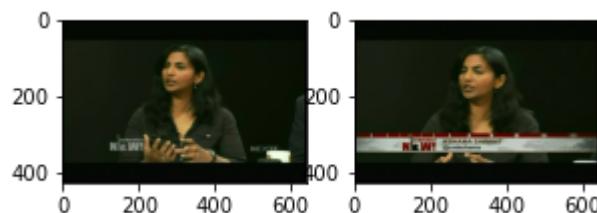
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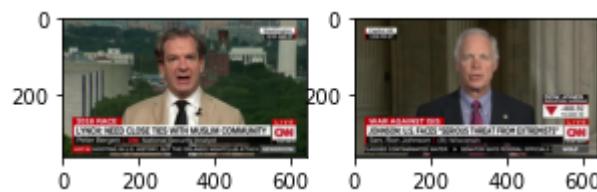
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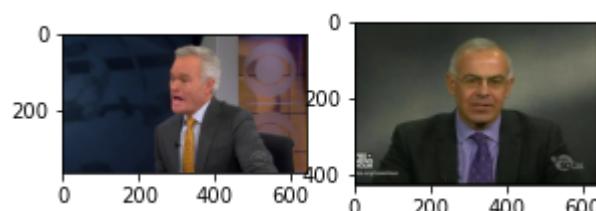
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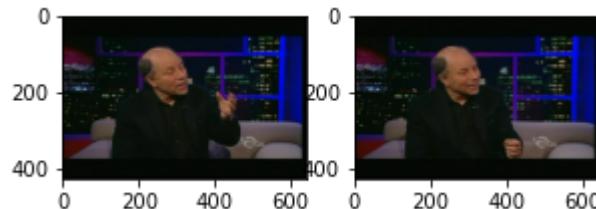
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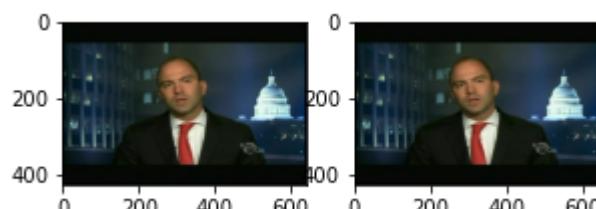
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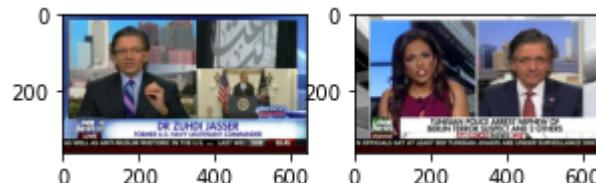
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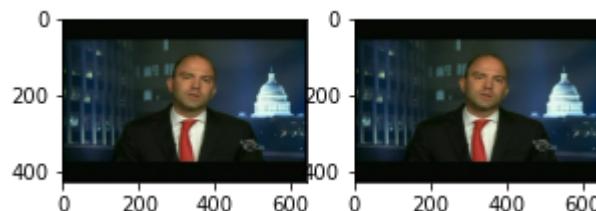
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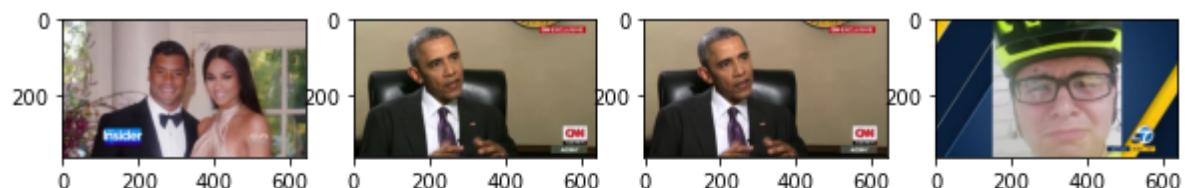
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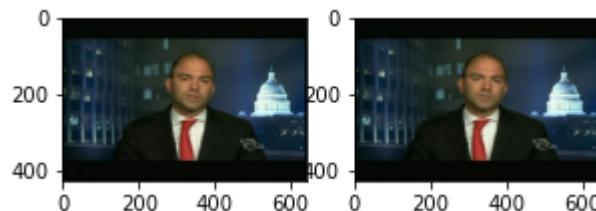
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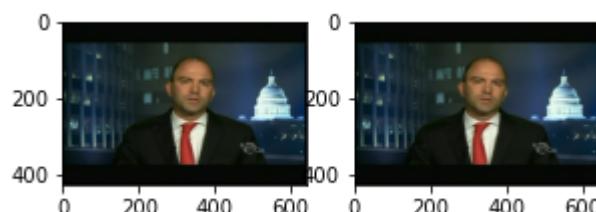
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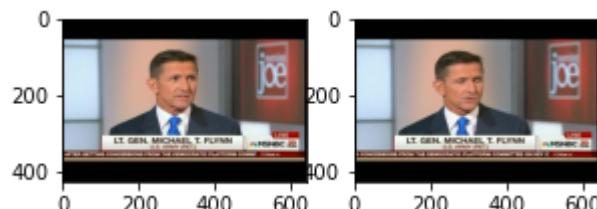
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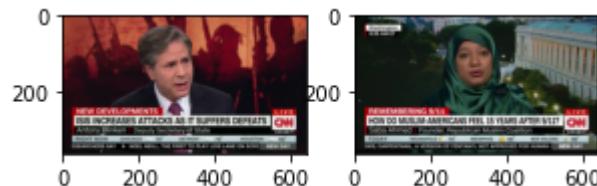
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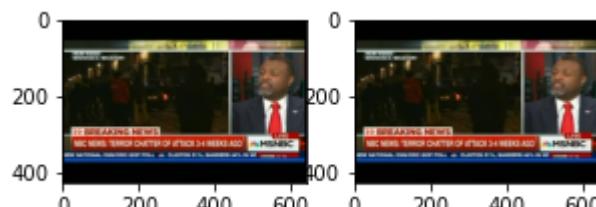
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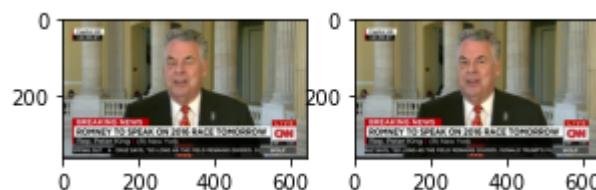
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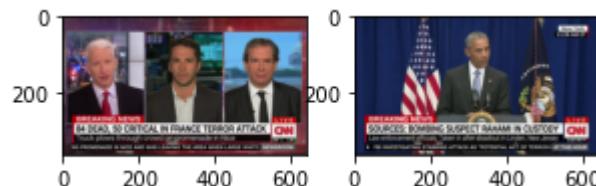
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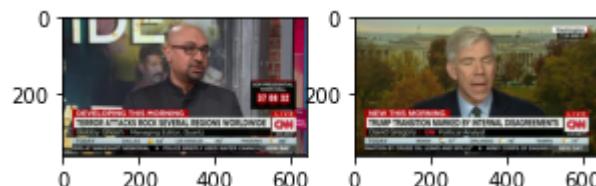
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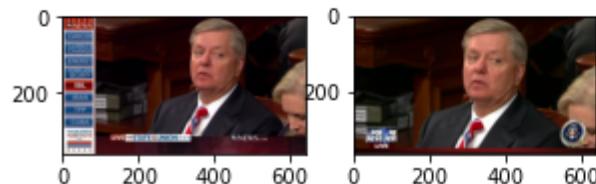
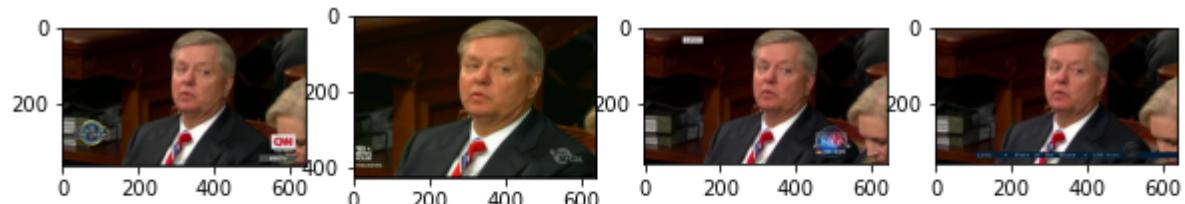
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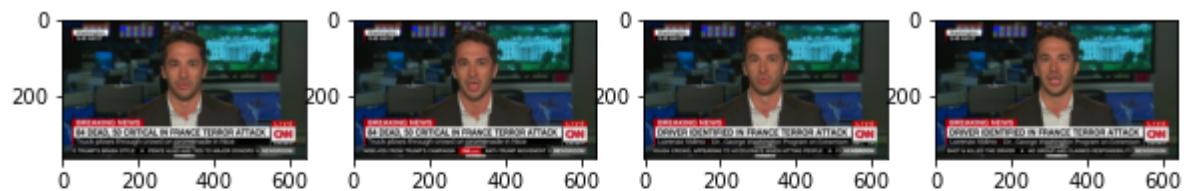
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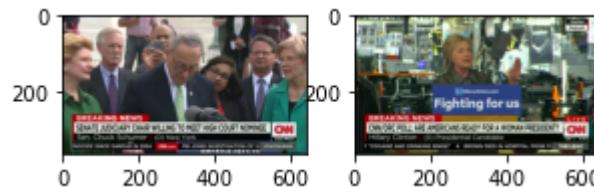
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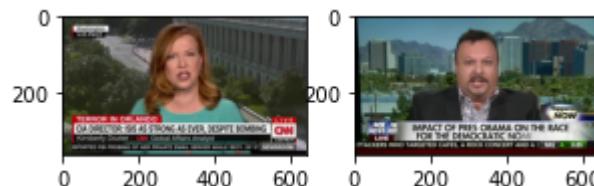
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CLUSTER--> 379 TOTAL IMAGES--> 2



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CLUSTER--> 382 TOTAL IMAGES--> 2



CLUSTER--> 383 TOTAL IMAGES--> 5



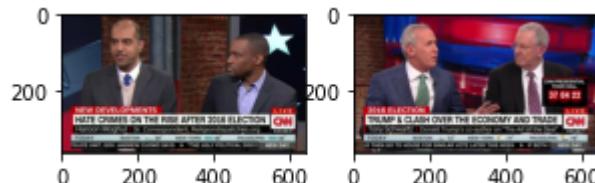
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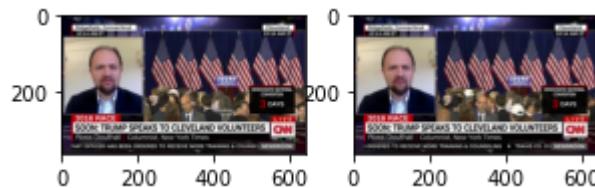
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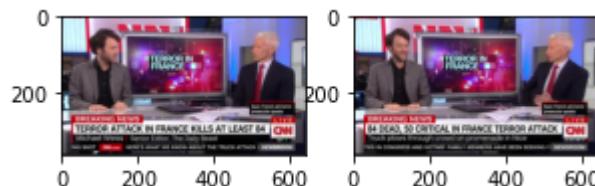
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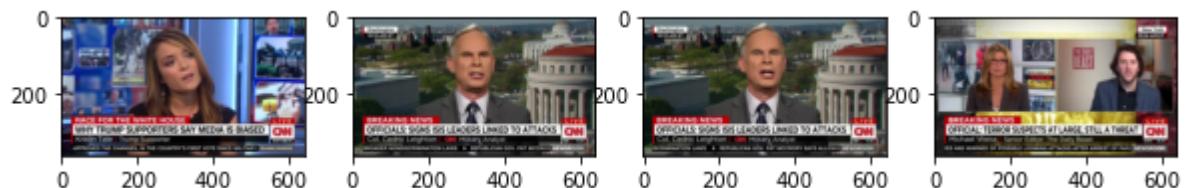
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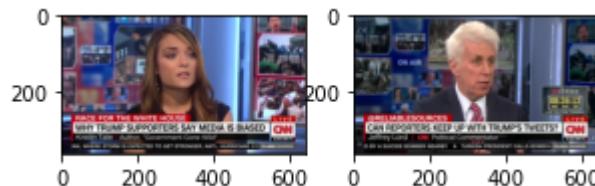
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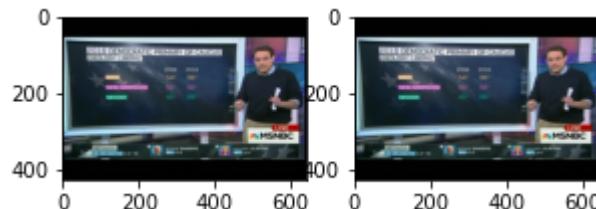
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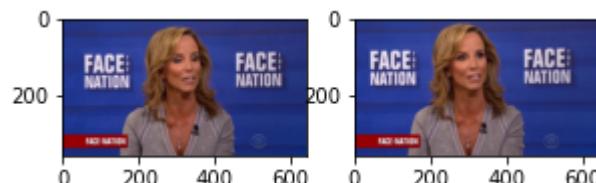
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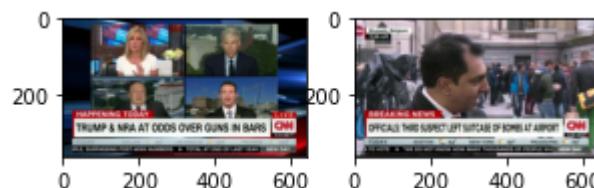
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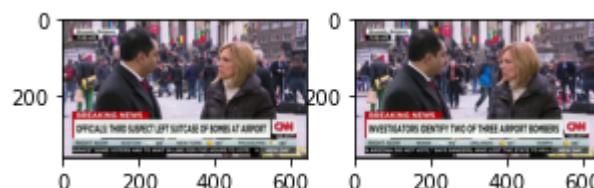
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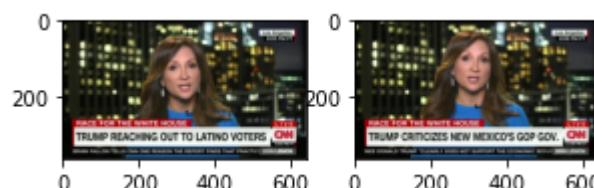
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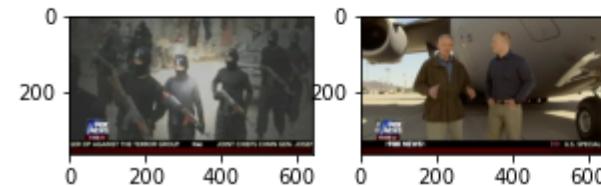
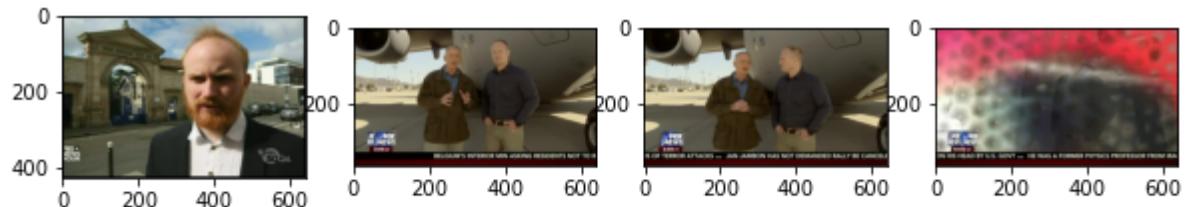
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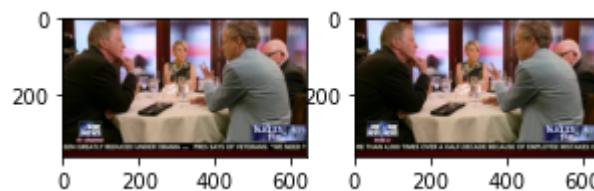
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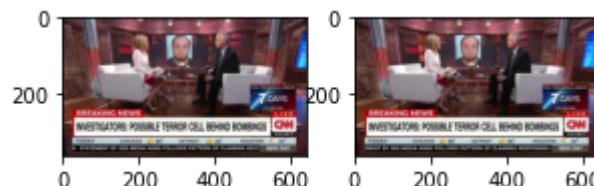
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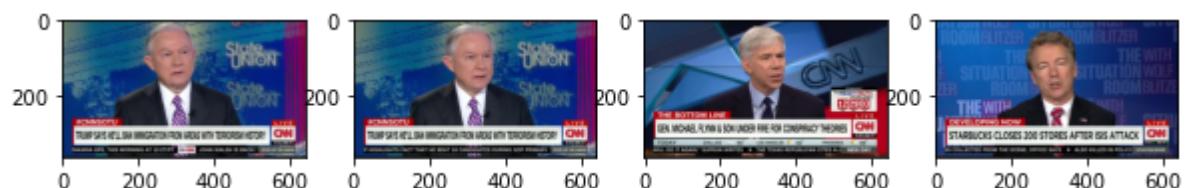
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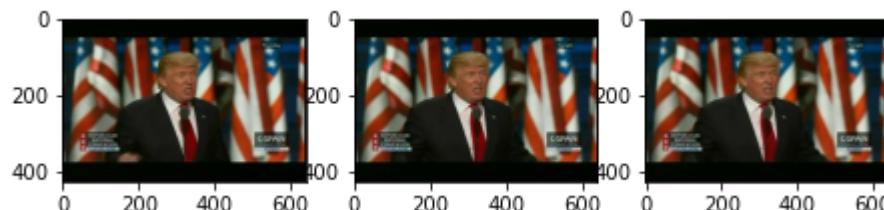
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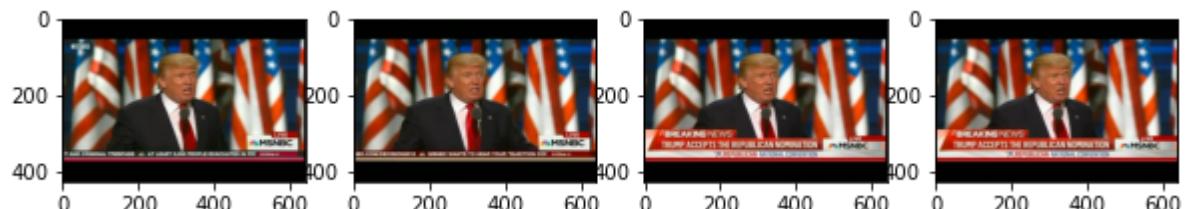
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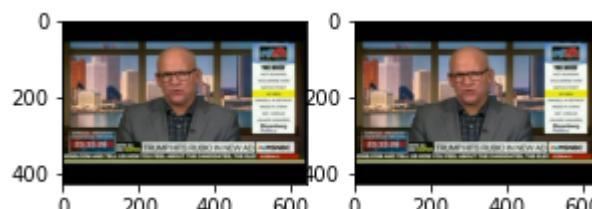
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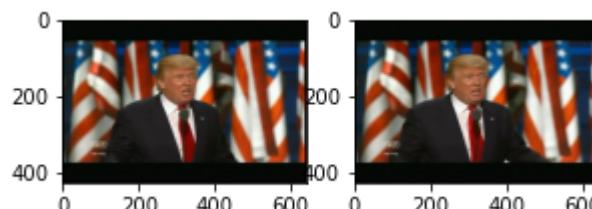
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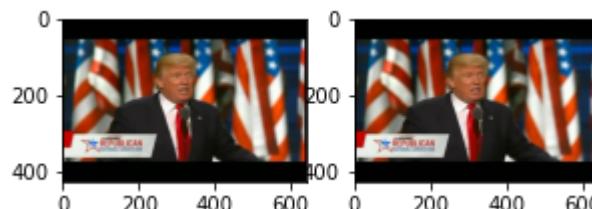
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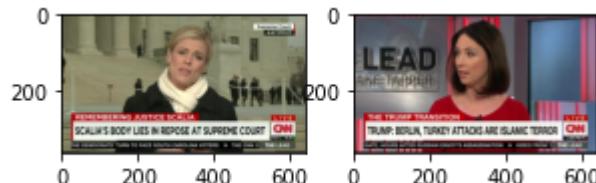
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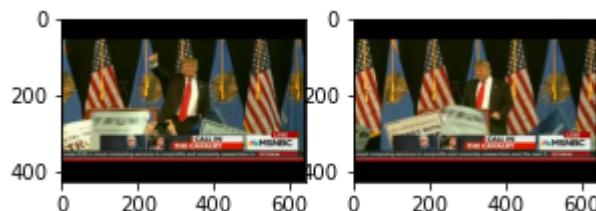
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