

```
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
```

```
In [2]: 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)
```

Out[2]: 2942

```
In [3]: def showClustering(predicted_labels,label):
    label_indexs= np.where(predicted_labels==label)[0]
    print("CLUSTER--> ",label,"TOTAL IMAGES--> ",len(label_indexs))
    if(len(label_indexs)>=500):
        fig=plt.figure(figsize=(10, 400))

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

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

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

    for i,index in enumerate(label_indexs):

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

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

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

    plt.show()
```

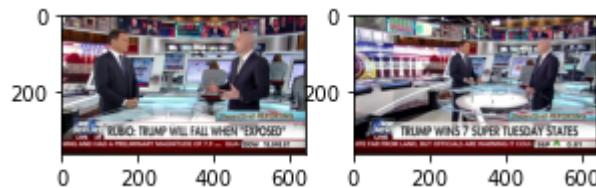
```
In [4]: results_df=pd.read_csv('D://Himani-work/gsoc2020/code/image-results-updateGrid/ideology_model_vgg_19.npy-pca.csv')  
results_df
```

Out[4]:

	Unnamed: 0	n_clusters	silhouette	calinski	davies
0	HDBSCAN	666	0.076880	3.806865	1.370842
1	DBSCAN	2	0.327818	16.176620	2.449359
2	Mean-shift	4	0.315762	6.522050	0.682623
3	Optics	211	-0.130567	4.769851	1.407501

```
In [5]: predicted_Labels=np.load('D://Himani-work/gsoc2020/code/image-results-updateGr  
id/ideology_model_vgg_19.npy-pca_hdbscan_labels.npy')  
unique_labels=set(predicted_Labels)  
for label in unique_labels:  
    if(label!=-1):  
        showClustering(predicted_Labels,label)
```

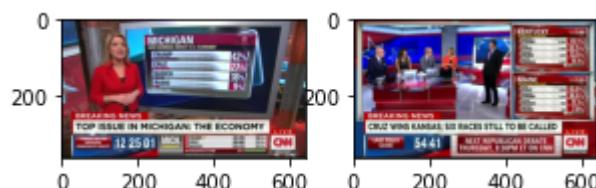
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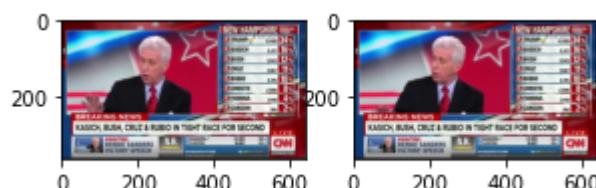
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CLUSTER--> 2 TOTAL IMAGES--> 2



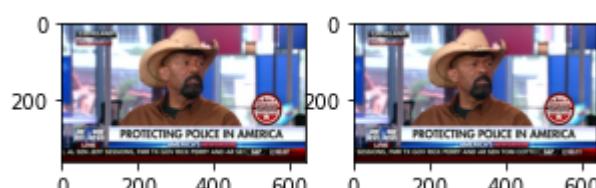
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CLUSTER--> 4 TOTAL IMAGES--> 2



CLUSTER--> 5 TOTAL IMAGES--> 2



CLUSTER--> 6 TOTAL IMAGES--> 2



CLUSTER--> 7 TOTAL IMAGES--> 2



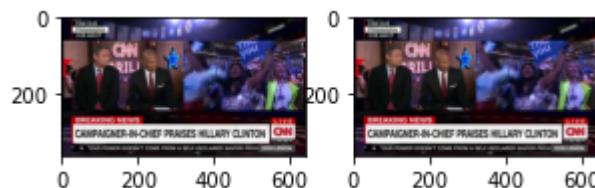
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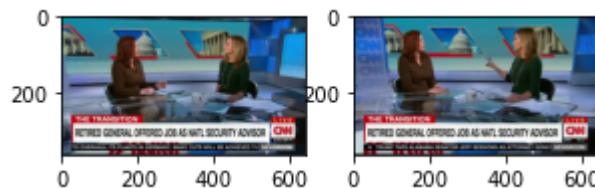
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CLUSTER--> 10 TOTAL IMAGES--> 2



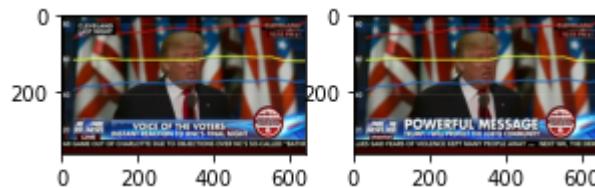
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CLUSTER--> 12 TOTAL IMAGES--> 4



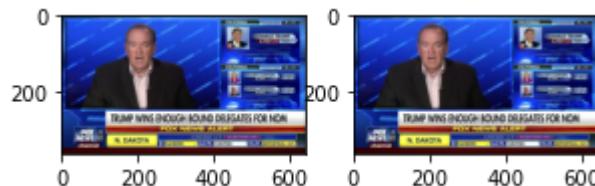
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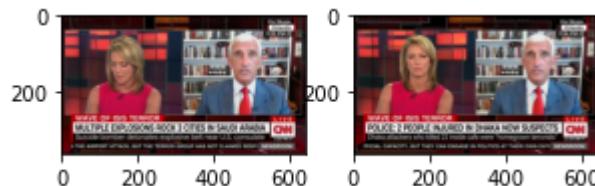
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CLUSTER--> 16 TOTAL IMAGES--> 2



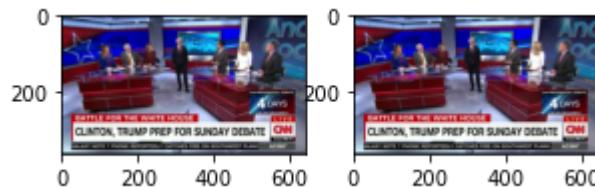
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CLUSTER--> 18 TOTAL IMAGES--> 2



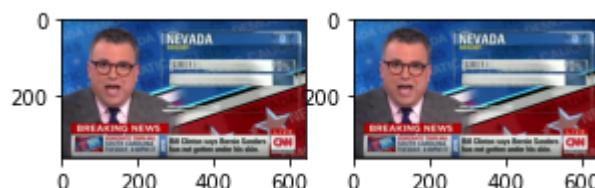
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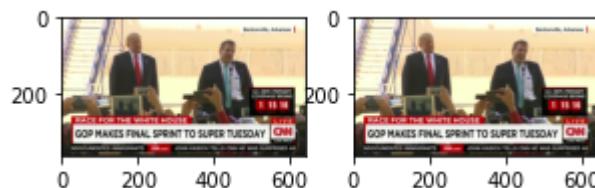
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CLUSTER--> 21 TOTAL IMAGES--> 2



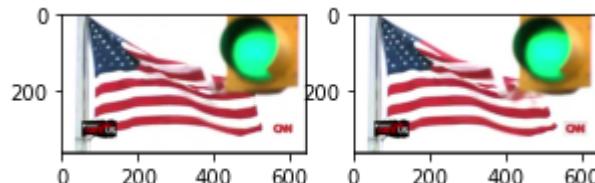
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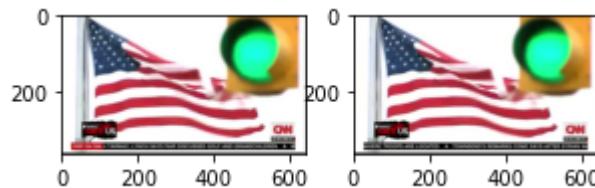
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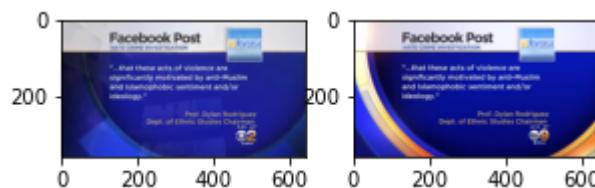
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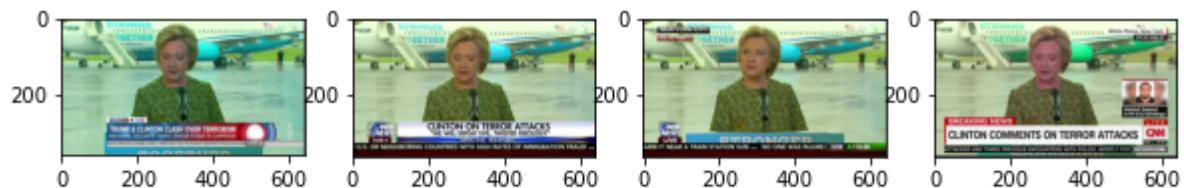
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CLUSTER--> 26 TOTAL IMAGES--> 2



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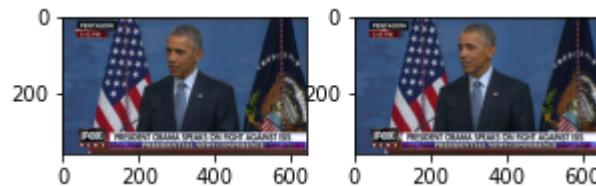
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CLUSTER--> 29 TOTAL IMAGES--> 3



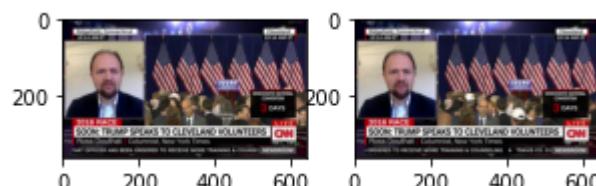
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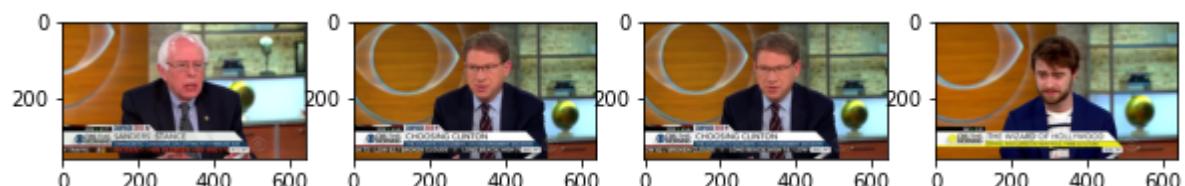
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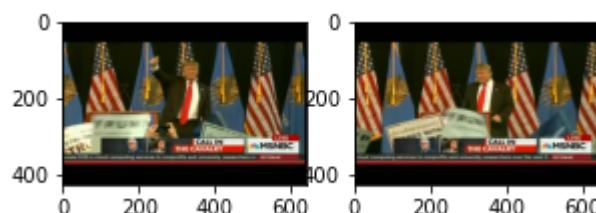
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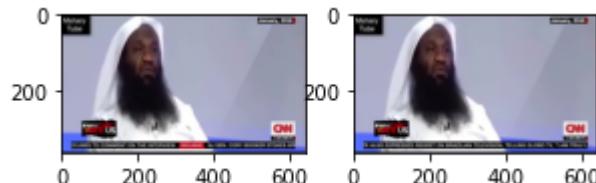
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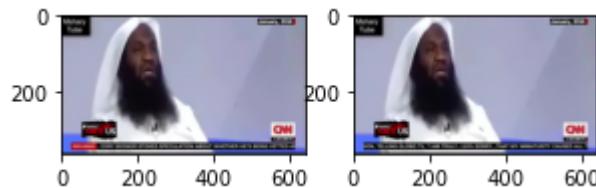
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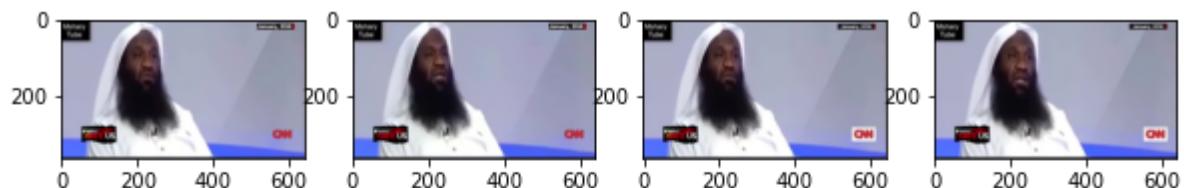
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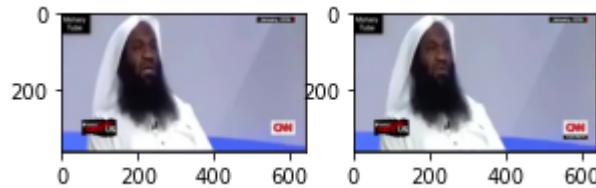
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CLUSTER--> 41 TOTAL IMAGES--> 2



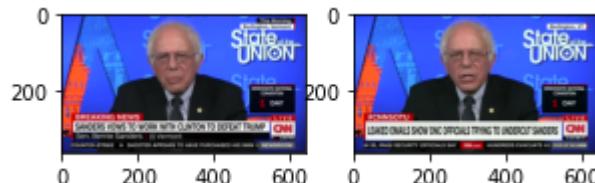
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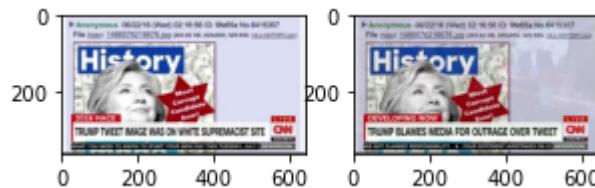
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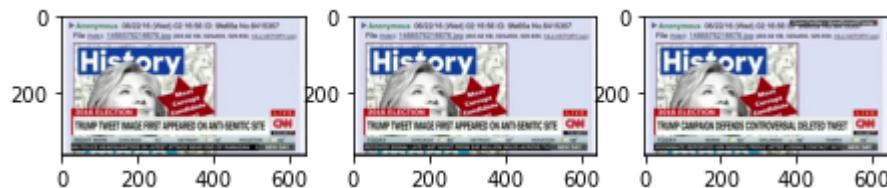
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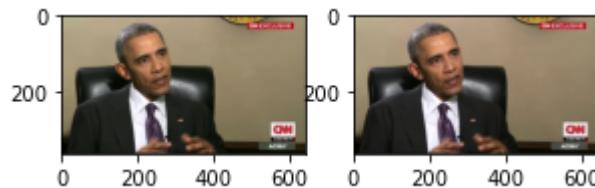
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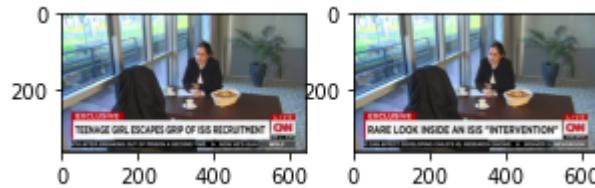
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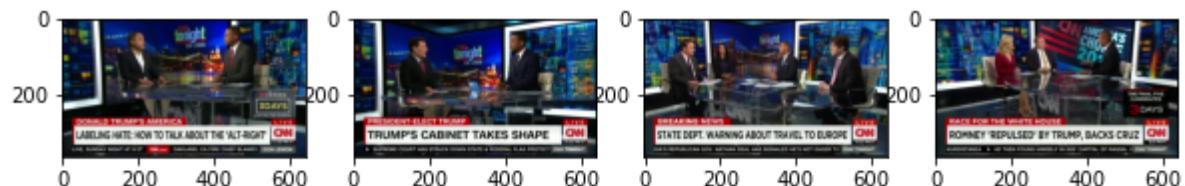
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CLUSTER--> 58 TOTAL IMAGES--> 2



CLUSTER--> 59 TOTAL IMAGES--> 2



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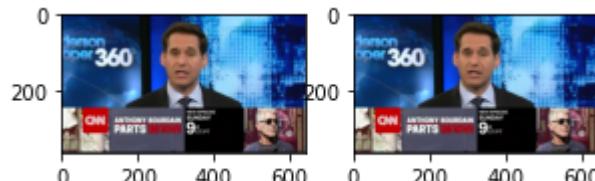
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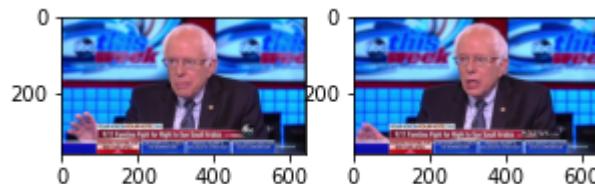
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CLUSTER--> 67 TOTAL IMAGES--> 2



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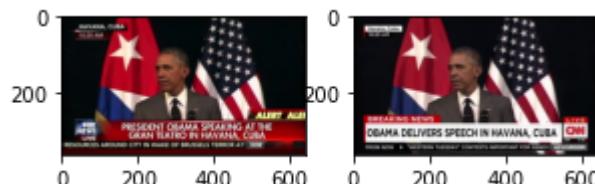
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CLUSTER--> 70 TOTAL IMAGES--> 3



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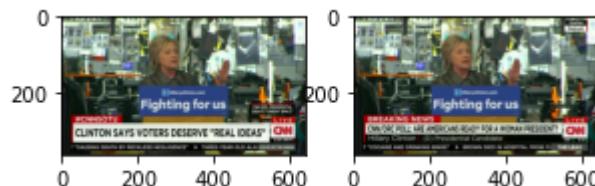
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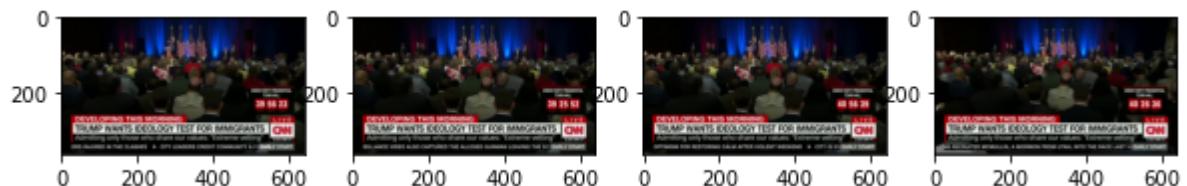
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CLUSTER--> 75 TOTAL IMAGES--> 4



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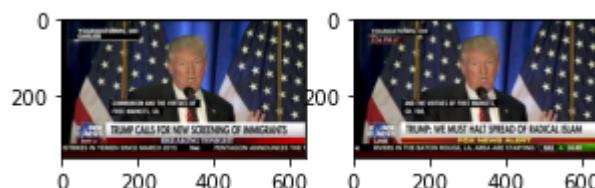
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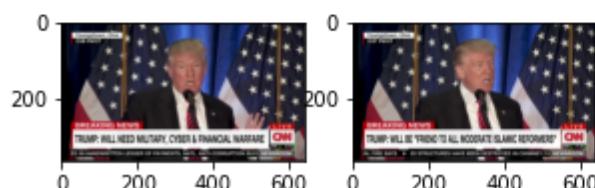
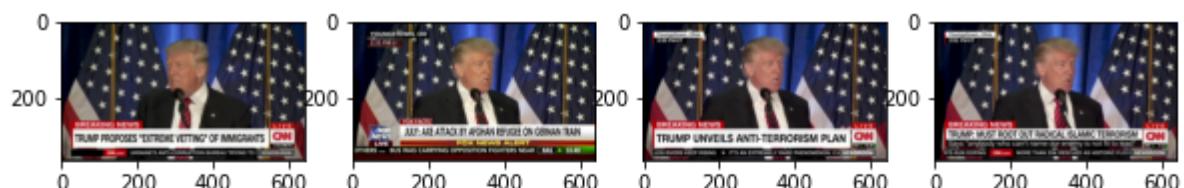
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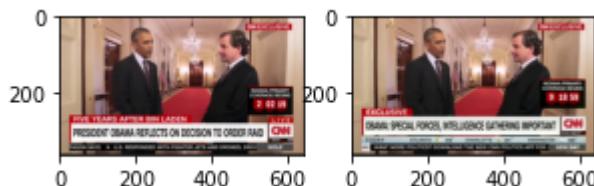
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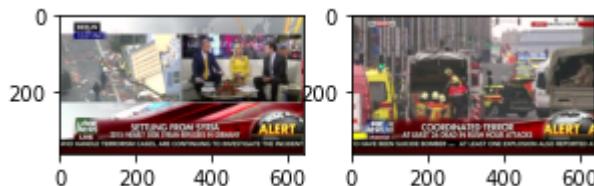
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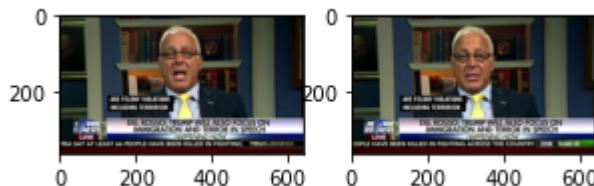
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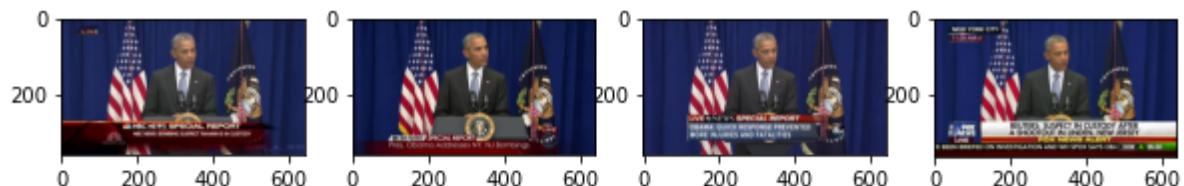
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CLUSTER--> 87 TOTAL IMAGES--> 2



CLUSTER--> 88 TOTAL IMAGES--> 5



CLUSTER--> 89 TOTAL IMAGES--> 3



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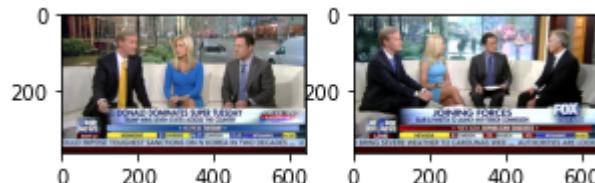
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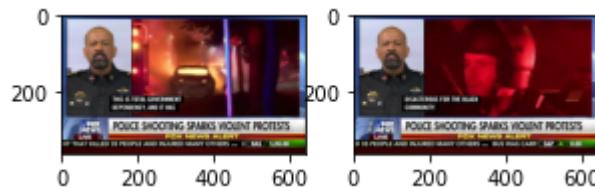
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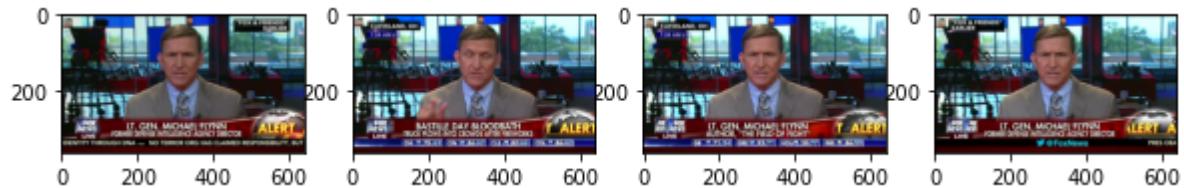
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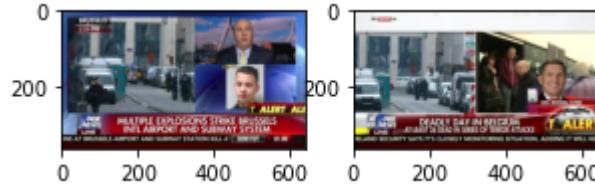
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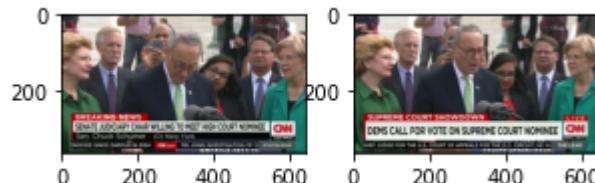
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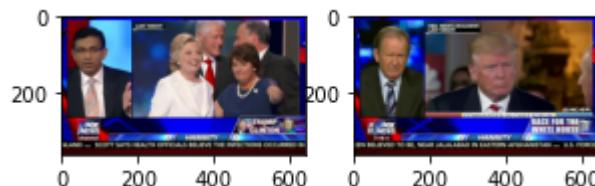
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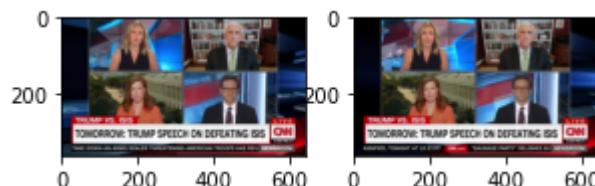
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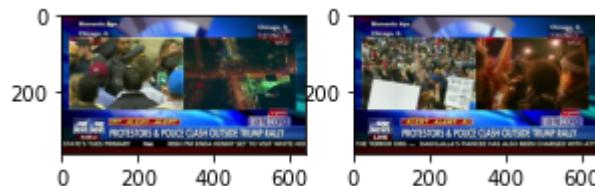
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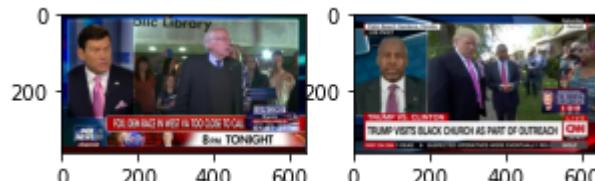
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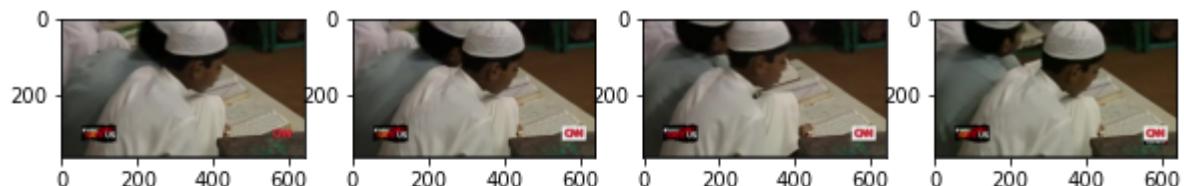
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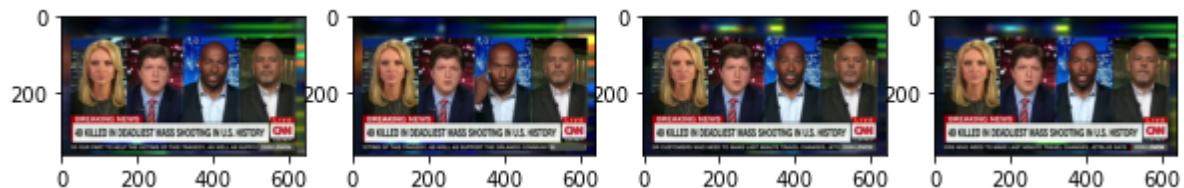
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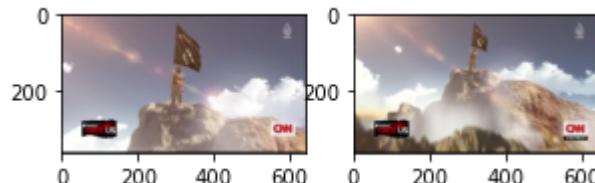
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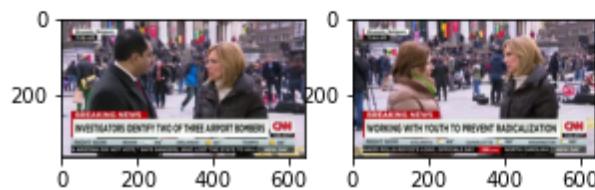
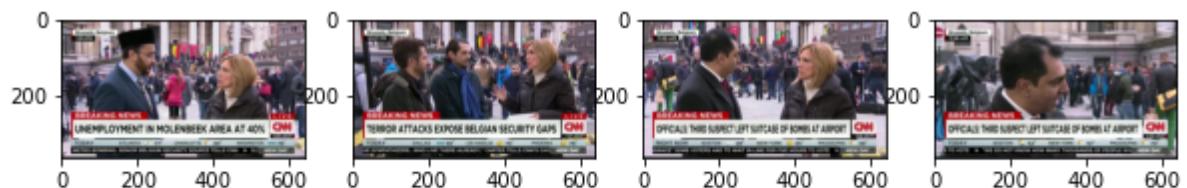
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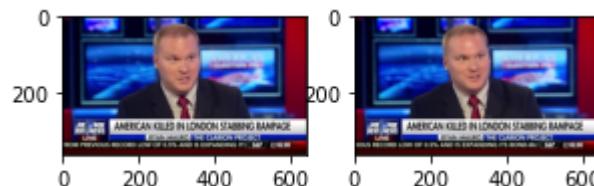
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CLUSTER--> 117 TOTAL IMAGES--> 2



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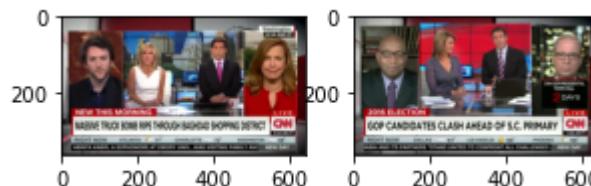
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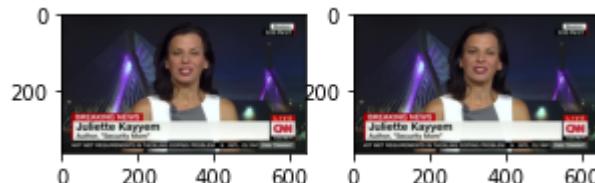
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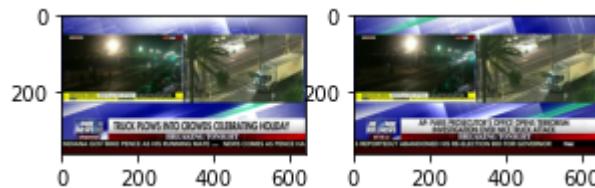
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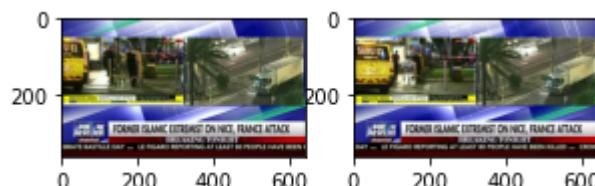
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CLUSTER--> 126 TOTAL IMAGES--> 2



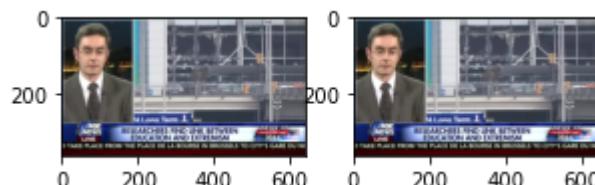
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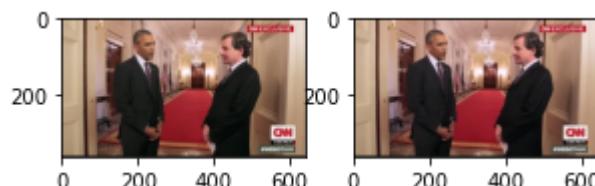
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CLUSTER--> 129 TOTAL IMAGES--> 2



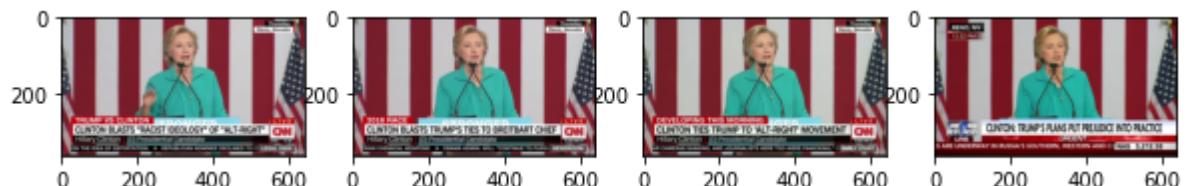
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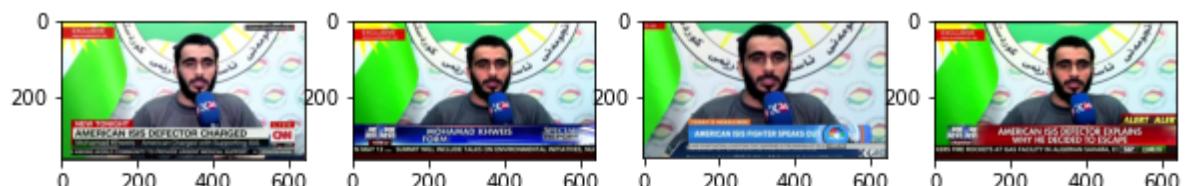
CLUSTER--> 132 TOTAL IMAGES--> 4



CLUSTER--> 133 TOTAL IMAGES--> 4



CLUSTER--> 134 TOTAL IMAGES--> 7



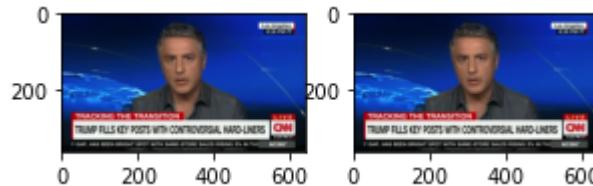
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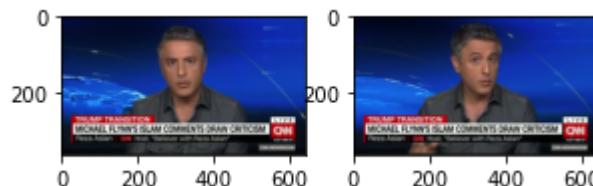
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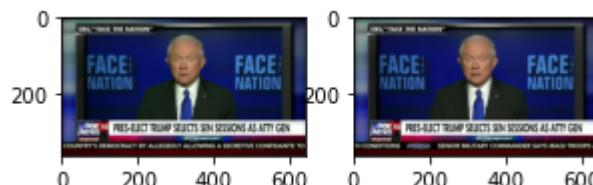
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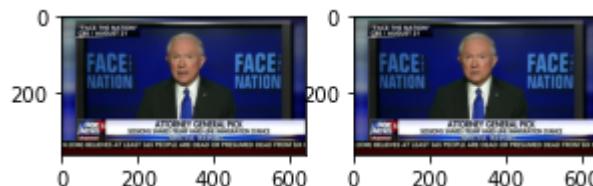
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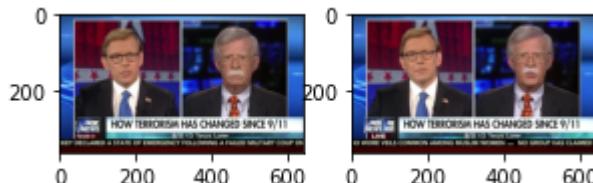
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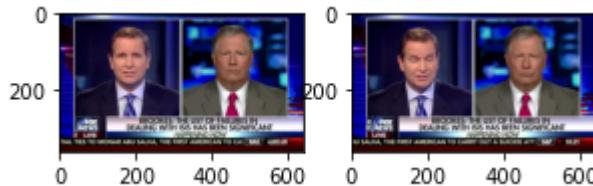
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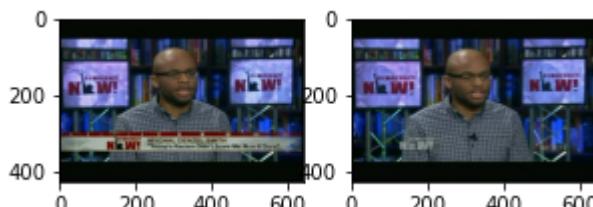
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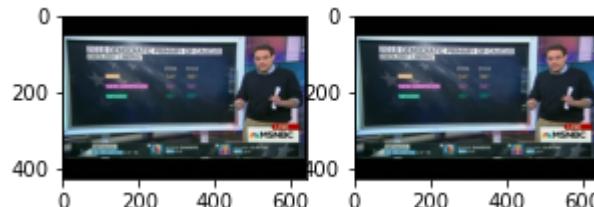
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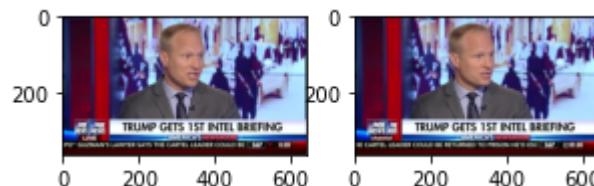
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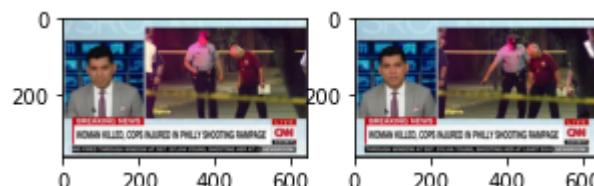
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CLUSTER--> 152 TOTAL IMAGES--> 2



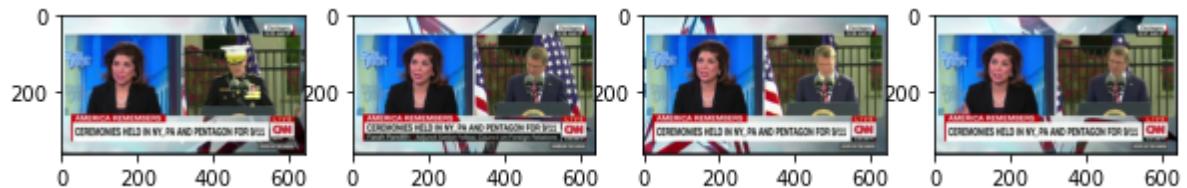
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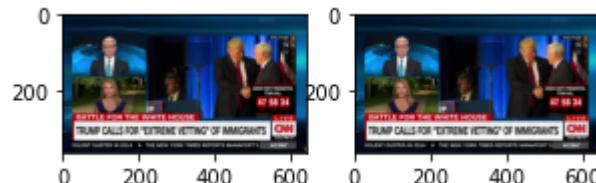
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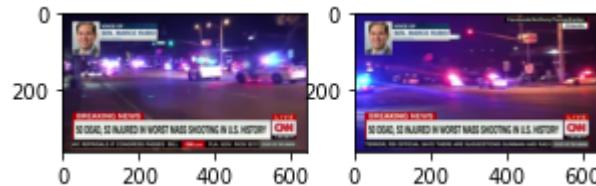
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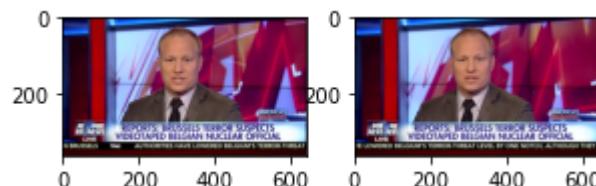
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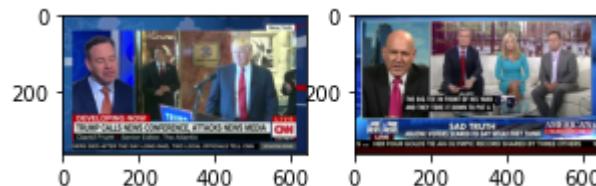
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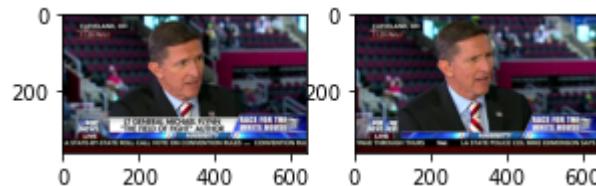
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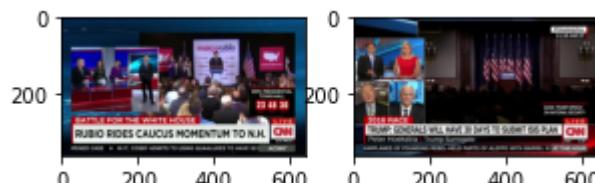
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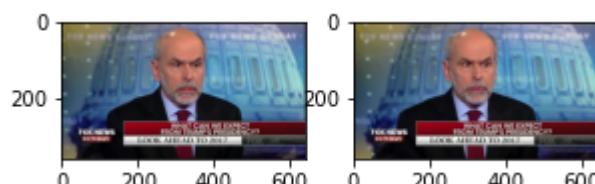
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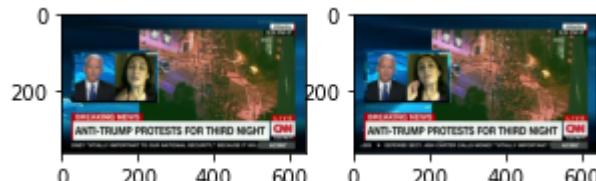
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CLUSTER--> 171 TOTAL IMAGES--> 2



CLUSTER--> 172 TOTAL IMAGES--> 2



CLUSTER--> 173 TOTAL IMAGES--> 15



CLUSTER--> 174 TOTAL IMAGES--> 2



CLUSTER--> 175 TOTAL IMAGES--> 2