Face Detection and Boxing

In [13]:
```
import face_recognition
import matplotlib.pyplot as plt
import matplotlib.image as mpimg
import numpy as np
from PIL import Image, ImageOps, ImageDraw
```

interesting resize capabilities https://matplotlib.org/stable/tutorials/introductory/images.html

Pre Recs

These images have both masks and no masks. Some images have 1 person per image and some have 2+.

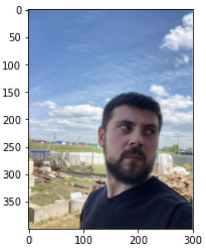
In [2]:
```
# some images from the dataset are stored in the test image directory
img_dir = './test_imgs/'
img_names = []
for i in range(1, 13):
    name = 'face' + str(i)
    full_name = img_dir + name
    if i in [1, 2, 3, 4]:
        full_name = full_name + '.jpg'
    else:
        full_name = full_name + '.png'
    img_names.append(full_name)
```

In [3]:
```
img_names
```

Out[3]:
```
['./test_imgs/face1.jpg',
 './test_imgs/face2.jpg',
 './test_imgs/face3.jpg',
 './test_imgs/face4.jpg',
 './test_imgs/face5.png',
 './test_imgs/face6.png',
 './test_imgs/face7.png',
 './test_imgs/face8.png',
 './test_imgs/face9.png',
 './test_imgs/face10.png',
 './test_imgs/face11.png',
 './test_imgs/face12.png']
```

Show an image

In [4]:
```
img_to_show = 7
img = mpimg.imread(img_names[img_to_show])
#img = np.rot90(img)  # rotates image to make it upright
imgplot = plt.imshow(img)
```



In [5]:
```
img = face_recognition.load_image_file(img_names[7])
#img = np.rot90(img)  # rotates image to make it upright
```

In [6]:
```
face_locs = face_recognition.face_locations(img)
```

In [7]:
```
face_locs
```

Out[7]:
```
[(187, 247, 295, 139)]
```

In [8]:
```
img.shape
```

Out[8]:
```
(400, 301, 3)
```

In [9]:
```
img_num = 5

img = face_recognition.load_image_file(img_names[img_num])
face_locs = face_recognition.face_locations(img)

pil_image = Image.fromarray(img)
img1 = ImageDraw.Draw(pil_image)

for face in face_locs:

    t, l, b, r = face
    face1 = [(l, t), (r, b)]
    img1.rectangle(face1, outline='red')
```

In [105…
```
pil_image.show()
```

In [13]:
```
for img_path in img_names:

    img = face_recognition.load_image_file(img_path)
    face_locs = face_recognition.face_locations(img)

    pil_image = Image.fromarray(img)
    img1 = ImageDraw.Draw(pil_image)

    for face in face_locs:

        t, l, b, r = face
        face1 = [(l, t), (r, b)]
        img1.rectangle(face1, outline='red')
    pil_image.show()
```

face detect works poorly with masks. Trying eye detect only

In [19]:
```
img_num = 5

img = face_recognition.load_image_file(img_names[img_num])
#img2 = np.rot90(img)  # rotates image to make it upright

landmarks = face_recognition.face_landmarks(img)
landmarks
```

Out[19]:
```
[]
```

In [20]:
```
pil_image = Image.fromarray(img)
pil_image.show()
```

In [ ]:
```
pil_image = Image.fromarray(img)
img1 = ImageDraw.Draw(pil_image)

for face in face_locs:

    t, l, b, r = face
    face1 = [(l, t), (r, b)]
    img1.rectangle(face1, outline='red')
```

still doesn't work

In [ ]:
```
img = face_recognition.load_image_file(r'./test_imgs/error.jpg')
#img = np.rot90(img)  # rotates image to make it upright

face_locs = face_recognition.face_locations(img)

pil_image = Image.fromarray(img)
img1 = ImageDraw.Draw(pil_image)

for face in face_locs:

    t, l, b, r = face
    face1 = [(l, t), (r, b)]
    img1.rectangle(face1, outline='red')
```

In [24]:
```
pil_image = Image.fromarray(img)
pil_image.show()
```

In [4]:
```
fp = r'./test_imgs/error.jpg'
out_fp = r'./test_imgs/test.png'

im1 = Image.open(fp)

im1 = im1.rotate(90, expand=True)

im1.save(out_fp)
```

In [8]:
```
img = face_recognition.load_image_file(out_fp)
#img = np.rot90(img)  # rotates image to make it upright

face_locs = face_recognition.face_locations(img)

pil_image = Image.fromarray(img)
img1 = ImageDraw.Draw(pil_image)

for face in face_locs:

    t, l, b, r = face
    face1 = [(l, t), (r, b)]
    img1.rectangle(face1, outline='red')
```

In [9]:
```
pil_image.show()
```

In [6]:
```

```

In [7]:
```
face_locs
```

Out[7]:
```
[(2165, 3048, 4153, 1061)]
```

Ok, so this procecss worked.

In [10]:
```
img = face_recognition.load_image_file(img_names[img_num])

pil_image = Image.fromarray(img)
pil_image.show()
```

In [11]:
```
img = Image.open(fp)
img.show()
```

In [ ]:
```

```

In [ ]:
```

```

In [ ]:
```

```

In [15]:
```
fp = r'./test_imgs/error.jpg'
out_fp = r'./test_imgs/test.png'

im1 = Image.open(fp)
im1 = ImageOps.exif_transpose(im1)
#im1 = im1.rotate(90, expand=True)

im1.show()
```

In [ ]:
```

```