Face Mask Detection Dataset

In [2]:

```
import matplotlib.pyplot as plt
import matplotlib.image as mpimg
from PIL import Image, ImageOps, ImageDraw
import PIL
import os

# first face detection algo
import face_recognition

# for the second face detection algo
import cv2
import mediapipe as mp
```

In [3]:

```
# paths for the pictures from teh WWMR database
fmd_image_root =  r'D:\data\face_mask\FaceMaskDetection\images'
```

First face detection method

In [4]:

```
test_img_name = 'maksssksksss96.png'
test_img_fp = os.path.join(fmd_image_root, test_img_name)
```

In [5]:

```
img = face_recognition.load_image_file(test_img_fp)

face_locs = face_recognition.face_locations(img)
```

In [6]:

```
face_locs
```

Out[6]:

```
[(151, 108, 194, 64), (86, 281, 122, 245)]
```

In [7]:

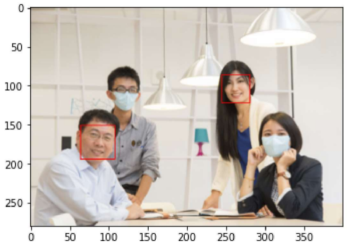
```
pil_image = Image.fromarray(img)
img1 = ImageDraw.Draw(pil_image)

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

In [8]:

```
pil_image.show()
```

In [9]:

```
imgplot = plt.imshow(img1._image)
```



Not all faces are detected however.

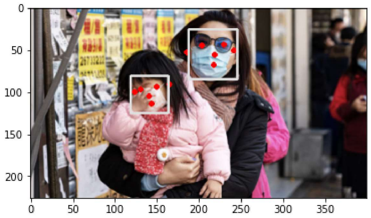
Second face detection method

In [10]:

```
mp_face_detection = mp.solutions.face_detection
mp_drawing = mp.solutions.drawing_utils
```

In [11]:

```
IMAGE_FILES = [r'D:\data\face_mask\FaceMaskDetection\images\maksssksksss100.png']

with mp_face_detection.FaceDetection(
    model_selection=1, min_detection_confidence=0.5) as face_detection:
    for idx, file in enumerate(IMAGE_FILES):
        image = cv2.imread(file)
        # Convert the BGR image to RGB and process it with MediaPipe Face Detection.
        results = face_detection.process(cv2.cvtColor(image, cv2.COLOR_BGR2RGB))
        #print(results.detections)


        # Draw face detections of each face.
        if not results.detections:
              continue
        annotated_image = image.copy()
        for detection in results.detections:
              mp_drawing.draw_detection(annotated_image, detection)
        #cv2.imwrite('/tmp/annotated_image' + str(idx) + '.png', annotated_image)
        plt.imshow(cv2.cvtColor(annotated_image, cv2.COLOR_RGB2BGR))
```



Google's media pipe works significantly better thant face_detection. Significanly higher detection rate, much less of the data will be lost because the faces were not detected.

In [17]:

```
results.detections[0]
```

```
Out[17]: label_id: 0
         score: 0.9093666076660156
         location_data {
           format: RELATIVE_BOUNDING_BOX
           relative_bounding_box {
             xmin: 0.4705358147621155
             ymin: 0.11944395303726196
             width: 0.14672362804412842
             height: 0.2596897482872009
           }
           relative_keypoints {
             x: 0.5108768343925476
             y: 0.20117676258087158
           }
           relative_keypoints {
             x: 0.5758687257766724
             y: 0.19650107622146606
           }
           relative_keypoints {
             x: 0.54831463098526
             y: 0.25126969814300537
           }
           relative_keypoints {
             x: 0.5455660820007324
             y: 0.30362606048583984
           }
           relative_keypoints {
             x: 0.4667125344276428
             y: 0.23753827810287476
           }
           relative_keypoints {
             x: 0.6072602272033691
             y: 0.22768235206604004
           }
         }
```

```
In [ ]:
```