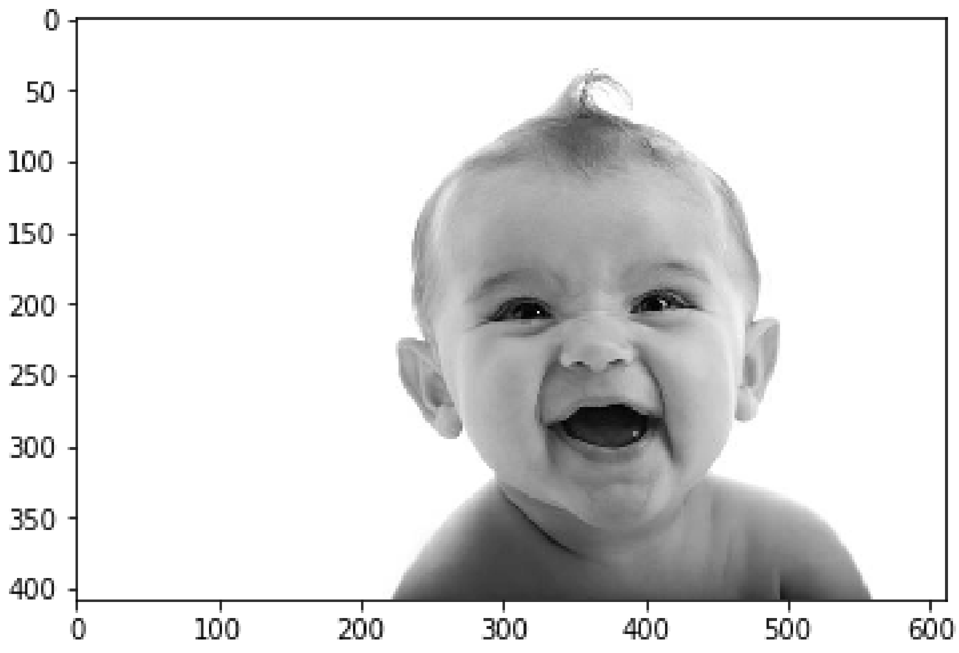
Face_Detection_using_Haar_Cascade

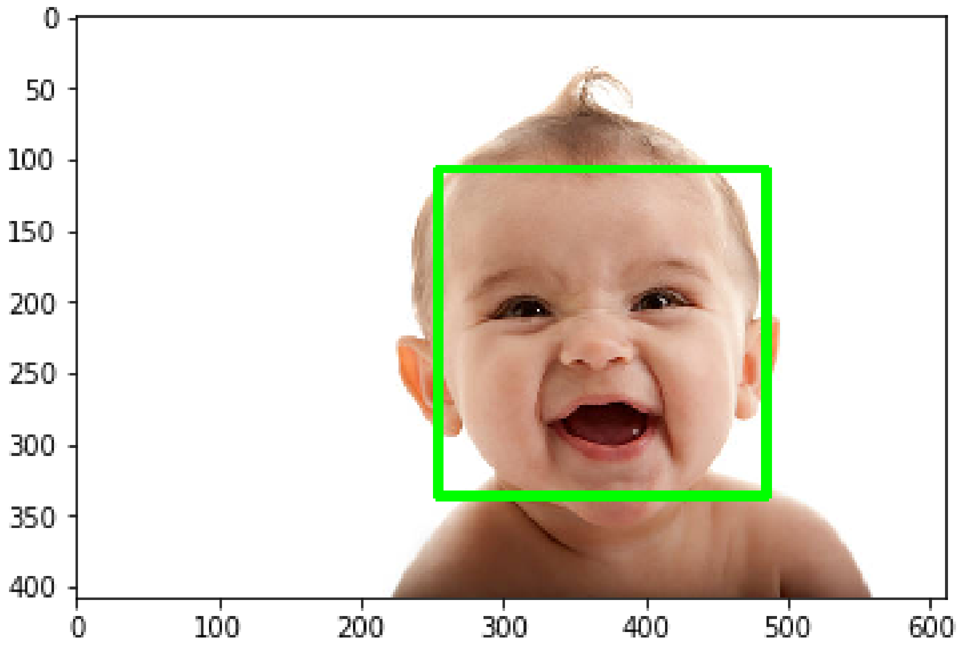
May 22, 2018

```
In [3]: import cv2
        import matplotlib.pyplot as plt
        import time
        %matplotlib inline

In [4]: # Load image
        test_image = cv2.imread('data.jpg')

In [5]: # Convert the image to gray imag as openCV face detector expcts gray images
        gray_test_image = cv2.cvtColor(test_image,cv2.COLOR_BGR2GRAY)

In [6]: plt.imshow(gray_test_image,cmap='gray')

Out[6]: <matplotlib.image.AxesImage at 0x1d7c9f0f9b0>
```



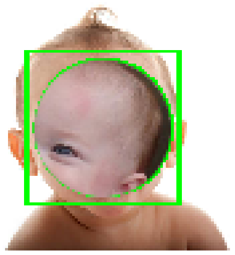
```
In [7]: # Load cascade classifier training file for haar_cascade
        haar_face_cascade = cv2.CascadeClassifier('data/haarcascade_frontalface_alt.xml')

In [8]: # This returns a list of positions of face in form "Rect(x,y,w,h)"
        faces = haar_face_cascade.detectMultiScale(gray_test_image, scaleFactor = 1.2 , minNei

In [9]: print("Faces Found : {}".format(str(len(faces))))

Faces Found : 1
```

```
In [10]: #opncv loads the image in BGR color..thus we convert it to RGB again
         def convertToRGB(img):
             return cv2.cvtColor(img, cv2.COLOR_BGR2RGB)

In [11]: # loop ove the list of faces and draw them as rectangle
         for (x,y,w,h) in faces:
             cv2.rectangle(test_image,(x,y),(x+w,y+h),(0,255,0),5)

In [12]: # call the RGB convertor defind above
         plt.imshow(convertToRGB(test_image))

Out[12]: <matplotlib.image.AxesImage at 0x1d7c9fb7dd8>
```



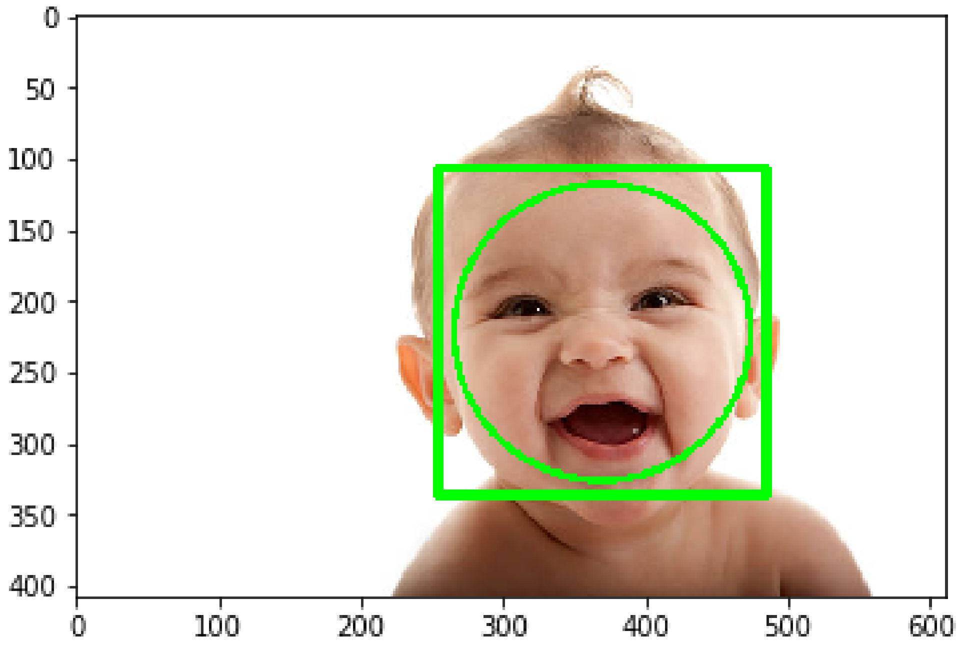
```
In [13]: import matplotlib.patches as patches
         import matplotlib.cbook as cbook
```

```
In [14]: with cbook.get_sample_data('C:/Users/jsidd/Desktop/TensorFLow/Facial-Detection-Recogn
             image = plt.imread(image_file)


         fig, ax = plt.subplots()
         for (x,y,w,h) in faces:
             cx,cy = round(x +w/2) , round(y +h/2)
             q = w/2
             e = h/2
             cv2.rectangle(test_image,(x,y),(x+w,y+h),(0,255,0),5)
             cv2.circle(test_image,(int(cx),int(cy)),int(w/2.2),(0,255,0),4)
         ax.imshow(convertToRGB(test_image))
         im = ax.imshow(image)
         patch = patches.Circle((int(cx),int(cy)),int(w/2.2), transform=ax.transData)
         im.set_clip_path(patch)

         ax.axis('off')
         plt.show()
```



```
In [15]: for (x,y,w,h) in faces:
             cx,cy = round(x +w/2) , round(y +h/2)
             q = w/2
             e = h/2
             cv2.rectangle(test_image,(x,y),(x+w,y+h),(0,255,0),5)
             cv2.circle(test_image,(int(cx),int(cy)),int(w/2.2),(0,255,0),4)
         plt.imshow(convertToRGB(test_image))
```

```
        plt.Circle((int(cx),int(cy)),int(w/2.2))
        plt.show()
```



OR you can define a function for this code

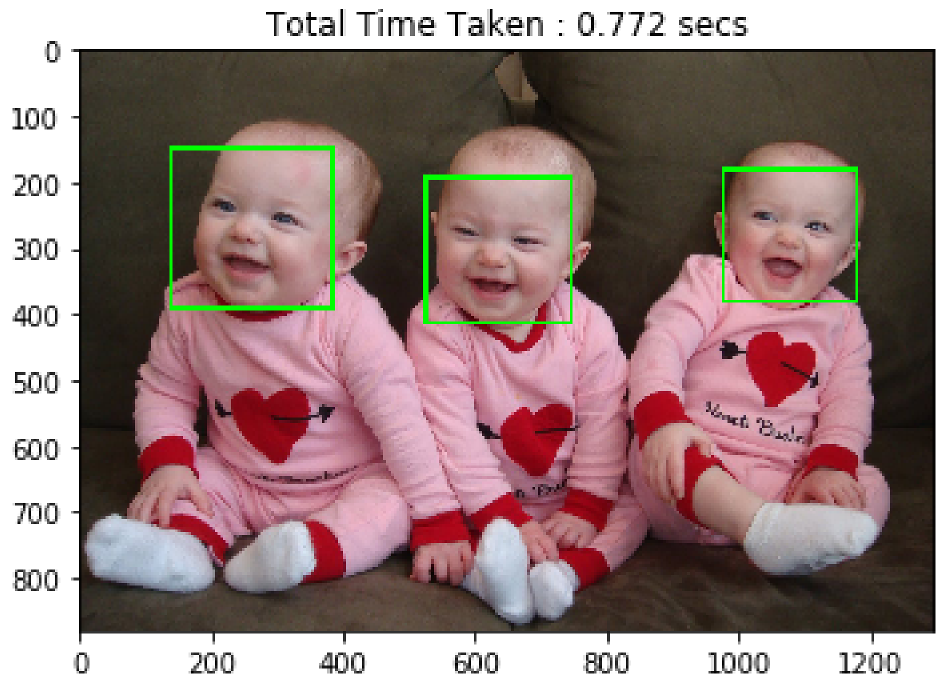
```
In [16]: def detect_faces(f_cascade ,img ,scaleFactor = 1.2):
             # make a copy so that the original image is not changed
             img_copy = img.copy()
             # convert to gray image as opencv expects gray images
             gray_image = cv2.cvtColor(img_copy , cv2.COLOR_BGR2GRAY)
             # ScaleFactor parametr for : some images may be closer than others
             faces = f_cascade.detectMultiScale(gray_image , scaleFactor = scaleFactor ,minNei
             # loop over the list of faces
             for (x,y,w,h) in faces:
                 cv2.rectangle(img_copy,(x,y),(x+w,y+h),(0,255,0),5)
             return img_copy
```

```
In [17]: # Load image
         test_image2 = cv2.imread('data/test3.jpg')
```

```
In [18]: # To calculate the Time
         start_time = time.time()
         # To call our function to detect faces
         face_detected_image =  detect_faces(haar_face_cascade, test_image2)
         end_time = time.time()
```

```
In [19]: plt.title('Total Time Taken : {} secs'.format(round(end_time-start_time,3)))
         plt.imshow(convertToRGB(face_detected_image))
```

```
Out[19]: <matplotlib.image.AxesImage at 0x1d7cb852048>
```



```
In [20]: import numpy as np
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In [ ]: np.
```