OpenCV – python Examples 2 (detection)

NB: 1- All xml files (as classifier) are downloaded from the following link:
https://github.com/opencv/opencv/tree/master/data/haarcascades

2- All Examples are based on image (not videos).

Example1: Face detection

```
import cv2

face_detector=cv2.CascadeClassifier('haarcascade_frontalface_default.
xml')

img = cv2.imread("data/images/Capture1.jpg")
gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)

faces = face_detector.detectMultiScale(gray, 1.2, 5)

for (x,y,w,h) in faces:
    img = cv2.rectangle(img,(x,y),(x+w,y+h),(0,255,0),2)

cv2.imshow('img',img)
cv2.waitKey(0)
cv2.destroyAllWindows()
```

Example2: Face + eye detection

```
import cv2

face_detector=cv2.CascadeClassifier('haarcascade_frontalface_default.
xml')
eye_detector = cv2.CascadeClassifier('haarcascade_eye.xml')

img = cv2.imread("data/images/Capture1.jpg")
gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)

faces = face_detector.detectMultiScale(gray, 1.2, 5)

for (x,y,w,h) in faces:
    img = cv2.rectangle(img,(x,y),(x+w,y+h),(0,255,0),2)

    roi_gray = gray[y:y+h, x:x+w]
    roi_color = img[y:y+h, x:x+w]

    eyes = eye_detector.detectMultiScale(roi_gray)

    for (ex,ey,ew,eh) in eyes:
        cv2.rectangle(roi_color,(ex,ey),(ex+ew,ey+eh),(255,255,0),2)

cv2.imshow('img',img)
cv2.waitKey(0)
cv2.destroyAllWindows()
```

Example3: Face + eye + smile detection

```
import cv2

face_detector=cv2.CascadeClassifier('haarcascade_frontalface_default.
xml')
eye_detector = cv2.CascadeClassifier('haarcascade_eye.xml')
smile_cascade = cv2.CascadeClassifier('smile_cascade.xml')



img = cv2.imread("data/images/Capture1.jpg")
gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)

faces = face_detector.detectMultiScale(gray, 1.2, 5)

for (x,y,w,h) in faces:
    img = cv2.rectangle(img,(x,y),(x+w,y+h),(0,255,0),2)

    roi_gray = gray[y:y+h, x:x+w]
    roi_color = img[y:y+h, x:x+w]

    eyes = eye_detector.detectMultiScale(roi_gray)

    for (ex,ey,ew,eh) in eyes:
        cv2.rectangle(roi_color,(ex,ey),(ex+ew,ey+eh),(255,255,0),2)

    smiles = smile_cascade.detectMultiScale(roi_gray, 1.2, 30)
    for (sx, sy, sw, sh) in smiles:
            cv2.rectangle(roi_color, (sx,sy), (sx+sw, sy+sh),
                          (0,0,255), 2)

cv2.imshow('img',img)
cv2.waitKey(0)
cv2.destroyAllWindows()
```