In [1]:
```
import numpy as np

import cv2 as cv
from matplotlib import pyplot as plt
```

Face Detection

In [2]:
```
classifier = cv.CascadeClassifier("haarcascade_frontalface_default (1).xml")
cam = cv.VideoCapture(0)

while True:
    _, img = cam.read()
    img = cv.flip(img , 1)
    face = classifier.detectMultiScale(img , 1.1 , 5)
    print(face)
    for x,y,h,w in face:
        cv.rectangle(img , (x,y) , (x+w , y+h) , (0,255,0) , 10)

    cv.imshow("frame" , img)
    if cv.waitKey(1) & 0xFF == ord("a"):
        break
cam.relsease()
cv.destroyAllWindows()
```

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```
---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
Cell In[2], line 15
     13     if cv.waitKey(1) & 0xFF == ord("a"):
     14         break
---> 15 cam.relsease()
     16 cv.destroyAllWindows()

AttributeError: 'cv2.VideoCapture' object has no attribute 'relsease'
```

Crop The Face For Frame

In [ ]:

```
classifier = cv.CascadeClassifier("haarcascade_frontalface_default (1).xml")

cam = cv.VideoCapture(0)

while True:
    _, img = cam.read()
    img = cv.flip(img , 1)

    faces = classifier.detectMultiScale(img , 1.1 , 5)

    for face in faces:

        if face[-1] == max(faces[:,-1]):
            break
        x = face[0]
        y = face[1]
        w = face[2]
        h = face[3]

        cv.rectangle(img , (x,y), (x+h , y+w) , (0,255,0) , 5)
        facess = img[y:y+h,x:x+w]
        resize = cv.resize(facess , (250,250))
```

```
        cv.imshow("face" , img)
        cv.imshow("crop_face" , resize)
        if cv.waitKey(1) & 0xFF == ord("f"):
            break
cam.release()
cv.destroyAllWindows()
```

Draw Circle For Face

In [2]:
```
classifier = cv.CascadeClassifier("haarcascade_frontalface_default (1).xml")

cam = cv.VideoCapture(0)
while True:
    _, img = cam.read()
    img = cv.flip(img , 1)
    face = classifier.detectMultiScale(img , 1.1, 5)
    for f in face:
        if f[-1] == max(face[:,-1]):
            break
    x = f[0]
    y = f[1]
    w = f[2]
    h = f[3]

    x_point = x + int(w/2)
    y_point = x + int(h/2)

    circle = cv.circle(img , (x_point , y_point) ,int(w/1.7), (0,255,0) , 10)

    cv.imshow("circle" , img)
    if cv.waitKey(1) & 0xFF == ord("z"):
        break
cam.release()
cv.destroyAllWindows()
```

Face Blur In face Detection

In [2]:
```
classifier = cv.CascadeClassifier("haarcascade_frontalface_default (1).xml")

cam = cv.VideoCapture(0)
while True:
    _, img = cam.read()
    img = cv.flip(img , 1)
    face_detection = classifier.detectMultiScale(img , 1.1 ,4)
    print(face_detection)
    for f in face_detection:
        if f[-1] == max(face_detection[:,-1]):
            break
    if len(f >= 1):

        x = f[0]
        y = f[1]
        w = f[2]
        h = f[3]

        cv.rectangle(img , (x, y) , (x+w, y+h) , (0,255,0) , 10)
        cv.imshow("face" , img)
        if cv.waitKey(1) & 0xFF == ord("a"):
            break
```

```
cam.release()
cv.destroyAllWindows()
```

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```

In [4]:
```
classifier = cv.CascadeClassifier("haarcascade_frontalface_default (1).xml")

cam = cv.VideoCapture(0)
while True:
    _, img = cam.read()
    img = cv.flip(img , 1)

    faces = classifier.detectMultiScale(img , 1.1 , 5)
    for f in faces:
        if f[-1] == max(faces[:,-1]):
            break
    if (len(faces) >= 1):

        x = f[0]
        y = f[1]
        w = f[2]
        h = f[3]

        original_face = cv.rectangle(img , (x,y) , (x+w , y+h) , (255,0,0) , 10)
        blurry = cv.blur(original_face , (10,8))
        face = img[x:x+w , y:y+h]
        blur = cv.blur(face , (70,80))
        cv.imshow("face_detection" , img)
        cv.imshow("img_shoe" , face)
        cv.imshow("blur" , blur)
        cv.imshow("blur_in_frame" , blurry)
        if cv.waitKey(1) & 0xFF == ord("f"):
            break
cam.release()
cv.destroyAllWindows()
```

In [3]:
```
classifier = cv.CascadeClassifier("haarcascade_frontalface_default (1).xml")
cam = cv.VideoCapture(0)

while True:
    _, img = cam.read()
    img = cv.flip(img , 1)

    face = classifier.detectMultiScale(img , 1.1 , 5)
    for f in face:
        if f[-1] == max(face[:,-1]):
            break
    if (len(face) >= 1):
        x = f[0]
        y = f[1]
```

```
        w = f[2]
        h = f[3]

        x_number = x + int(w/2)
        y_number = y + int(h/2)

        cv.circle(img , (x_number , y_number) , 180 , (0,0,225) , 10)
        cv.imshow("frame" , img)
        if cv.waitKey(1) & 0xFF == ord("h"):
            break
cam.release()
cv.destroyAllWindows()
```

In [ ]: