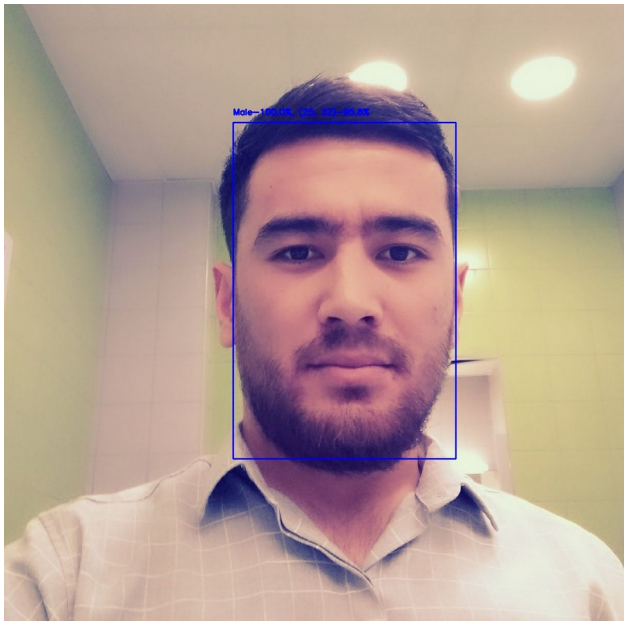
Detectorlar

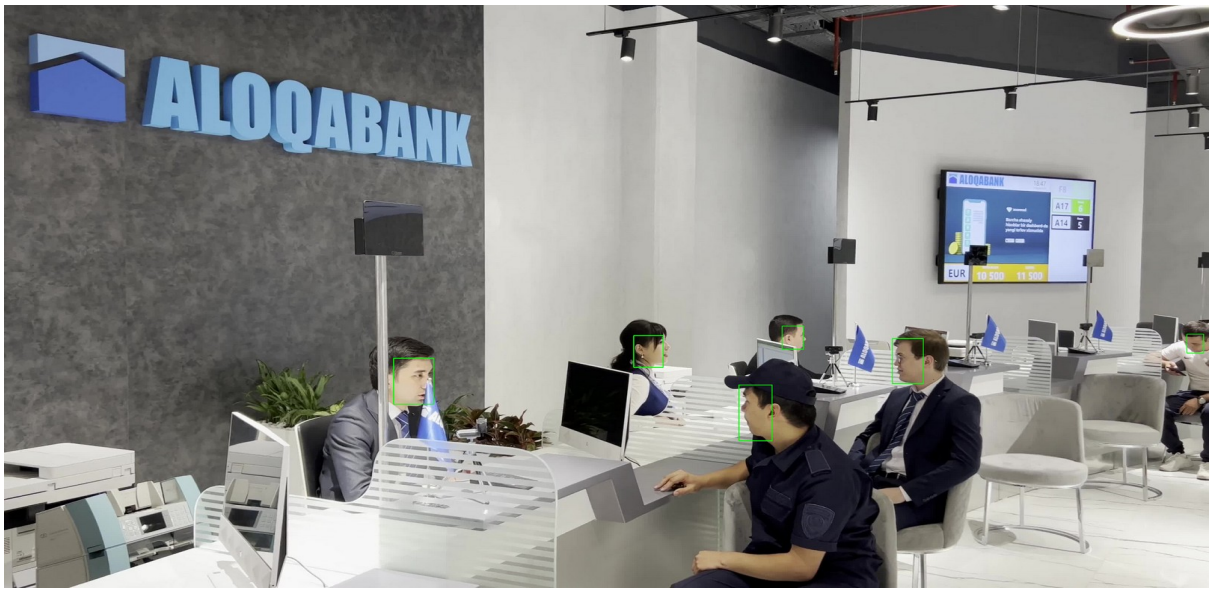
CAFFE

1. Modellar olingan link:
    a. https://www.thepythoncode.com/article/predict-age-using-opencv (bu liknda ma’lumotlar yetarli emas)
    b. https://www.thepythoncode.com/article/gender-and-age-detection-using-opencv-python (to’liq malumot)
2. Natijalar @samar natijalarni shu yerga tashlang



Xulosa: men ishlatgan model faqat yaqindan olingan rasmdan face aniqladi, krupniy plandagi rasmdan aniqlay olmadi. siz bergan link bo’yicha ishni boshladim.

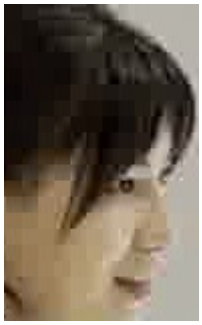
SCRFD
https://github.com/deepinsight/insightface/tree/master/detection/scrfd



Demo uchun mana bunday qilsak ham bo’ladi
https://huggingface.co/spaces/hysts/insightface-SCRFD
Aynan kod qayerdaligi:
https://huggingface.co/spaces/hysts/insightface-SCRFD/blob/main/app.py

3. Age va Genderni tekshirish uchun rasmlar

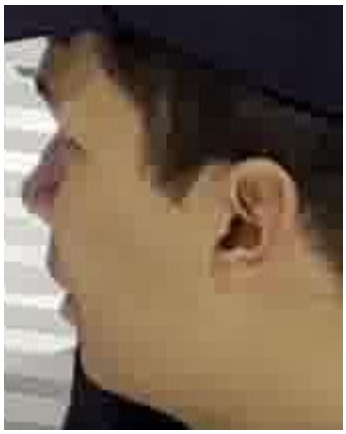
rasm1: gender: Female-100.0%, age: (38, 43)-95.0%



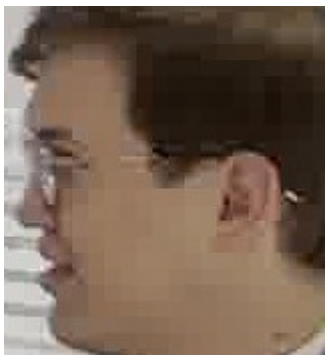
rasm2: gender: Female-74.2%, age: (25, 32)-58.6%

rasm3: gender: Female-98.7%, age: (38, 43)-82.2%

rasm4: gender: Male-73.6%, age: (4, 6)-69.7%



rasm5: gender: Female-91.6%, age: (0, 2)-63.0%



Yuzlar qirqib olingan rasm:

17/09/2022
Elyor

Kod

```
import cv2
import matplotlib.pyplot as plt
from insightface.app import FaceAnalysis


app = FaceAnalysis(allowed_modules=['detection', 'genderage'])
app.prepare(ctx_id=0, det_size=(640, 640), det_thresh=0.3)

_path = "/home/elyor/Documents/Private/Porject_2/imgs/output_file1.jpg"
img = cv2.imread(_path)

faces = app.get(img)
for face in faces:
    print(face.bbox)
    print(face.sex, face.age)

rimg = app.draw_on(img, faces)
rimg = cv2.cvtColor(rimg, cv2.COLOR_BGR2RGB)
plt.imshow(rimg)
plt.show()

print("Odamlar soni: {}".format(len(face)))
```

Natija:

```
[1268.4976 1323.4425 1404.6332 1507.2946]
M 27
[2877.4482 1274.0386 2971.9795 1424.7019]
M 32
[2076.6787 1246.8275 2150.772  1355.1431]
M 27
[2389.6223 1437.2872 2495.4722 1623.3044]
M 31
[2537.5808 1211.3708 2593.7239 1306.649 ]
M 28
Odamlar soni: 5
```

Xulosa

1. Jinsi murakkabroq. Hozir hammaini ‘erkak’ qildi. O’shaning uchun buni olb tursak bo’ladi. Yoki kamera o’zgartish kerak jinsini aniqlash uchun. O’zimiz train qilsa natija ancha yaxshi bo’ladi.
2. Yoshiga kelsak. Menimcha yomonmas
3. Menimcha yosh va odamlar sonini MVPga hozircha qo’ysak bo’ladi.

20/09.2022
Samariddin

1. Berilgan kod boyicha MVPni to’g’irladim

```
from insightface.app import FaceAnalysis
import time
import cv2

app = FaceAnalysis(allowed_modules=['detection', 'genderage'])
app.prepare(ctx_id=0, det_size=(640, 640), det_thresh=0.3)


# # Initialize video
cap = cv2.VideoCapture("./upload/IMG_0843.MOV")

cap.set(cv2.CAP_PROP_FPS, 6)
start_time = 0  # skip first {start_time} seconds
cap.set(cv2.CAP_PROP_POS_FRAMES, start_time * 30)


cv2.namedWindow("Detected Objects", cv2.WINDOW_NORMAL)
```

```
frame_rate = 6
prev = 0
while cap.isOpened():

   # Press key q to stop
   if cv2.waitKey(1) == ord('q'):
       break

   try:
       time_elapsed = time.time() - prev
       res, image = cap.read()

       if time_elapsed > 1. / frame_rate:
           prev = time.time()

           # Read frame from the video
           ret, frame = cap.read()
           if not ret:
               break
           faces = app.get(frame)
           rimg = app.draw_on(frame, faces)
           cv2.imshow("Detected Objects", rimg)

   except Exception as e:
       print(e)
       continue
```

05/10/2022
Elyor

Kamerani joylashtirish

Umumiy

- Etibor berishimiz kerakki, kameraga quyosh tushmaslik kerak. Aks holda rasmni sifati yomonlashishi mumkin. Kun davomida yoruglik o’zgarmaydigan joyda qo’yilish kerak.
- Balandlik: 2.5-4m
- Qancha baland bo’lsa aniqlash va tanish qiyinlashaveradi.
- Kameralar sonini kamaytirishga harakat qilishimiz kerak. Qancha ko'p bo'lsa shuncha qimmatlashib ketaveradi. Shunga eng asosiy joylarga ko’rishimiz kerak. Shuning uchun birinchi navbatda **kirish/chiqishni** qo’lga olishimiz kerak.

Yuzni tanish uchun:

- Eshikdan kirganda yuzni rasmini olish uchun.
- Eshikka yaqinroq joyga qo’yilish kerak

yoki

- Chiqishda yuzni rasmini olish uchun
    - Eshik tepasida iloji boricha
- Har bir foydalaniladigan eshikka shunday qilishimiz kerak

Umumiy odamlar sonini aniqlash uchun:

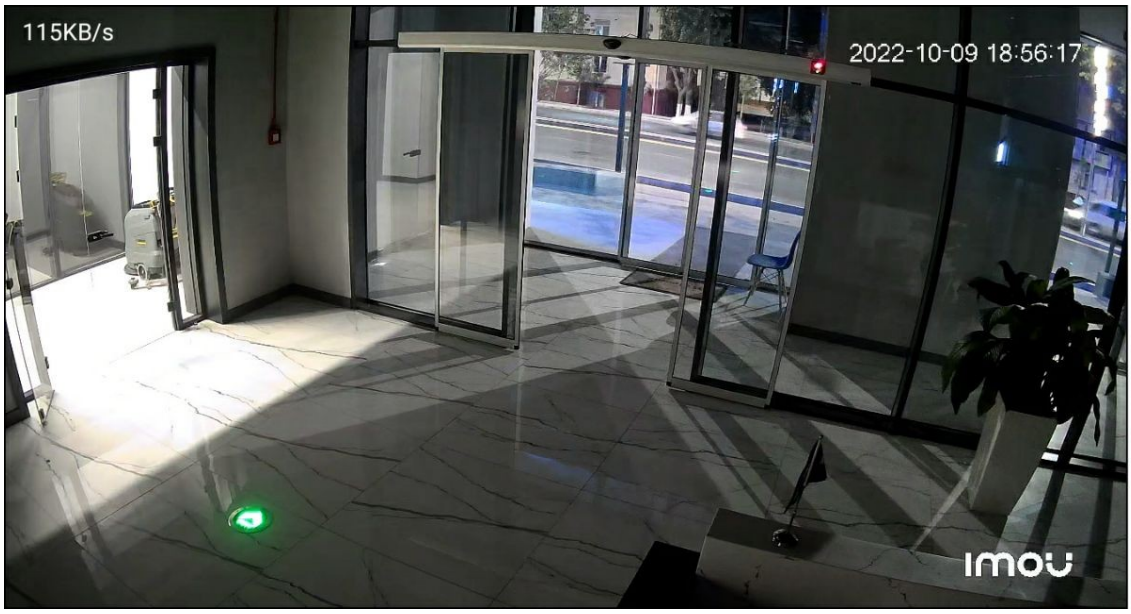
- Birinchi kamera chamasi shunday qo’yiladi

- Keyingi joy birinchi kamera olalmagan joyga qo’yamiz
- Shu tarzda davom etib hamma joyni qoplashimiz kerak

09.10.2022
Samariddin

Qilingan ishlar:

- 2 ta kameralar o’rnatildi.(IMOU https://www.megateh.eu/products/imou-cloud-cameras/-imou-bullet-2-ipc-f42fep-d-4mp-h265-bullet-wi-fi-camera)
- kameraga bog’lanish(Google Play http://mobile.easy4ipcloud.com/imou/detect.html nomi: “imou live”). Registratsiyadan o’tilgan username: bekmezonali@gmail.com parol: Samariddin0703
- Kirishga qo’yilgan kamera:



- Chiqishga qo’yilgan kemera:

opencv da kameraga bog’lanish,

- kirish: `rtsp://admin:L2C3F493@100.67.7.171:554/cam/realmonitor?channel=1&subtype=0&unicast=true&proto=Onvif`
- chiqish: `rtsp://admin:L22F4A64@100.67.7.157:554/cam/realmonitor?channel=1&subtype=0&unicast=true&proto=Onvif`

Lokal kompyuter orqali rasmlarni amazon serverga API orqali jo’natiladi lekin kelishib olinagigan narsalar:

- Har qancha vaqtda(second) kameradan ma’lumot olinadi
- Ma’lum bir sohani olib osha sohaga odamlar yuzi tushganda yuzni tanib olishmi

Note: **rasmlar_kirish** va **rasmlar_chiqish** papkasiga olingan rasmlarni tashladim ya’ni qachon odamni detect qilishni boshlash uchun turli hil rasmlar

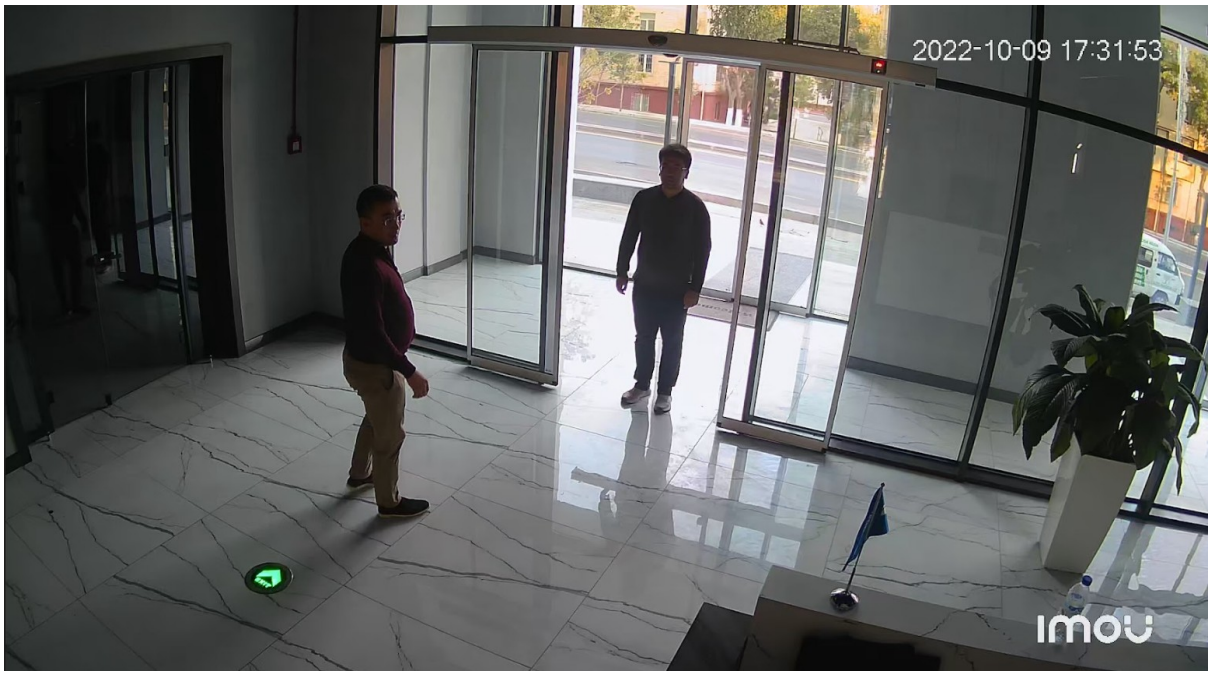
Tavsiyalar
Elyor

Har qancha vaqtda(second) kameradan ma’lumot olinadi

- Kirish chiqishda: qachonki yangi yuz qo’shilganda va chiqqanda
- Boshqa joylarda: vaziyatni o’rganishimiz kerak.
    - Ya’ni o’rtacha xar bir odam bankda necha minut vaqt o’tkazadi?
    - min vaqt va max vaqt qancha?

Ma’lum bir sohani olib osha sohaga odamlar yuzi tushganda yuzni tanib olishmi
Kirish

- Quyidagi rasm joyi bo’ladi. Aniqlik uchun kirishi bilan olishimiz kerak, chunki eshikka bitta odam ketadi va boshqa joyga tezda burilib ketishligi, yoki kameraga juda yaqin keliib yuz ko’rinmay qolishligi mumkin



Chiqish

- Quyidagi rasmdan 1-1.5 qadam orqaroq oralig’ida olishimiz kerak. Bizga odamni o’zini ham aniqlash kerak bo’lishlig mumkin. Odam kameraga qancha yaqinlashversa kamerag tepada bo’lganligi uchun odam ko’rinishi yo’qolib ketaveradi natijada attributlar (representation) yaxshi bo’lmaydi.

14/10/2022
Samariddin

kirish oralig’ini aniqlash (review uchun)

```
import math
from insightface.app import FaceAnalysis
import cv2


app = FaceAnalysis(allowed_modules=['detection'])
app.prepare(ctx_id=0, det_size=(640, 640), det_thresh=0.3)
img1 = cv2.imread("./rasmlar/1_1_1_2022-10-09-17-32-26.jpg")

start_point = (1150, 120)
end_point = (1650, 900)
startX, startY= start_point
endX, endY = end_point

image = img1[startY:endY, startX:endX]
faces = app.get(image)
for face in faces:
  dioganal = math.sqrt((face.bbox[0]-face.bbox[2])**2+(face.bbox[1]-face.bbox[3])**2)
  if(dioganal>80 and dioganal<115):
      return image
```

16/10/2022
Elyor&Samaraddin

3 ta model

- face detection - done
- age/gender detection - done
- face recognition - TBD
    - `FaceAnalysis`
        - `fea_vector = FaceAnalysis.get_fea(image)`
    -

Detection tezligini oshirish

```
Eski: app = FaceAnalysis(allowed_modules=['detection'])
tezlik = ~0.07s
Yangi: app = FaceAnalysis(allowed_modules='detection',
name="buffalo_sc")
tezlik = ~0.01s
```

Recognitionni ham qo’shsak(source linki bo’lsa joylashtiring men o’zim tekshirib ko’raman)

```
app = FaceAnalysis(allowed_modules=['detection', 'genderage',
'recognition'], name="buffalo_sc")
```

shunda qyidagi dict kalitlarini ko’ramiz:

```
ict_keys(['bbox', 'kps', 'det_score', 'embedding'])
```

embedding: 512 dim va recognitionga qo’llaymiz.

Alohida 3 ta net qilamiz desak, quyidagicha qilsa bo'ladi.

- `det = FaceAnalysis(allowed_modules=['detection'], name="buffalo_sc")`
- `genderage = FaceAnalysis(allowed_modules=['detection', 'genderage'], name="buffalo_sc")`
- `rec = FaceAnalysis(allowed_modules=['detection', 'recognition'], name="buffalo_sc")`

Alohida recognition kerak bo'lsa

```
import cv2
import matplotlib.pyplot as plt
from insightface.app import FaceAnalysis
import insightface


# detection
app = FaceAnalysis(allowed_modules=['detection'], name="buffalo_sc")
app.prepare(ctx_id=0, det_size=(640, 640), det_thresh=0.4)

_path =
"/home/elyor/Documents/Private/Porject_2/imgs/output_file1.jpg"
img = cv2.imread(_path)

faces = app.get(img)
for face in faces:
    print(face.bbox)
    print(face.sex, face.age)


# recognition
handler = insightface.model_zoo.get_model("buffalo_sc")
a = handler.get(img, faces[0])
print(a.shape) # ->> (512,)
```

Model linklari

1. https://github.com/deepinsight/insightface/tree/master/model_zoo
2. https://github.com/deepinsight/insightface/tree/master/python-package