

Face Clustering DNN folder using video

September 17, 2019

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[2]: from os import listdir
from os.path import isfile, join
import os
import cv2
import dlib
import numpy as np

# Define Image Path Here

def draw_label(image, point, label, font=cv2.FONT_HERSHEY_SIMPLEX,
               font_scale=0.8, thickness=1):
    size = cv2.getTextSize(label, font, font_scale, thickness)[0]
    x, y = point
    cv2.rectangle(image, (x, y - size[1]), (x + size[0], y), (255, 0, 0), cv2.
→FILLED)
    cv2.putText(image, label, point, font, font_scale, (255, 255, 255),
→thickness, lineType=cv2.LINE_AA)

detector = dlib.get_frontal_face_detector()

# Initialize Webcam
cap = cv2.VideoCapture('testfriends.mp4')
img_size = 64
margin = 0.2
frame_count = 0

_videodir = "./face-clustering"

    # create dynamic name, like "D:\Current Download\Attachment82673"
_videodir = os.path.join(_videodir, 'friendsvideo')

    # create 'dynamic' dir, if it does not exist
if not os.path.exists(_videodir):
    os.makedirs(_videodir)
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while True:
    ret, frame = cap.read()
    frame_count += 1
    print(frame_count)

    input_img = cv2.cvtColor(frame, cv2.COLOR_BGR2RGB)
    img_h, img_w, _ = np.shape(input_img)
    detected = detector(frame, 1)
    faces = []

    if len(detected) > 0:
        for i, d in enumerate(detected):
            x1, y1, x2, y2, w, h = d.left(), d.top(), d.right() + 1, d.bottom() + 1, d.width(), d.height()
            xw1 = max(int(x1 - margin * w), 0)
            yw1 = max(int(y1 - margin * h), 0)
            xw2 = min(int(x2 + margin * w), img_w - 1)
            yw2 = min(int(y2 + margin * h), img_h - 1)
            face = frame[yw1:yw2 + 1, xw1:xw2 + 1, :]
            file_name = _videodir + "/" + str(frame_count) + "_" + str(i) + ".jpg"
            cv2.imwrite(file_name, face)
            cv2.rectangle(frame, (x1, y1), (x2, y2), (255, 0, 0), 2)

    cv2.imshow("Face Detector", frame)
    if cv2.waitKey(1) == 13: #13 is the Enter Key
        break

cap.release()
cv2.destroyAllWindows()

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[12]: from imutils import paths
import face_recognition
import argparse
import pickle
import cv2
import os
```

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[13]: # grab the paths to the input images in our dataset, then initialize
# out data list (which we'll soon populate)
print("[INFO] quantifying faces...")
imagePaths = list(paths.list_images("./face-clustering/friendsvideo"))
#imagePaths = list(paths.list_images(args["dataset"]))
data = []
```

[INFO] quantifying faces...

```
[14]: # loop over the image paths
for (i, imagePath) in enumerate(imagePaths):
    # load the input image and convert it from RGB (OpenCV ordering)
    # to dlib ordering (RGB)
    print("[INFO] processing image {}/{}".format(i + 1, len(imagePaths)))
    print(imagePath)
    image = cv2.imread(imagePath)
    rgb = cv2.cvtColor(image, cv2.COLOR_BGR2RGB)
    # detect the (x, y)-coordinates of the bounding boxes
    # corresponding to each face in the input image
    boxes = face_recognition.face_locations(rgb, model="hog")
    # compute the facial embedding for the face
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encodings = face_recognition.face_encodings(rgb, boxes)

# build a dictionary of the image path, bounding box location,
# and facial encodings for the current image
d = [{"imagePath": imagePath, "loc": box, "encoding": enc}
      for (box, enc) in zip(boxes, encodings)]
data.extend(d)

# dump the facial encodings data to disk
print("[INFO] serializing encodings...")
f = open("encodingsfriend", "wb")
f.write(pickle.dumps(data))
f.close()

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[INFO] processing image 303/322
./face-clustering/friendsvideo/147_0.jpg
[INFO] processing image 304/322
./face-clustering/friendsvideo/244_0.jpg
[INFO] processing image 305/322

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./face-clustering/friendsvideo/265_0.jpg
[INFO] processing image 306/322
./face-clustering/friendsvideo/231_0.jpg
[INFO] processing image 307/322
./face-clustering/friendsvideo/167_0.jpg
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[INFO] processing image 314/322
./face-clustering/friendsvideo/126_0.jpg
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./face-clustering/friendsvideo/182_0.jpg
[INFO] processing image 316/322
./face-clustering/friendsvideo/207_0.jpg
[INFO] processing image 317/322
./face-clustering/friendsvideo/287_0.jpg
[INFO] processing image 318/322
./face-clustering/friendsvideo/14_0.jpg
[INFO] processing image 319/322
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[INFO] processing image 320/322
./face-clustering/friendsvideo/98_0.jpg
[INFO] processing image 321/322
./face-clustering/friendsvideo/262_0.jpg
[INFO] processing image 322/322
./face-clustering/friendsvideo/276_0.jpg
[INFO] serializing encodings...

```

```

[16]: # import the necessary packages
from sklearn.cluster import DBSCAN
from imutils import build_montages
import numpy as np
import pickle
import cv2

```

```

[17]: # load the serialized face encodings + bounding box locations from
# disk, then extract the set of encodings to so we can cluster on
# them
print("[INFO] loading encodings...")

```

```
data = pickle.loads(open("encodingsfriend", "rb").read())
data = np.array(data)
encodings = [d["encoding"] for d in data]
```

[INFO] loading encodings...

```
[18]: # cluster the embeddings
print("[INFO] clustering...")
clt = DBSCAN(metric="euclidean")
clt.fit(encodings)

# determine the total number of unique faces found in the dataset
labelIDs = np.unique(clt.labels_)
numUniqueFaces = len(np.where(labelIDs > -1)[0])
print("[INFO] # unique faces: {}".format(numUniqueFaces))
```

[INFO] clustering...

[INFO] # unique faces: 2

```
[19]: import os
# loop over the unique face integers
for labelID in labelIDs:
    # find all indexes into the `data` array that belong to the
    # current label ID, then randomly sample a maximum of 25 indexes
    # from the set
    print("[INFO] faces for face ID: {}".format(labelID))
    idxs = np.where(clt.labels_ == labelID)[0]
    idxs = np.random.choice(idxs, size=min(25, len(idxs)),
                            replace=False)

    # initialize the list of faces to include in the montage
    faces = []
    # loop over the sampled indexes
    for i in idxs:
        # load the input image and extract the face ROI
        image = cv2.imread(data[i]["imagePath"])
        (top, right, bottom, left) = data[i]["loc"]
        face = image[top:bottom, left:right]

        # force resize the face ROI to 96x96 and then add it to the
        # faces montage list
        face = cv2.resize(face, (128, 128))
        request_number = labelID if labelID != -1 else "Unknown"

    # base dir
    _dir = "./face-clustering/friendsvideo"
```



```

# create dynamic name, like "D:\Current Download\Attachment82673"
_dir = os.path.join(_dir, 'Person%s' % request_number)

# create 'dynamic' dir, if it does not exist
if not os.path.exists(_dir):
    os.makedirs(_dir)
file_name = _dir + "/" + str(i) + ".jpg"
cv2.imwrite(file_name, face)

#cv2.destroyAllWindows()

```

```

[INFO] faces for face ID: 0
[INFO] faces for face ID: 1

```

```

[29]: import os
      for labelID in labelIDs:
          authenticate= input("Do you want to authenticate person%s % labelID press (y/
→n)" )
          if authenticate=="y":
              src="./face-clustering/friendsvideo/"
              src1=src+"Person"+str(labelID)
              personname=input("Enter person name")
              dst=src+personname
              os.rename(src1, dst)
          else:
              continue

```

```

Do you want to authenticate person%s % labelID press (y/n)y
Enter person nameJohn
Do you want to authenticate person%s % labelID press (y/n)n

```

```
[ ]:
```

```
[ ]:
```