



OPENCV FOR GENDER AND AGE DETECTION

¹M.Mamatha , ²V.Likhitha

¹Assistant Professor, CSE Dept, MGIT, Hyderabad, Telangana State, India.

² CSE Dept, MGIT, Hyderabad, Telangana State, India.

Abstract

Human face contains many particulars and aging is one of the aspects that simulates them. Among all these hallmarks, gender and age are two vital features whose identification is arduous in subsistence. Automatic gender and age identification is a rudimentary task in computer vision, which procures handy details from visual inputs.

Though there are multiple techniques proposed in identifying gender and age, many people may not have sufficient computing power to train the model on a huge dataset of images. In order to solve the above problem, this project makes sure any commoner can identify gender and age from a person's face by making use of pre-trained models and Open CV, instead of training the whole model from the scratch. This project deals with detecting age and gender of a person from his/her face features using OpenCV and Deep Learning model. It also includes identifying person's faces from a video and classifying the gender and age of all the people present in the video using deployed deep learning model.

With this gender and age detector which can approximately guess the gender and age of the person(face) in a picture using Deep Learning, it can be helpful in many authentic ML applications, like human-computer interaction, visual surveillance and marketing. It is used in many practical real-world applications like targeted advertisement where we can customize the advertisement based on various ages and genders. It will also be helpful in many applications which age restricted content so that customizing the content can be uncomplicated.

Introduction

In today's ambitious world with piles of new technologies and innovations, computer vision is one of the most driven technologies. And identification of gender and age became a strenuous and attentive task in computer vision field. Human Faces have many particulars which can be obliging in identification of gender, age, emotions and many other aspects of a person. Amid them, classifying gender and age is very pivotal task as it can be fruitful in many subsistence applications like human computer interaction, targeting advertisement, customized applications, surveillance, customer management, biometric application and entertainment etc. Nevertheless, it is the most arduous task in the field of computer vision. The main motive is to develop a detector which can easily identify the gender and age of a person(face) without any complicated trainings. To keep away from the complicated trainings, we are simply using a pre-trained model which will make our task simple. This project is the process of building a gender and age detector that can classify the gender and age of a person by using that person's face and it's features in a picture or video that is taken from real-life camera using deployed Deep Learning model. My model

consists of pre-defined deep learning network which can be deployed and by using images from real-world, we are classifying the gender and age of a person in the picture by first detecting their face and then passing it into pre-trained models of gender and age, and then classifying the gender and age by using that face.

This project proposes a method to detect the age and gender of the person in the input image or video by making use of OpenCV and a pre-trained deep learning model. It is more like classification model, which classify the gender of a face to male or female, and age of the face to a corresponding group. It takes real-time data such as video from our camera by using Open CV model so that gender and age of the person in the camera can be classified.

System Architecture

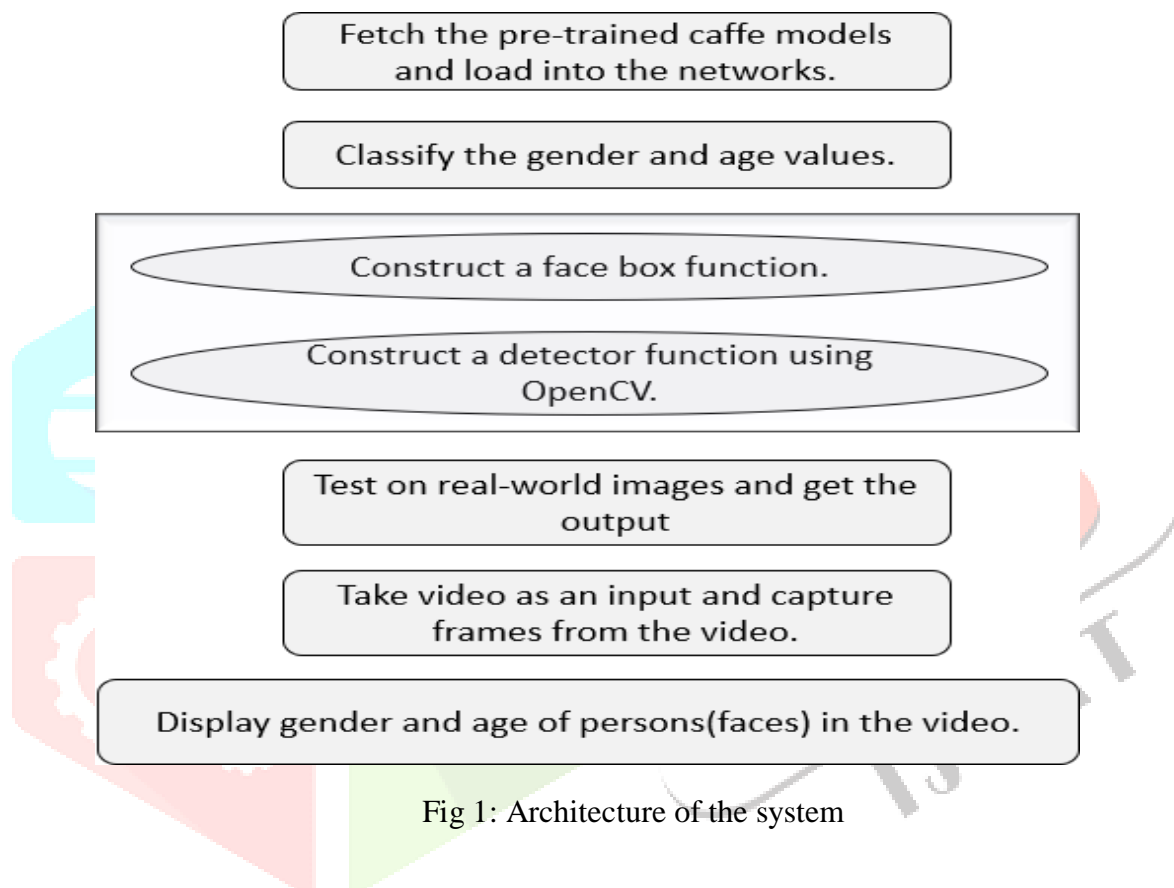


Fig 1: Architecture of the system

Outputs for images input

```
In [9]: input = cv.imread("Data/im1.jpg")
output = age_gender_detector(input)
plt.imshow(output)
plt.show()
```

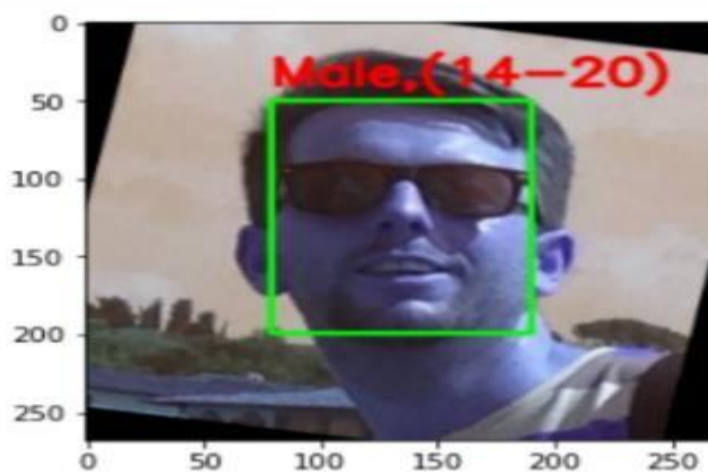


Fig 2: Output 1

```
In [16]: input = cv.imread("Data/im8.jpg")
output = age_gender_detector(input)
plt.imshow(output)
plt.show()
```

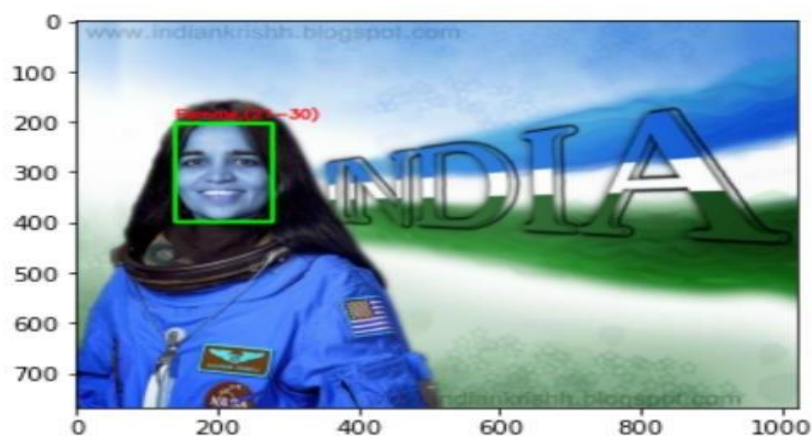


Fig 3: Output 2

Output for video input

```
genderNet.setInput(blob)
genderPreds=genderNet.forward()
gender=genderList[genderPreds[0].argmax()]
print(f'Gender: {gender}')

ageNet.setInput(blob)
agePreds=ageNet.forward()
age=ageList[agePreds[0].argmax()]
print(f'Age: {age[1:-1]} years')

cv.putText(resultImg, f'{gender}, {age}', (faceBox[0], faceBox[1]-10), cv.FONT_HERSHEY_SIMPLEX, 0.8,
cv.imshow("Detecting age and gender", resultImg)
```

```
Gender: Female
Age: 8-13 years
Gender: Female
Age: 21-35 years
Gender: Male
Age: 21-35 years
Gender: Female
Age: 21-35 years
Gender: Female
Age: 21-35 years
Gender: Female
Age: 21-35 years
Gender: Female
Age: 21-35 years
Gender: Female
```

Fig 4: Video Output

Conclusion

This project deals with detecting gender and ages of people from their facial features. In this project, OpenCV and a pre-trained caffe model is used in order to identify the gender and age of the person. OpenCV is used for computer vision purpose and we are able to detect the gender and age of the person present in the real-life images and also capable of detecting even in the real-life video. As the caffe model is trained on nearly 26,000 images, it gives more efficiency than other models in the field of gender and age detection. Integrating that model with Open CV is helpful for users to detect the age and gender of them easily by simply giving the image as input to gender and age detection function instead of writing complex code. It can be used in many real-world applications such as marketing intelligence, visual surveillance and targeting advertisement etc.

Future Scope

Though caffe model provides more efficiency than other models, it still has some miscalculation due to many extraneous features especially to noisy images. It had already been trained on nearly 26,000 images. But to train our own model, it requires more efficient Graphics Processing Unit (GPU)s and more computing power and our normal computers cannot provide that. Using super computers on training more images or using more complex network architecture can be helpful in increasing the efficiency of model and can detect the gender and ages of the people more effectively by countering inaccuracy. This model can be taken as reference and more complex architecture can be built in future researches to build a more efficient network for gender and age detection.

References

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