Challenge #2: Can you make your way into Cannes Festival?

Course: ImSecu Spring 2023

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Introduction

Welcome to Côte d'Azur! As you may know, one of the most important events of the region is the well-known *Cannes Film Festival*. You want to have access to it to meet the most popular celebrities of the decade but there is a problem, the festival is secured with a face biometrics system!

As an Eurecom student you have access to some imaging security knowledge and it appears to be in your possession the face recognition system that is being used…

Objective

This challenge will focus on face recognition and morphing. We will work with a pre-trained Vgg-Face[1] model architecture, the dlib cnn face detector [2] and a face morphing [3] function.

Your objective is to evaluate the system to know more about how it operates and to adapt a "hacking" technique to it. More specifically, you will study the outputs of a face classifier trained with 20 celebrities "allowed" to access the festival. Then your aim is to get similarity scores with all the celebrities enrolled in the database and morph your face with the celebrity that you look like the most in order to be accepted by the system.

Evaluation

For completing this challenge, you will have to set up the lab in *Google Colab* in order to complete and run the code of a .ipynb.

You will also find in the notebook some questions. Answer the questions precisely. Remember you should provide your comments and justifications for each step of the challenge. You will find a text cell after each question with "Your answer" marked.

The code of the notebook has to run. If it presents compilation errors, the student will be asked to submit a new running version and might be penalized.

General instructions

Upload the file "*Biometric_Challenge_students_version.ipynb"* in your Drive account and open it with *Google Colab.* Then follow the instructions of the notebook. They will guide you.

References

[1] https://machinelearningmastery.com/how-to-perform-face-recognition-with-vggface2-convolutional-neural-network-in-keras/

[2] https://towardsdatascience.com/cnn-based-face-detector-from-dlib-c3696195e01c

[3] https://normankarr.com/computational-photography/face-morphing/