

CECS 551
Assignment 8
Total: 40 Points

General Instruction

- Submit uncompressed file(s) in the Dropbox folder via BeachBoard (Not email).
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1. Develop face recognition software using a pre-trained network. Please note that you don't need to implement and train a model.
 - (a) Find open source codes of Facenet at *here*.
 - (b) Download the attached dataset `images.zip`. The dataset includes 12,000 images of 40 people. (30 images for each person)
 - (c) `id-pairs.csv` includes pairs of the image file ids and the person ids.
 - (d) (20 points) By using the pre-trained Facenet, implement a Python function `img2vec`.
 - Input: An image (x) which includes a human face.
 - Output: Embedding vector ($f(x) \in \mathbb{R}^d$) in d -dimensional Euclidean space of the input image. The embedding vector should be normalized, i.e. $\|f(x)\|_2 = \sum_i^d f_i(x)^2 = 1$.
 - (e) (20 points) Implement a Python program `imageFinder.ipynb`.
 - Input: An image file id.
 - Intermediate steps
 1. Include your `img2vec` function in your `imageFinder.ipynb`.
 2. Using your `img2vec` function, compute Euclidean distances between the embedding vector of the input image and the embedding vectors of other images in the dataset. You will have 1,199 Euclidean distances.
 3. Find 5 nearest images based on the computed distances.
 - Output: Showing an input image with its 'pid' and the 5 nearest images with their 'pids' on the Jupyter notebook output. Please check a recommended output format in Figure 1
 - (f) Submit your `imageFinder.ipynb`. You don't need to submit the pretrained model and the weights file.



Figure 1: A recommended output format