Project 3 Report

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Face detection in the wild:

Methods

- First, the front side face is detected using `Haarcascade_frontalface_alt.xml`.
- Then, one side of the face is identified using `Haarcascade_profileface.xml`.
- The other side of the face is detected by flipping the image and then using the `Haarcascade_profileface.xml`.
- After the faces are detected, for a single face, front and profile faces were detected. We then removed the multiple bounding boxes for the same face.
- If a region is selected as a `frontal` face, then that area can't be again considered using the `profile` face.
- Finally, all the faces bounding boxes are reported.

Challenges

- Some mis-classification occurs.

Face clustering:

Methods

- For this task, first we detect the faces in an image.
- Then using `face-recognition` package we extract the feature vector of every face image. We assume one image has only one face.
- `K-Means` algorithm is implemented to cluster the feature vectors.
- The initial cluster means are the quantiles of the features.
- The result is a bit sensitive to the initialization.

Discussion:

For the first task, 0.81 of f_β score was obtained for the validation set images. For the second task, correct clustering was obtained.

Figure 1: Cluster1

Figure 2: Cluster2

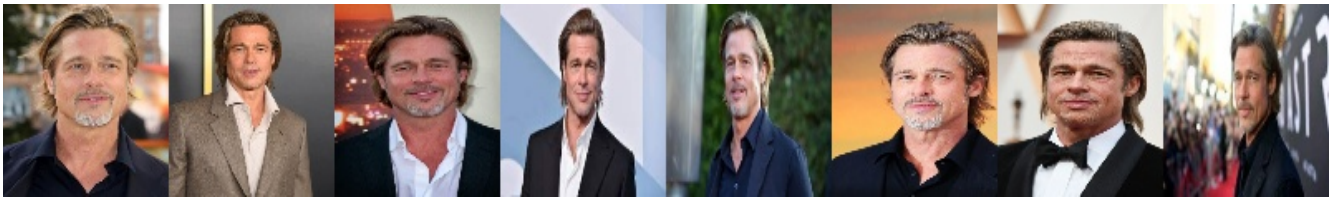

Figure 3: Cluster3

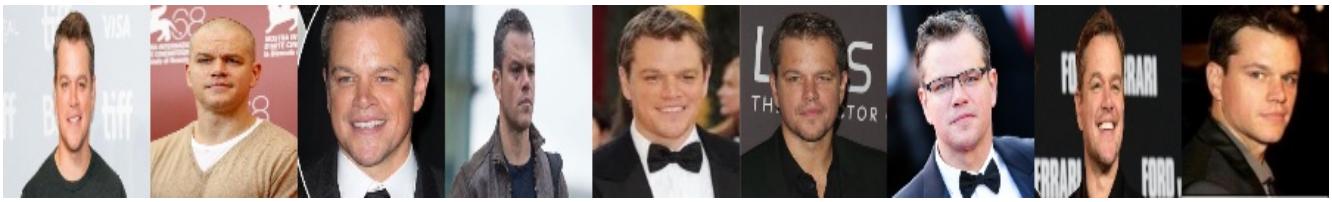

Figure 4: Cluster4

Figure 5: Cluster5