Face Recognition

Now that we have faces its time to perform feature recognition of the faces. This is one of the most important part of the face recognition process.

First before you dive into the theory try to brainstorm as to how will our model be able to recognize faces?

To give a brief overview, it is done in 2 steps:

1) Facial feature extraction:
    a) Shallow approach
        i) Feature extraction - SIFT, HOG, Eigenfaces and Eigenvalues, PCA, LDA(for dimensionality reduction), etc

    b) Deep approach
        i) CNN
        ii) Explore the industrial giant nets ! (Eg. VGG)
            (1) Each of you try to come up with a Deep network used for face recognition.

2) Feature matching:
    a) ANN, SVM, KNN, Euclidean distance, cosine similarity, etc

Tasks:

1) Go through different feature extraction and matching methods.
2) Study their pros and cons(we will discuss them in the next session)
3) List down the giant nets used for obtaining feature embeddings.

References:

[1] PCA for face recognition:
https://pythonmachinelearning.pro/face-recognition-with-eigenfaces/

[2] HoG features extraction:
https://lilianweng.github.io/lil-log/2017/10/29/object-recognition-for-dummies-part-1.html

[4] KNN matching:
https://github.com/ageitgey/face_recognition

[5] SVM classifier: Train multiple images per person then recognize faces using a SVM classifier-
https://github.com/ageitgey/face_recognition/blob/master/examples/face_recognition_svm.py

[6] Distance matching: Compare faces by numeric face distance instead of only True/False matches
https://github.com/ageitgey/face_recognition/blob/master/examples/face_distance.py

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

[8] Face Recognition algorithm explanation:
https://medium.com/@ageitgey/machine-learning-is-fun-part-4-modern-face-recognition-with-deep-learning-c3cffc121d78