WEEK 6

HW2P2 - FACE CLASSIFICATION AND VERIFICATION

Face Classification – Given a person's face, return the ID of the face

Face Verification – Check whether two face images are of same person

How to face Verify

- You identify the most important features in the image which capture the identity of the face
- The extracted features will be represented by a fixed length vector, known as an embedding
- In order to do verification, we need to identify if a given embedding is similar to a reference embedding of that person using a distance metric like the Cosine Distance

Classification vs Verification

● Classification

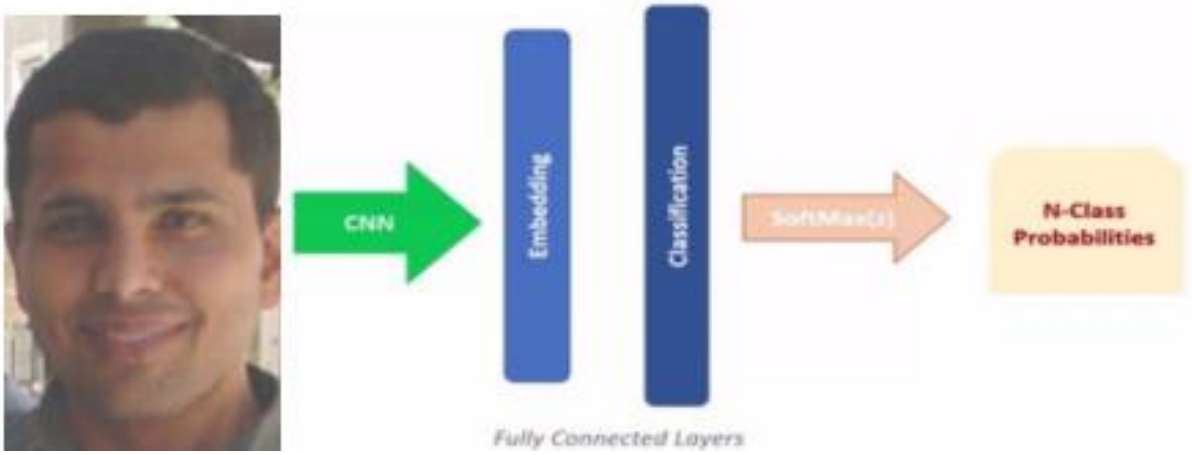
○ An N way classification task, predicting from a fixed set of possible output classes

● Verification

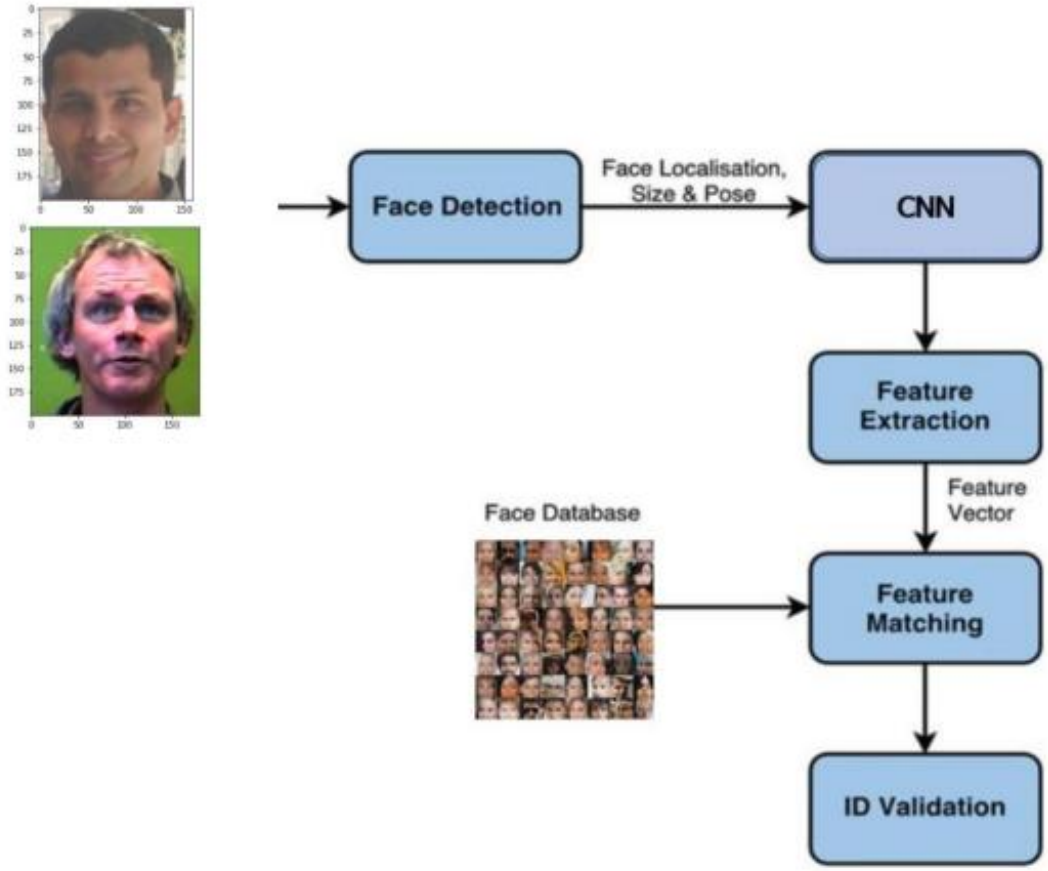
○ It is a matching operation, where you match the given sample to the closest sample from a reference of N other samples

○ Can also be a 1 to 1 task, where we want to verify if the two embeddings are similar (belong to the same class)

○ N way classification using cross entropy loss



VERIFICATION

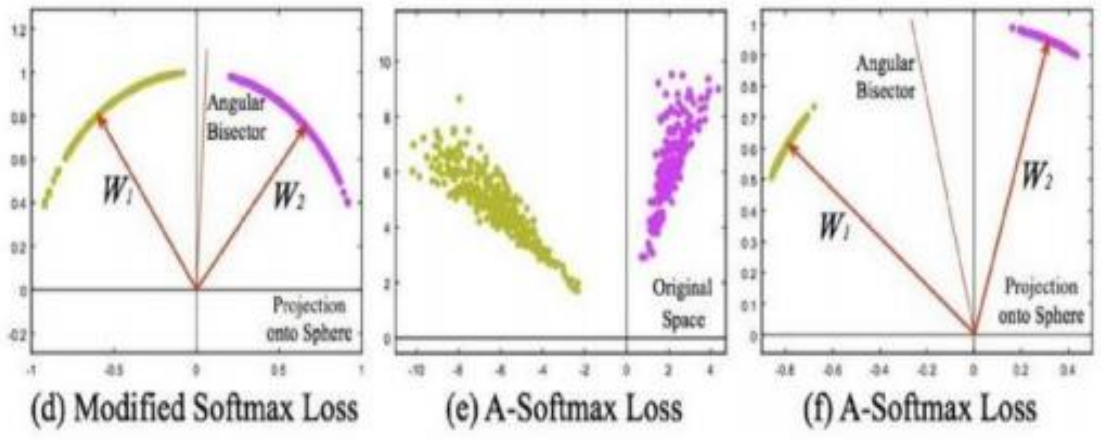


CNN Architectures:

- ✓ AlexNet
- ✓ VGG Net
- ✓ ResNet
- ✓ Dense Nets
- ✓ MobileNet
- ✓ Residual and Inverted Residual block

Loss:

1. Center Loss
2. Contrastive Loss (maintain margin between classes)
3. Triplet Loss (motivated from nearest neighbor classification)
4. Pair Wise Loss (separate distributions of similarity scores)
5. Angular Softmax Loss



(d) Modified Softmax Loss (e) A-Softmax Loss (f) A-Softmax Loss