

Face Recognition through Artificial Neural Network

Face is a multidimensional data; hence we can't directly apply ANN (Artificial Neural Network) to classify the face data. In order to apply ANN on face, we have to first extract unique features from face data, these unique features can be extracted based on the geometrical property of faces (face structure: like distance between eyes and nose, nose and lips etc) or based on the images we have (intensity values).

Here for extracting features we are using PCA (Principal Component Analysis) that we have already discussed.

Architecture Details for Implementing ANN using Back Propagation

Inputs: PCA Projected Faces ($k \times P$: where k is the number of principal components and P is the population we have).

Hidden Layer: Use One Hidden Layer Having n Neurons in this.

Output Layer: Number of neurons in the output layer is C (C = Number of classes/Persons)

Threshold: Random Number between .1 to 1.

Activation Function: Sigmoidal ($Y = \frac{1}{1+e^{-x}}$).

Learning Rate: Any value between .1 to 1.

Target Values at Output Layer: A feature which belongs to its corresponding class target values will be 1 and rest will be 0 (If input is 1 then corresponding output will be 1 rest will become 0).

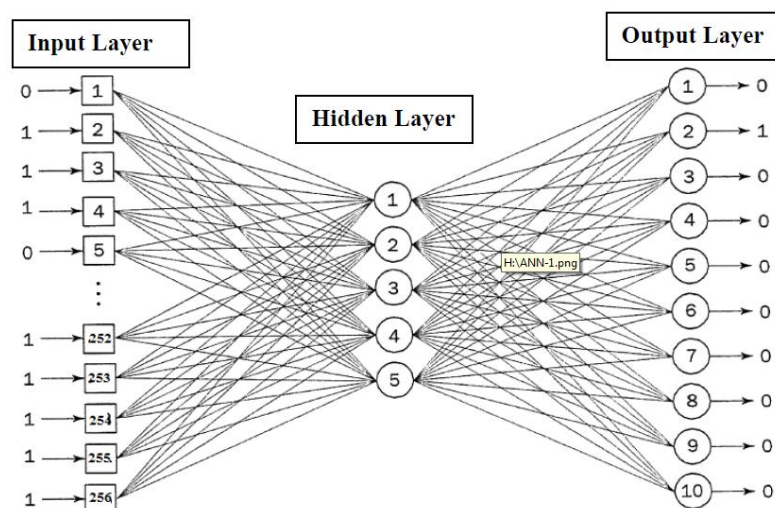


Figure 1 Architecture of Neural Network