Neural Networks Ensembles For Face Recognition

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In this paper, an approach that uses a combination of neural networks classifiers is applied to face recognition. Face Recognition has become one of the most challenging tasks in the pattern recognition field. The recognition of faces is very important for many applications such as; video surveillance, retrieval of an identity from a data base for criminal investigations, biometric systems, and forensic, etc applications .Face recognition is a difficult task because of the inherent variability of the image formation process in terms of image quality and photometry, geometry, occlusion, change, and disguise. In the real application, face appearance changes significantly due to different illumination, pose, and expression. Face recognition based on different representations of the input face images have different sensitivity to these variations; therefore, a combination of different face classifiers which can integrate the complementary information should lead to improved classification accuracy. Ensemble methods are learning algorithms that construct a set of classifiers and then classify new data points by taking a vote of their prediction. We describe weighted averaging that is a simple and powerful method for linear combining and subject to a few conditions being satisfied, optimal weights may be found by an exhaustive search. However when an identical feature representation is used, correlation reduction between experts may cause those conditions not to be satisfied. Our combination method, suggested in this paper may have better performance in these circumstances; in addition, some feature-based approaches, such as PCA (Principal Component Analysis) and etc, for representation of face recognition system have been used in this research work.