A framework for face recognition using Laplacian eigenmaps and nearest feature mixtures

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Abstract

Many researchers exert to find the best discriminant transformation in eigenspaces to reduce the facial pose, illumination, and expression (PIE) impacts for obtaining the better recognition results. Covariance matrix which represents dimensional correlation among samples plays the key role in projection-based methods for face recognition. In this study, a mixture of nearest feature points (NFP) and nearest feature lines (NFL) embedding (called NFM embedding) algorithm is proposed for face recognition. The distance measurement of point to NFP and NFL is embedded into the scatter computation in discriminant analysis. The proposed method is evaluated by several benchmark databases and compared with several state-of-the-art algorithms. From the compared results, the proposed method outperforms the other algorithms.

Keyword：Face recognition, covariance matrix, nearest feature point, nearest feature line, Fisher criterion