AN SVM METHOD OF LDA AND ITS KERNEL ALGORITHM WITH APPLICATION TO FACE RECOGNITION

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ABSTRACT—Face recognition has been a research topic of pattern recognition and feature extraction is an important step toward face recognition. In this paper, we first propose a method to transform from LDA to PCA with the discriminative information embedded in a whitening transformation, and then we propose a support vector machine (SVM) method of LDA. The kernel algorithm of the SVM solution to LDA has been developed by mapping the data to kernel space using the kernel trick implicitly. The two proposed methods have been applied to face recognition. The results of experiments obtained on ORL and XM2VTS databases show the effectiveness of proposed methods including both linear method and nonlinear method respectively.

Key Words: Face recognition, Kernel methods, Kernel discriminant analysis (KDA), Linear discriminant analysis (LDA), Principal component analysis (PCA), Least squares-support vector machine (LS-SVM)