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Research Letter

Extraction and Recognition of Nonlinear Interval-Type Features Using Symbolic KDA Algorithm with Application to Face Recognition

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Abstract

We present symbolic kernel discriminant analysis (symbolic KDA) for face recognition in the framework of symbolic data analysis. Classical KDA extracts features, which are single-valued in nature to represent face images. These single-valued variables may not be able to capture variation of each feature in all the images of same subject; this leads to loss of information. The symbolic KDA algorithm extracts most discriminating nonlinear interval-type features which optimally discriminate among the classes represented in the training set. The proposed method has been successfully tested for face recognition using two databases, ORL database and Yale face database. The effectiveness of the proposed method is shown in terms of comparative performance against popular face recognition methods such as kernel Eigenface method and kernel Fisherface method. Experimental results show that symbolic KDA yields improved recognition rate.