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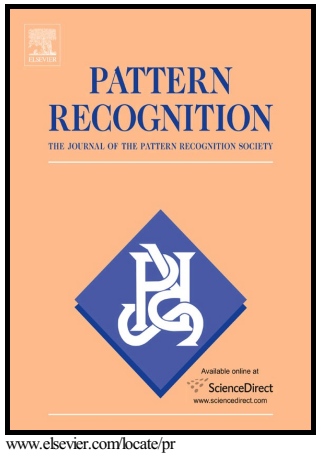


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# Sparse Embedded Dictionary Learning on Face Recognition

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**Abstract**

In sparse dictionary learning based face recognition(FR), a discriminative dictionary is learned from the training set so that good classification performance can be achieved on probe set. In order to achieve better performance and less computation, dimensionality reduction is applied on source data before training. Most of the proposed dictionary learning methods learn features and dictionary separatively, which may decrease the power of dictionary learning because the classification ability of dictionary learning method is based on data structure of source domain. Therefore, a sparse embedded dictionary learning method(SEDL) is proposed, of which dictionary learning and dimensionality reduction are jointly realized and the margin of coefficients distance between between-class and within-class is encourage to be large in order to enhance the classification ability and gain discriminative information. Moreover, orthogonality of the projection matrix is preserved which is critical to data reconstruction. And data reconstruction is consid-

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