Image set classification based on cooperative sparse representation

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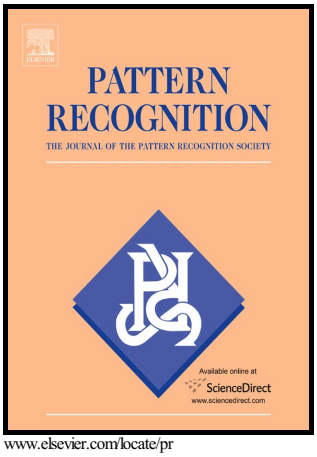

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Image Set Classification Based on Cooperative Sparse Representation

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Abstract

Image set classification has been widely applied to many real-life scenarios including surveillance videos, multi-view camera networks and personal albums. Compared with single image based classification, it is more promising and therefore has attracted significant research attention in recent years. Traditional (forward) sparse representation (fSR) just makes use of training images to represent query ones. If we can find complementary information from backward sparse representation (bSR) which represents query images with training ones, the performance will be likely to be improved. However, for image set classification, the way to produce additional bases for bSR is a problem concerned as there is no other bases than the query set itself. In this paper, we extend cooperative sparse representation (CoSR) method, which integrates fSR and bSR together, to image set classification. **In this process, we propose two schemes, namely 'Learning Bases' and 'Training Sets Division', to produce the additional dictionary for bSR.** And different from **previous work, our work considers** scene classification as a problem of image set classification, which will provide a new insight for scene classification. Experimental results show that the proposed model **can obtain competitive recognition rates** for image set classification. By combining information from these two opposite SRs,

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