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## An efficient method for human face recognition using nonsubsampling contourlet transform and support vector machine

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### Keywords

multiscale geometric analysis, face recognition, nonsubsampling, contourlet, support vector machine

### Abstract

To improve the recognition rate in different conditions, a multiscale face recognition method based on nonsubsampling contourlet transform and support vector machine is proposed in this paper. Firstly, all face images are decomposed by using nonsubsampling contourlet transform. The contourlet coefficients of low frequency and high frequency in different scales and various angles will be obtained. Most significant information of faces is contained in coefficients, which is important for face recognition. Then, the combinations of coefficients are applied as study samples to the support vector machine classifiers. Finally, the decomposed coefficients of testing face image are used to test classifiers, then face recognition results are obtained. The experiments are performed on the YaleB database and the Cambridge University ORL database. The results indicate that the method proposed has performs better than the wavelet-based method. Compared with the wavelet-based method, the proposed method can make the best recognition rates increase by 2.85% for YaleB database and 1.87% for ORL database, respectively. Our method is also suitable for other face databases and appears to work well.



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