

# 数学与系统科学研究院

## 计算数学所定期学术报告

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报告题目:

**Face Recognition Based on Multi-resolution and Multi-direction Feature**

报告时间: 2017 年 11 月 22 日 (周 三)

下午 16:00-17:00

报告地点: 数学院科技综合楼

三层 311 报告厅

报告摘要: Face recognition has been one of the most active research areas in computer vision, pattern recognition and biometrics. Feature extraction is the most key step of a face recognition system, which can provide an effective representation of face images to decrease the computational

complexity and make for classification. A good feature extraction method can greatly improve the recognition rate of a face recognition system. This report discusses and establishes effective feature extraction methods based on multi-resolution and multi-direction feature, wavelet transform. We propose a novel technique which is a joint of pixel-level and feature-level fusion at the top-level's wavelet sub-bands for face recognition. We convert the problem of finding the best pixel-level fusion coefficients of high frequency wavelet sub-bands to two optimization problems with the help of principal component analysis(PCA) and linear discriminant analysis(LDA), respectively; and propose two alternating methods to solve the corresponding optimization problems for finding transformation matrices of dimension reduction and optimal fusion coefficients of the high frequency wavelet sub-bands. The proposed methods make full use of four top-level's wavelet sub-bands rather than the low frequency sub-band only. Experiments are carried out on the FERET, ORL and AR face databases, which indicate that our methods are effective and robust.

**欢迎大家参加!**