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Face Images Dimension Reduction Using Wavelets and Decimation Algorithm

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Abstract - This paper demonstrates a novel lower dimension multi resolution analysis technique to represent facial images using wavelet transform and decimation, which alleviate heavy computational load, reduce noise, produce a representation in low frequency domain and hence make the facial images less sensitive to facial expressions and small occlusions. All coefficients of wavelet transform do not have information needed for face classification. This work also selects the most appropriate wavelet coefficients required for recognition. In preprocessing phase to reduce computational load, Automatic Computing Algorithm (ACA) is applied for scale normalization which removes unnecessary details except face from image and at the same time facial tilt has been addressed through reverse datasets with different resolutions: success rate upto 99% on ORL dataset is achieved.