On Decomposing Object Appearance using PCA and Wavelet bases with Applications to Image Segmentation

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Generative models capable of synthesising complete object images have over the past few years proven their worth when interpreting images. Due to the recent development of computational machinery it has become feasible to model the variation of image intensities and landmark positions over the complete object surface using principal component analysis. This typically involves matrices with a few thousands and up to 100.000+ rows. This paper demonstrates applications of such models applied on colour images of human faces and cardiac magnetic resonance images. Further, we devise methods for alleviating the obvious computational and storage requirements of these large models by means of truncated wavelet bases.

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