

Applications of the Wavelet Transform in Skin Color Image Analysis, Synthesis and Classification

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Abstract

The 2-D Wavelet transform provides a powerful mathematical tool for the analysis, synthesis and classification of textured images, being especially used in medical applications. A novel interesting application of 2-D wavelet decomposition is in the analysis of human skin images – which shows a good potential of development. This paper presents a framework for skin color image analysis, synthesis and classification based on both color and texture details, using an own developed C++ implementation of the 2-D color Wavelet transform with different families of filters. The framework was implemented in C++ Builder. Using seven decomposition steps, different sub-bands are retained to reflect: the average skin color; the internal texture as given by the veins, hair or spots; the finer texture components which may be specific to gender, age, skin location. Such information is extremely useful for image classification, and also for synthesizing skin images with different combined features.