Skin segmentation using YUV and RGB color spaces

ABSTRACT

Skin detection is used in many applications, such as face recognition, hand tracking, and human-computer interaction. There are many skin color detection algorithms that are used to extract human skin color regions that are based on the thresholding technique since it is simple and fast for computation. The efficiency of each color space depends on its robustness to the change in lighting and the ability to distinguish skin color pixels in images that have a complex background. For more accurate skin detection, we are proposing a new threshold based on RGB and YUV color spaces. The proposed approach starts by converting the RGB color space to the YUV color model. Then it separates the Y channel, which represents the intensity of the color model from the U and V channels to eliminate the effects of luminance. After that the threshold values are selected based on the testing of the boundary of skin colors with the help of the color histogram. Finally, the threshold was applied to the input image to extract skin parts. The detected skin regions were quantitatively compared to the actual skin parts in the input images to measure the accuracy and to compare the results of our threshold to the results of otherôs thresholds to prove the efficiency of our approach. The results of the experiment show that the proposed threshold is more robust in terms of dealing with the complex background and light conditions than others.

Keyword: Skin segmentation; Thresholding technique; Skin detection; Color space