EECS: 332 Intro to Computer Vision, MP #4

Histogram – Based Skin Color Detection, Due on 10/19/2017

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Introduction

Algorithm for Histogram Based Skin Color Detection

1. The test images are cropped using ***'imcrop'*** and stored in the folder.
2. For each test image, we create 3 cropped images for training the histogram and finding the threshold.
3. After the images are cropped, a 3-D histogram with hue and saturation is created for determining the threshold for detection of skin color.
4. The original images are converted in HSV format.
5. After this, we iterate over the input image and check if the hue and saturation value is less than the threshold obtained in the previous step, the pixel values in the input image are made zero. This helps in determining only the skin tone in the image.
6. And then, the output image is created
7. The same process is used for finding the skin tone of different test images.

Result Analysis

The results can be analyzed as follows:

1. Fig 1. Shows the Input Image and different cropped images
2. Fig 2. shows the Training Histogram of the Input Image
3. Fig 3 shows the Skin Detected output of test images.

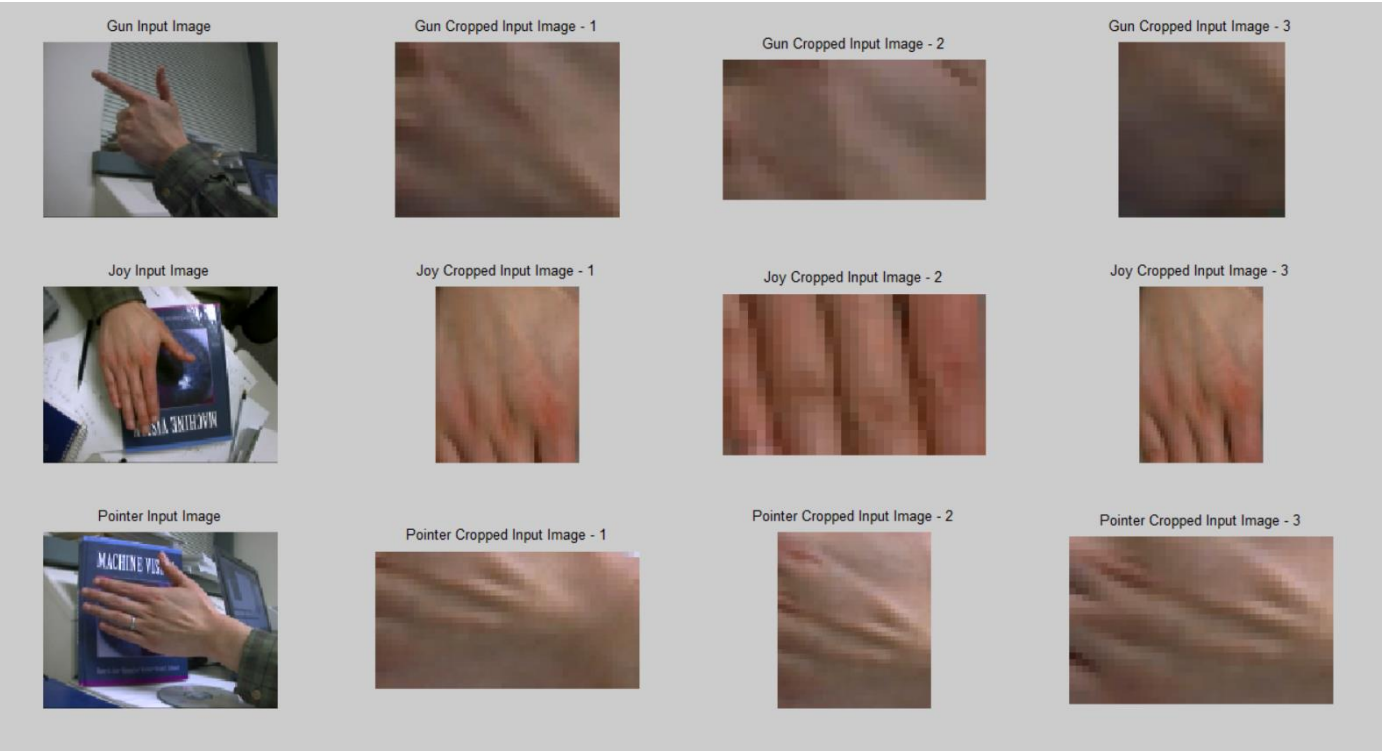

Fig 1: Input and Cropped Images

As you can see in Fig 1, different cropped images are used for training the histogram which is shown in Fig 2. From the histogram, we determine a threshold for getting the skin tone. In this we used a threshold of 0.00025. The pixel value below the threshold are made zero. The output is shown in Fig 3. We can get a better skin color detection by using more cropped images and a better threshold value.

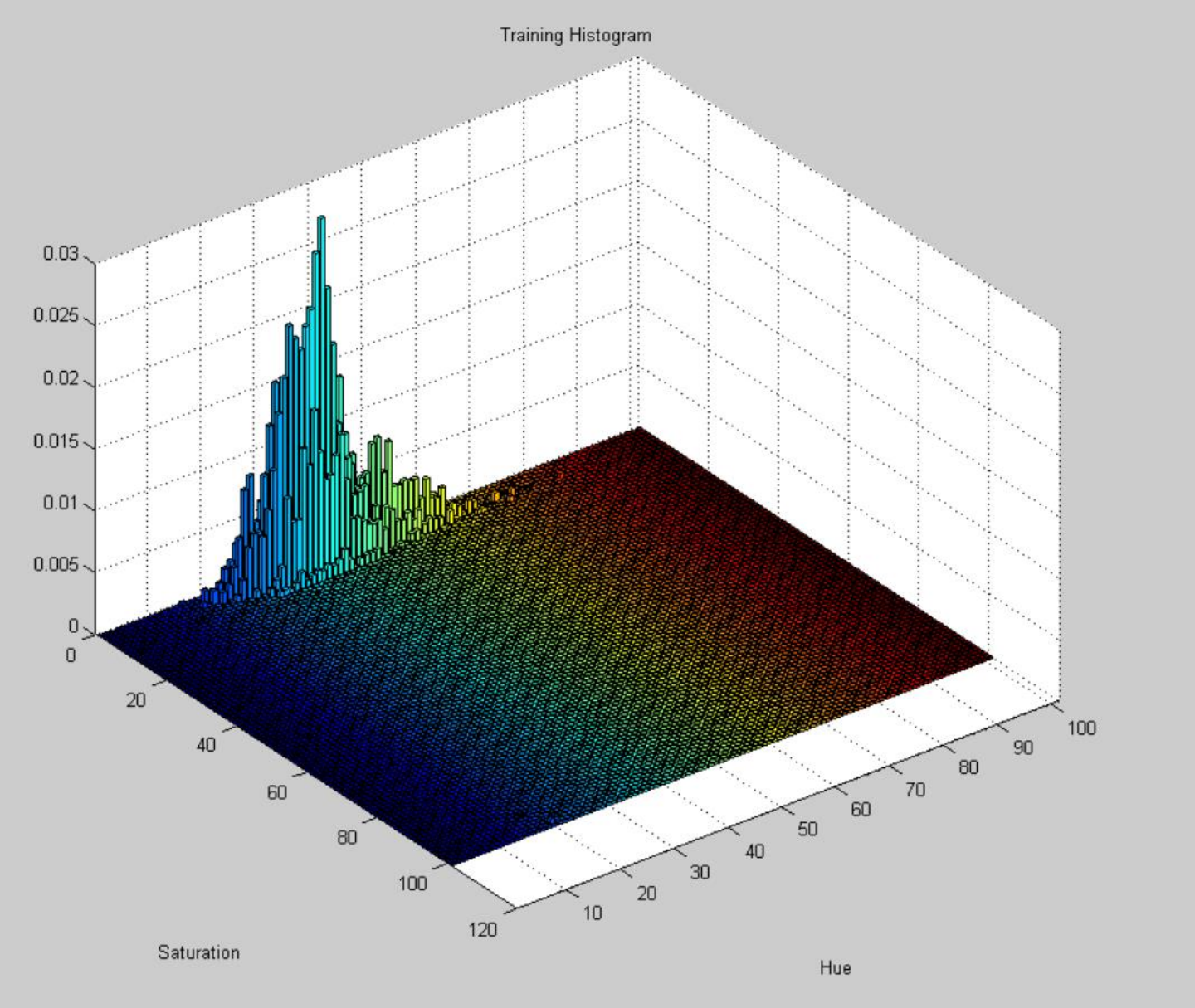

Fig 2: Training Histogram

Fig 3: Skin Detected Test Images