Digital Image Processing CSL 783

Assignment 1: Image Processing for Tactile Images

Due Date (Extended): Sep 4 29, 2015 NEW

This assignment deals with processing of images so that these can be used for rendering tactile images as discussed in the class. This requires implementation of the following operations:

- half toning using Floyd and Steinberg algorithm
- color or intensity quantization
- embossing filter
- (color/intensity based) segmentation,
- edge detection and linking,
- silhoutte (edge/boundary) enhancement,
- mapping segmented regions with different patterns

The image may also require some pre-processing operations to enhance the image for which you can use image enhancement in spatial domain. For color or intensity quantization you are required to implement median cut algorithm [1]. Implement edge detection using Difference of Gaussian (DoG).

Note:

- Assignment can be done in a group of maximum size of two. The group should not change later.
- For reading and writing images and other filter functions you may use built-in functions from a library like OpenCV/ImageMagick/MATLAB.

References

1. Color Image Quantization for Frame Buffer Display, Paul Heckbert, SIGGRAPH 1982.
