Exam for ISA5230: Algorithms for Image Analysis

Due in class of December 6, 2017

1. Print 2448×3264 *Nijubashi.jpg* and *Kamakura Daibutsu.jpg*; and 480×640 *Sleeping-Dog.jpg*, 438×780 *carriers.jpg* color images and draw their R,G,B histograms by using Matlab tool, where the images are located in the following website. Discuss your observation?

2. Print six 128×128 face images: 880372.raw, 881530.raw, 882515.raw, 891538.raw, 891539.raw, 892539.raw, and draw their respective cumulative distribution functions in the same plot, where the images are located in the following website. Discuss your observation?

3. Write an LBG algorithm to train a codebook of size 256 with each codeword having size 16 (from a 4×4 block) from four images: face1=880372.raw, 881530.raw, 882515.raw, 891538.raw, Print the codebook with each codeword displayed as a 4×4 block as shown in the lecture notes. Then do image compression/reconstruction by VQ on images 880372.raw, 881530.raw, 882515.raw, 891538.raw, and 891539.raw, face6=892539.raw. Report the psnr values for each of the six images by using VQ compression, respectively.

4. Show the silhousette by using Sobel operations as taught in class on the 512×512 images lenna.raw, tiffany.raw, mandrill.raw, koala512.raw, respectively. Briefly describe your procedures including the threshold selection to get the silhousette.

♢ All of the images mentioned in the problems are available in the following website.

http://www.cs.nthu.edu.tw/∼cchen/ISA5230/Examdata

♢ You can use the existing programs to do your work but you should mention where the source codes come from.