

Image (and Video) Coding and Processing
Computer Project 2, Due Date: April 3, 2006
Spring 2006

Project Description

In this project, your team of three (the entire class) will study DCT-based compression. In particular, you are to implement an 8x8 DCT-based image quantization/compression scheme (in MATLAB) and apply it to the Lena test image.

You are to do the following:

1. Implement a block-by-block 8x8 DCT transform
2. Apply the JPEG quantization table (and able to be tuned according to different quality factors)
3. Encode the DC coefficients using differential coding
4. Reorder the AC coefficients according to Zig-Zag coding
5. Implement the reverse process

For this assignment it is not necessary to output a bitstream. You should be able to store the results in memory and run a separate reconstruction program to reconstruct.

The Test Image

The test image that I am providing is the standard 'Lena' test image. I am providing an uncompressed TIFF formatted version of the file at the following webpage:

http://www.winlab.rutgers.edu/~trappe/Courses/ImageVideoS06/lena_uncomp.tif

What to Turn In

Collectively, your team should write up a report that summarizes your experiences, and observations.