IST 562 Theoretical Foundations for Information Science
Penn State University Park

Programming Assignment 3: Wavelet Transforms
Due in about two weeks

Implement a *simple* multi-level 2-D Daubechies wavelet transform using a programming language of your choice. You can consult with existing source codes on the Internet but should not directly call a function in Matlab or other math packages or libraries to achieve this goal. Use a reasonable scheme to handle the boundary of the input image. Apply your program to arbitrary grayscale images on the Internet and show the results in PPM or PGM images.

[BONUS OPTION] Design and implement a *simple* lossy image compression algorithm using the wavelet transform you have developed. State the advantages or good features of your compression algorithm.

Total points 100:

Correctness: 30 points
Functionality: 50 points
Documentation: 20 points

You can upload your program to the CANVAS drop box. Please include a short document with some examples of executing the program.

Example online resources:

D4 transform with sample codes:
http://www.bearcave.com/misl/misl_tech/wavelets/daubechies/index.html

Wavelets, with links to source codes:
http://vermeulen.ca/wavelets.html

Everything wavelets
http://www.wavelet.org