MATH 464, Projects

1) Compare performance with respect to compression rates, of 2-d Fast Hartley and Daubechies 4 wavelet transforms. Use some quantitative estimate of the difference between the original and the reconstructed images as measure of the success of compression.

2) Compare performance with respect to compression rates, of 2-d Daubechies 4 and 6 wavelet transforms. Use some quantitative estimate of the difference between the original and the reconstructed images as measure of the success of compression.

3) Compare performance with respect to compression rates, of 1-d Fast Hartley and Daubechies 6 wavelet transforms. Use some quantitative estimate of the difference between the original and the reconstructed signals as measure of the success of compression.

4) Compare performance with respect to compression rates, of 1-d Discrete Cosine of type I and Discrete Sine of type I transforms. Use some quantitative estimate of the difference between the original and the reconstructed signals as measure of the success of compression.

5) Compare performance with respect to denoising, of 2-d Fast Hartley and Daubechies 4 wavelet transforms. Use some quantitative estimate of the difference between the original and the denoised images as measure of the success of denoising.

6) Compare performance with respect to denoising, of 1-d Fast Hartley and Daubechies 6 wavelet transforms. Use some quantitative estimate of the difference between the original and the denoised signals as measure of the success of denoising.

7) Compare performance with respect to denoising, of 2-d Coifman 6 and Daubechies 6 wavelet transforms. Use some quantitative estimate of the difference between the original and the denoised images as measure of the success of denoising.

8) Compare performance with respect to denoising, of 1-d Discrete Cosine of type IV and Discrete Sine of type IV transforms. Use some quantitative estimate of the difference between the original and the denoised signals as measure of the success of denoising.

9) Compare performance with respect to compression rates, of 2-d Daubechies 4 wavelet transform and 2-d Daubechies 4 optimal wavelet packet decomposition. Use some quantitative estimate of the difference between the original and the reconstructed images as measure of the success of compression.

10) Compare performance with respect to compression rates, of 1-d Fast Hartley transform and 1-d Daubechies 4 optimal wavelet packet decomposition. Use some quantitative estimate of the difference between the original and the reconstructed images as measure of the success of compression.

11) Compare performance with respect to denoising, of 1-d Fast Hartley and Daubechies 6 optimal wavelet packet decomposition. Use some quantitative estimate of the difference between the original and the denoised signals as measure of the success of denoising.

12) Compare performance with respect to denoising, of 2-d Daubechies 6 wavelet transform and 2-d Daubechies 6 optimal wavelet packet decomposition. Use some quantitative estimate of the difference between the original and the denoised images as measure of the success of denoising.

13) Compare performance with respect to edge detection of 1-d DFT and 1-d Short Time Fourier Transform. Provide a quantitative comparison based on a number of properly detected edges.

14) Compare performance with respect to edge detection of 1-d Discrete Haar Transform and 1-d Daubechies 4 wavelet transform. Provide a quantitative comparison based on a number of properly detected edges.

15) Compare performance with respect to edge detection of 1-d Discrete Haar Transform and 1-d Short Time Fourier Transform. Provide a quantitative comparison based on a number of properly detected edges.

16) Compare performance with respect to edge detection of 1-d Daubechies 4 wavelet transform and 1-d Short Time Fourier Transform. Provide a quantitative comparison based on a number of properly detected edges.