

Wavelets MATLAB Assignment 4

Sound compression in MATLAB

So far we have constructed and used Shannon wavelets and Daubechies D6 wavelets. From exercises 3.3.4 and 3.3.5 you can get filter coefficients for D2 (Haar) basis and D4 wavelets. (One can get other wavelet coefficients either by doing a similar procedure as in the section 3.3 or get them from the web). In the last assignment we did compression of a few sample functions using some of the above bases and also Euclidian and Fourier bases for comparison.

Assignment 4

In this assignment we will also work on compression but with a real sound file.

You have plenty of freedom to choose your own signal or any built-in signals in Matlab, like Handel's Messiah (make sure it has the length of some power of 2).

Compress the signal (or several signals) in **Shannon, D2, D4, D6 and Fourier** bases (or any other ones) with different ratios (say 75%, 50%, 25% until you can still recognize the signal).

Make a graph of relative errors so you can compare which basis works better for your particular signal.

Submit interesting graphs, and more important the error comparison graph. Also you can e-mail me compressed music files or bring it to class and play it there.

Several sample graphs and sounds are available on the class webpage.

Have some fun!