DSP Project #3
Due Date: April 26, 2008

This project aims at making the student aware of the technologies available to implement digital signal processing in an embedded environment. This project does not include any development or implementation of DSP methodologies but rather a thorough search and understanding of practical means for existing embedded implementations.

Project Tasks:

1. Embedded digital signal processing can be done in practice using either dedicated digital signal processors like TMS320C6000 series (www.ti.com) or field programmable gate arrays (FPGA) like Xilinx Virtex-5 (www.xilinx.com). Each has its advantages and disadvantages. You are required in this task to compare these two platforms with respect to the following criteria:

    a. Basic concepts
    b. Development tools
    c. Available libraries to assist in building DSP projects
    d. Ease of implementation of complex DSP algorithms
    e. Price and availability

Provide your own personal opinion about your preference of either and what you perceive as the future of embedded DSP.

2. In the following applications, provide your own opinion about which embedded DSP platform you prefer to use:

    a. Doppler ultrasound real-time spectrogram calculation (128-point FFT per line, 50 lines per second)
    b. ECG arrhythmia detection based on computing the linear prediction coefficients (LPCs) of 3 second windows.
    c. Computing the Hilbert transformation of an ultrasound signal sampled at 50 MHz

Notes:
1. Avoid too much copy/paste. Brevity is the soul of wit!
2. Please submit your report in PDF electronic form on a CD.