DIGITAL SIGNAL PROCESSING LAB

Course Code: 13EC2108

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Pre requisites: Digital Signal Processing Theory, C and MATLAB Programming.

Course Educational Objectives:

1. To perform DSP algorithms like convolution, correlation, DFT, FFT in software using a computer language such as C with TMS320C6713 floating point Processor.
2. To design and simulate various discrete time signals and digital filter types like IIR-Butterworth, Chebyshev and FIR using window techniques.

Course Outcomes:

1. To develop DSP algorithms like convolution, correlation, DFT, FFT in software using a computer language such as C with TMS320C6713 floating point Processor.
2. To Analyze and Observe Magnitude and phase characteristics (Frequency response Characteristics) of digital filter types like IIR-Butterworth, Chebyshev and FIR window-design.

LIST OF EXPERIMENTS:

1. Linear convolution between two sequences.
2. Circular convolutionbetween two sequences.
3. Linear convolution using circular convolution.
4. Program to perform N-point DFT. Also to perform the IDFT on the result obtained to verify the result.
5. To perform circular correlation using
   a) direct method
   b) circular convolution using rotation method.
6. To perform circular convolution and correlation using DFT.
7. To perform linear convolution using (a) overlap save method (b) overlap add method.
8. To perform FFT on a sequence using the following methods. (a) Decimation in time (b) Decimation in frequency.
9. To perform IDFT on a transformed sequence using DFT.
10. Design an FIR filter using windowing techniques.
11. Design an IIR filter using impulse invariant method.
12. Design an IIR filter using bilinear transformation method.
13. Program to compute power density spectrum of a sequence.
14. Filter Design and Analysis using FDA Tool.

*Note: Any **TEN** of the above experiments are to be conducted.*