Corporate / Academic Training on Digital Signal Processing

Topics to be covered in the course

1. Introduction to DSP
   Learn about DSP including its advantages, applications and limitations.
   - Why and when to use DSP
   - Sampled data systems
   - Aliasing and antialiasing
   - Reconstruction
   - Practical limitations
   - Frequency & amplitude resolution
   - Quantization and timing errors
   - Correlation and convolution
   - Frequency analysis
   - Fourier transforms
   - Frequency 'leakage'
   - Windowing
2. Transforms
   - Fourier Transform
   - Z – Transform
   - DCT Transform
   - Wavelet Transform
3. Filters
   (a) FIR Filter - FIR digital filters - Learn how FIR digital filters are used, how to implement them efficiently on DSP hardware and how the aim of efficient implementation affects design choices.
      - FIR filter basics
      - Analysis of FIR filters
      - Frequency & impulse responses
      - The window design method
      - Optimization design methods
      - Practical limitations of FIR filters

   (b) IIR Filter - Learn why IIR filters fail so often when implemented on real DSP hardware. Understand the practical limitations when implementing on limited precision hardware, and learn how to avoid the common pitfalls.
      - IIR filter basics
      - Analysis of FIR filters
      - Frequency & impulse responses
      - IIR filter design
      - Poles, zeroes and filter response
4. Introduction to DSP Processor and JPEG Application Discussion
      - Introduction to TI DSP Processor
      - Pipeline Concept
      - Architecture
      - JPEG Application