NPTEL Video Course - Electrical Engineering - NOC:Mathematical Methods and Techniques in Signal Processing

Subject Co-ordinator - Prof. Shayan Srinivasa Garani

Co-ordinating Institute - IISc - Bangalore

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 30 - Problem on MAP Detection
Lecture 31 - Fourier transform of dirac comb sequence
Lecture 32 - Sampling theorem
Lecture 33 - Basics of multirate systems
Lecture 34 - Frequency representation of expanders and decimators
Lecture 35 - Decimation and interpolation filters
Lecture 36 - Fractional sampling rate alterations
Lecture 37 - Digital filter banks
Lecture 38 - DFT as filter bank
Lecture 39 - Noble Identities
Lecture 40 - Polyphase representation
Lecture 41 - Efficient architectures for interpolation and decimation filters
Lecture 42 - Problems on simplifying multirate systems using noble identities
Lecture 43 - Problem on designing synthesis bank filters
Lecture 44 - Efficient architecture for fractional decimator
Lecture 45 - Multistage filter design
Lecture 46 - Two-channel filter banks
Lecture 47 - Amplitude and phase distortion in signals
Lecture 48 - Polyphase representation of 2-channel filter banks, signal flow graphs and perfect reconstructio
Lecture 49 - M-channel filter banks
Lecture 50 - Polyphase representation of M-channel filter bank
Lecture 51 - Perfect reconstruction of signals
Lecture 52 - Nyquist and half band filters
Lecture 53 - Special filter banks for perfect reconstruction
Lecture 54 - Introduction to wavelets
Lecture 55 - Multiresolution analysis and properties
Lecture 56 - The Haar wavelet
Lecture 57 - Structure of subspaces in MRA
Lecture 58 - Haar decomposition - 1
Lecture 59 - Haar decomposition - 2
Lecture 60 - Wavelet Reconstruction
Lecture 61 - Haar wavelet and link to filter banks
Lecture 62 - Demo on wavelet decomposition
Lecture 63 - Problem on circular convolution
Lecture 64 - Time frequency localization
Lecture 65 - Basic analysis
Lecture 66 - Basic Analysis
Lecture 67 - Fourier series and notions of convergence
Lecture 68 - Convergence of Fourier series at a point of continuity

Lecture 69 - Convergence of Fourier series for piecewise differentiable periodic functions
Lecture 70 - Uniform convergence of Fourier series of piecewise smooth periodic function
Lecture 71 - Convergence in norm of Fourier series
Lecture 72 - Convergence of Fourier series for all square integrable periodic functions
Lecture 73 - Problem on limits of integration of periodic functions
Lecture 74 - Matrix Calculus
Lecture 75 - KL transform
Lecture 76 - Applications of KL transform
Lecture 77 - Demo on KL Transform
Lecture 78 - Live Session
Lecture 79 - Live Session 2