

## NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Electronics and Communication Engineering - NOC: Estimation for Wireless Communications,

Subject Co-ordinator - Prof. Aditya K. Jagannatham

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Basics - Sensor Network and Noisy Observation Model
- Lecture 2 - Likelihood Function and Maximum Likelihood (ML) Estimate
- Lecture 3 - Properties of Maximum Likelihood (ML) Estimate  $\hat{\theta}$  Mean and Unbiasedness
- Lecture 4 - Properties of Maximum Likelihood (ML) Estimate  $\hat{\theta}$  Variance and Spread Around Mean
- Lecture 5 - Reliability of the Maximum Likelihood (ML) Estimate  $\hat{\theta}$  Number of Samples Required
- Lecture 6 - Estimation of Complex Parameters  $\hat{\theta}$  Symmetric Zero Mean Complex Gaussian Noise
- Lecture 7 - Wireless Fading Channel Estimation  $\hat{\theta}$  Pilot Symbols and Likelihood Function
- Lecture 8 - Wireless Fading Channel Estimation  $\hat{\theta}$  Pilot Training based Maximum Likelihood ML Estimate
- Lecture 9 - Wireless Fading Channel Estimation  $\hat{\theta}$  Mean and Variance of Pilot Training Based Maximum Likelihood ML Estimate
- Lecture 10 - Example  $\hat{\theta}$  Wireless Fading Channel Estimation for Downlink Mobile Communication
- Lecture 11 - Cramer Rao Bound (CRB) for Parameter Estimation
- Lecture 12 - Cramer Rao Bound CRB Example  $\hat{\theta}$  Wireless Sensor Network
- Lecture 13 - Vector Parameter Estimation  $\hat{\theta}$  System Model for Multi Antenna Downlink Channel Estimation
- Lecture 14 - Likelihood Function and Least Squares Cost Function for Vector Parameter Estimation
- Lecture 15 - Least Squares Cost Function for Vector Parameter Estimation Vector Derivative Gradient
- Lecture 16 - Least Squares Solution Maximum Likelihood ML Estimate Pseudo Inverse
- Lecture 17 - Properties of Least Squares Estimate  $\hat{\theta}$  Mean Covariance and Distribution
- Lecture 18 - Least Squares Multi Antenna Downlink Maximum Likelihood Channel Estimation
- Lecture 19 - Multiple Input Multiple Output MIMO Channel Estimation  $\hat{\theta}$  Least Squares Maximum Likelihood ML Estimate
- Lecture 20 - Example  $\hat{\theta}$  Least Squares Multiple Input Multiple Output MIMO Channel Estimation
- Lecture 21 - Channel Equalization and Inter Symbol Interference ISI Model
- Lecture 22 - Least Squares based Zero Forcing Channel Equalizer
- Lecture 23 - Example of ISI Channel and Least Squares based Zero Forcing
- Lecture 24 - Equalization and Approximation Error for Zero Forcing Channel Equalizer
- Lecture 25 - Example Equalization and Approximation Error for Zero Forcing Channel Equalizer
- Lecture 26 - Introduction to Orthogonal Frequency Division Multiplexing OFDM  $\hat{\theta}$  Cyclic Prefix CP and Circular Convolution
- Lecture 27 - Introduction to Orthogonal Frequency Division Multiplexing OFDM  $\hat{\theta}$  FFT at Receiver and Flat Fading
- Lecture 28 - Channel Estimation Across Each Subcarrier in Orthogonal Frequency Division Multiplexing OFDM
- Lecture 29 - Example Orthogonal Frequency Division Multiplexing OFDM  $\hat{\theta}$  Transmission of Samples with Cyclic Prefix

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- Lecture 30 - Example Orthogonal Frequency Division Multiplexing OFDM  $\hat{A}$  FFT at Receiver and Channel Estimation
- Lecture 31 - Comb Type Pilot CTP Based Orthogonal Frequency Division Multiplexing OFDM Channel Estimation
- Lecture 32 - Comb Type Pilot CTP Based Orthogonal Frequency Division Multiplexing OFDM Channel Estimation
- Lecture 33 - Example Comb Type Pilot CTP Based Orthogonal Frequency Division Multiplexing OFDM Channel
- Lecture 34 - Frequency Domain Equalization FDE for Inter Symbol Interference ISI Removal in Wireless System
- Lecture 35 - Example Frequency Domain Equalization FDE for Inter Symbol Interference ISI Removal in Wireless
- Lecture 36 - Example Frequency Domain Equalization FDE for Inter Symbol Interference ISI Removal in Wireless
- Lecture 37 - Introduction to Sequential Estimation  $\hat{A}$  Application in Wireless Channel Estimation
- Lecture 38 - Sequential Estimation of Wireless Channel Coefficient  $\hat{A}$  Estimate and Variance Update Equation
- Lecture 39 - Example Sequential Estimation of Wireless Channel Coefficient