

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

NPTEL Video Course - Mechanical Engineering - NOC:Nonlinear Adaptive Control

Subject Co-ordinator - Prof. Srikant Sukumar

Co-ordinating Institute - IIT - Bombay

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

Lecture 1 - Basic Concepts and Nomenclature
Lecture 2 - Preliminaries - Part 1
Lecture 3 - Preliminaries - Part 2
Lecture 4 - Preliminaries - Part 3
Lecture 5 - Preliminaries - Part 4
Lecture 6 - Preliminaries - Part 5
Lecture 7 - Barbalat's Lemma - Part 1
Lecture 8 - Barbalat's Lemma - Part 2
Lecture 9 - Convergence of Signals using Barbalat's Lemma - Part 1
Lecture 10 - Convergence of Signals using Barbalat's Lemma - Part 2
Lecture 11 - Notions of Stability - Part 1
Lecture 12 - Notions of Stability - Part 2
Lecture 13 - Stability Analysis with Examples - Part 1
Lecture 14 - Stability Analysis with Examples - Part 2
Lecture 15 - Stability Analysis with Examples - Part 3
Lecture 16 - Stability Analysis with Examples - Part 4
Lecture 17 - Stability Analysis in Linear Systems
Lecture 18 - Function Classes and Definiteness
Lecture 19 - Positive Definite Functions
Lecture 20 - Radially Unbounded Functions
Lecture 21 - Decrescent Functions
Lecture 22 - Lyapunov Stability Theorems - Part 1
Lecture 23 - Lyapunov Stability Theorems - Part 2
Lecture 24 - Lyapunov Stability Theorems - Part 3
Lecture 25 - Exponential Stability and Converse Lyapunov Theorems
Lecture 26 - Persistence of Excitation (PE): Introduction
Lecture 27 - Connection of PE to Stability, Uniform Complete Observability (UCO)
Lecture 28 - Exponential Stability of LTV systems, PE and Exponential Stability
Lecture 29 - Parameter Identifier Convergence under PE Condition

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- Lecture 30 - Analysis of Parameter Varying Systems using General Integral Lemma - Part 1
- Lecture 31 - Analysis of Parameter Varying Systems using General Integral Lemma - Part 2
- Lecture 32 - Adaptive Control Design: First Order Scalar Systems
- Lecture 33 - Barbalat's Lemma and Signal Chasing Analysis
- Lecture 34 - Parameter Convergence in Adaptive Control Design
- Lecture 35 - Adaptive Control Design: Second-Order Systems
- Lecture 36 - Overcoming the Detectability Obstacle: Ortega Construction
- Lecture 37 - Backstepping in Adaptive Control: Introduction - Part 1
- Lecture 38 - Backstepping in Adaptive Control: Introduction - Part 2
- Lecture 39 - Backstepping in Adaptive Control: Parameters Unmatched with Control - Part 1
- Lecture 40 - Backstepping in Adaptive Control: Parameters Unmatched with Control - Part 2
- Lecture 41 - How to Deal with Unknown Gains in Control
- Lecture 42 - Setup of Model Reference Adaptive Control (MRAC) Problem
- Lecture 43 - Model Reference Adaptive control: For Known and Unknown Parameters
- Lecture 44 - Model Reference Adaptive control: Lyapunov Stability Analysis
- Lecture 45 - Generalization of Adaptive Integrator Backstepping Method - Part 1
- Lecture 46 - Generalization of Adaptive Integrator Backstepping Method - Part 2
- Lecture 47 - Extended Matching Design for Avoiding Overparameterization
- Lecture 48 - Adaptive Integrator Backstepping Method: An Example - Part 1
- Lecture 49 - Adaptive Integrator Backstepping Method: An Example - Part 2
- Lecture 50 - Extended Matching Design: An Example
- Lecture 51 - Control Lyapunov Function
- Lecture 52 - Tuning Function Adaptive Method
- Lecture 53 - Adaptive Backstepping via Control Lyapunov Function (CLF)
- Lecture 54 - Adaptive Backstepping via CLF: An Example
- Lecture 55 - Robustness in Adaptive Control - Part 1
- Lecture 56 - Robustness in Adaptive Control - Part 2
- Lecture 57 - Parameter Projection in Adaptive Control - Part 1
- Lecture 58 - Parameter Projection in Adaptive Control - Part 2
- Lecture 59 - Parameter Projection in Adaptive Control - Part 3
- Lecture 60 - Sigma- Modification and Epsilon-Modification in Adaptive Control
- Lecture 61 - Initial Excitation in Adaptive Control - Part 1
- Lecture 62 - Initial Excitation in Adaptive Control - Part 2
- Lecture 63 - Initial Excitation in Adaptive Control - Part 3
- Lecture 64 - Initial Excitation in Adaptive Control - Part 4
- Lecture 65 - Initial Excitation in Adaptive Control - Part 5
- Lecture 66 - Discussion on Historical Developments in Adaptive Control and Learning
- Lecture 67 - Real Time Neural Network Based Control of a Robotic Manipulator - Part 1
- Lecture 68 - Real Time Neural Network Based Control of a Robotic Manipulator - Part 2

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- Lecture 69 - Real Time Neural Network Based Control of a Robotic Manipulator - Part 3
- Lecture 70 - Real Time Neural Network Based Control of a Robotic Manipulator - Part 4
- Lecture 71 - Real Time Neural Network Based Control of a Robotic Manipulator - Part 5