NPTEL Video Course - Electrical Engineering - NOC:Linear Dynamical Systems

Subject Co-ordinator - Prof. Tushar Jain

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Response and state-space solution of Linear systems
Lecture 2 - Solution of LTV systems
Lecture 3 - Solution of LTI systems
Lecture 4 - Equivalent State Equations
Lecture 5 - Realization of LTI and LTV Systems
Lecture 6 - Tutorial - 1
Lecture 7 - Introduction to Stability Analysis
Lecture 8 - Lyapunov Stability - Part I
Lecture 9 - Lyapunov Stability - Part II
Lecture 10 - Proof of lyapunov stability theorem
Lecture 11 - BIBO vs Lyapunov Stability
Lecture 12 - BIBO vs Lyapunov Stability
Lecture 13 - Tutorial - 2
Lecture 14 - Introduction to Controllability
Lecture 15 - Reachability and Controllability Gramians
Lecture 16 - Controllability Matrix
Lecture 17 - Discrete-time Reachability and Controllability Gramians
Lecture 18 - Tests for controllability - I
Lecture 19 - Tests for controllability - II
Lecture 20 - Tutorial - 3
Lecture 21 - Tests for controllability - III
Lecture 22 - Tests for controllability - IV
Lecture 23 - Controllable Decomposition - I
Lecture 24 - Stabilizable Systems
Lecture 25 - Tests for Stabilizability
Lecture 26 - Tutorial - 4
Lecture 27 - State Feeback - I
Lecture 28 - State Feeback - II
Lecture 29 - Lyapunov Method of State Feedback Design

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Lecture 30 - Regulation and Tracking
Lecture 31 - Tutorial - 5
Lecture 32 - Robust Tracking and Disturbance Rejection
Lecture 33 - State Feedback design for Multi-input systems
Lecture 34 - Linear Quadratic Regulator
Lecture 35 - Tutorial - 6
Lecture 36 - Output feedback and observability
Lecture 37 - Duality and Observability tests
Lecture 38 - Decompostions and Detectability
Lecture 39 - Minimal Realisations
Lecture 40 - Observer Design and Output Feedback
Lecture 41 - Observer Design and Output Feedback
Lecture 42 - UIO
Lecture 43 - Tutorial - 7 and 8 (combined)
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