NPTEL Video Course - Computer Science and Engineering - NOC:Foundations of Cyber Physical Systems

Subject Co-ordinator - Prof. Soumyajit Dey

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - CPS: Motivational examples and compute platforms
Lecture 2 - CPS: Motivational examples and compute platforms (Continued...)
Lecture 3 - CPS: Motivational examples and compute platforms (Continued...)
Lecture 4 - CPS: Motivational examples and compute platforms (Continued...)
Lecture 5 - CPS: Motivational examples and compute platforms (Continued...)
Lecture 6 - Real time sensing and communication for CPS
Lecture 7 - Real time sensing and communication for CPS (Continued...)
Lecture 8 - Real time sensing and communication for CPS (Continued...)
Lecture 9 - Real time sensing and communication for CPS (Continued...)
Lecture 10 - Real time task scheduling for CPS
Lecture 11 - Real time task scheduling for CPS (Continued...)
Lecture 12 - Real time task scheduling for CPS (Continued...)
Lecture 13 - Real time task scheduling for CPS (Continued...)
Lecture 14 - Real time task scheduling for CPS (Continued...)
Lecture 15 - Real time task scheduling for CPS (Continued...)
Lecture 16 - Real time task scheduling for CPS (Continued...)
Lecture 17 - Real time task scheduling for CPS (Continued...)
Lecture 18 - Dynamical system modeling, stability, controller design
Lecture 19 - Dynamical system modeling, stability, controller design (Continued...)
Lecture 20 - Dynamical system modeling, stability, controller design (Continued...)
Lecture 21 - Dynamical system modeling, stability, controller design (Continued...)
Lecture 22 - Dynamical system modeling, stability, controller design (Continued...)
Lecture 23 - Dynamical system modeling, stability, controller design (Continued...)
Lecture 24 - Delay-aware Design; Platform effect on Stability/Performance
Lecture 25 - Delay-aware Design; Platform effect on Stability/Performance (Continued...)
Lecture 26 - Delay-aware Design; Platform effect on Stability/Performance (Continued...)
Lecture 27 - Delay-aware Design; Platform effect on Stability/Performance (Continued...) Corrigendum
Lecture 28 - Hybrid Automata based modelling of CPS
Lecture 29 - Hybrid Automata based modelling of CPS (Continued...)

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Lecture 30 - Hybrid Automata based modelling of CPS (Continued...)
Lecture 31 - Hybrid Automata based modelling of CPS (Continued...)
Lecture 32 - Hybrid Automata based modelling of CPS (Continued...)
Lecture 33 - Reachability analysis
Lecture 34 - Reachability analysis (Continued...)
Lecture 35 - Reachability analysis (Continued...)
Lecture 36 - Reachability analysis (Continued...)
Lecture 37 - Lyapunov Stability, Barrier Functions
Lecture 38 - Lyapunov Stability, Barrier Functions (Continued...)
Lecture 39 - Lyapunov Stability, Barrier Functions (Continued...)
Lecture 40 - Lyapunov Stability, Barrier Functions (Continued...)
Lecture 41 - Lyapunov Stability, Barrier Functions (Continued...)
Lecture 42 - Lyapunov Stability, Barrier Functions (Continued...)
Lecture 43 - Quadratic Program based safe Controller Design
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Lecture 45 - Quadratic Program based safe Controller Design (Continued...)
Lecture 46 - Quadratic Program based safe Controller Design (Continued...)
Lecture 47 - Neural Network (NN) Based controllers in CPS
Lecture 48 - Neural Network (NN) Based controllers in CPS (Continued...)
Lecture 49 - Neural Network (NN) Based controllers in CPS (Continued...)
Lecture 50 - State Estimation using Kalman Filters (KF)
Lecture 51 - State Estimation using Kalman Filters (KF) (Continued...)
Lecture 52 - Attack Detection and Mitigation in CPS
Lecture 53 - Attack Detection and Mitigation in CPS (Continued...)
Lecture 54 - Attack Detection and Mitigation in CPS (Continued...)
Lecture 55 - Attack Detection and Mitigation in CPS (Continued...)
Lecture 56 - Attack Detection and Mitigation in CPS (Continued...)
Lecture 57 - Attack Detection and Mitigation in CPS (Continued...)
Lecture 58 - Attack Detection and Mitigation in CPS (Continued...)
Lecture 59 - Attack Detection and Mitigation in CPS (Continued...)
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