

FP03

Nonlinear Control II

13:30-15:30

Room : Base 1st Floor-Otztal

Chair1 : Masahiko ITOH (Miyagi National College of Technology, Japan)

Chair2 :

13:30 – 13:50

FP03-1

Speed Control of Ultrasonic Motor using PDF Controller Designed by CDM

Don Isarakorn, Taworn Benjanarasuth, Sumit Panaudomsup, Jongkol Ngamwiwit(KMITL, THAILAND), Noriyuki Komine(Tokai Univ., JAPAN)

- Introduction
- Control System Structure
- Coefficient Diagram Method
- Controller Design
- Experimental Results
- Conclusions

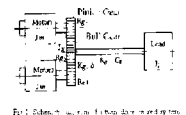
13:50 – 14:10

FP03-2

Vibration Suppression Control for a Twin-Drive Geared Mechanical System with Backlash: Simulation Study on Effects of Model-Based Control

Masahiko ITOH(Tech. Miyagi Nat'l College, JAPAN)

1. Introduction
2. Twin-Drive Geared Mechanical System
3. Reduced-Order Control Model
4. Model-Based Control System
5. Suppression of Transient Vibration
6. Effects of Model-Based Control
7. Conclusions



14:10 – 14:30

FP03-3

Decentralized Control for Multimachine Power Systems with Nonlinear Interconnections and Disturbances

Kyu-Il Jung, Kwang-Youn Kim, Tae-Woong Yoon, Gilsoo Jang(Korea Univ., KOREA)

- In this paper, a robust decentralized excitation control scheme is proposed
- We prove that the proposed control system is practically stable
- The origin is globally uniformly asymptotically stable in the absence of the disturbance
- If assumption is not satisfied, the proposed control system is still guarantees L2 stability
- Simulations for a three-machine power system demonstrates the effectiveness of the proposed scheme

14:30 – 14:50

FP03-4

Receding horizon controller design for fuzzy systems with input constraints

Seung Cheol Jeong, Doo Jin Choi, POOGyeon Park(POSTECH, KOREA)

- We present a state-feedback RHC for discrete-time TS fuzzy systems with input constraints.
- The controller employ the current and one-step past information on the fuzzy weighting functions.
- It is obtained from the finite horizon optimization problem with the invariant ellipsoid constraint.
- Under parameterized LMI conditions on the terminal weighting matrix
- The closed-loop system stability is guaranteed.
- The parameterized linear matrix inequalities are relaxed to a finite number of solvable LMIs.

14:50 – 15:10

FP03-5

Nonlinear Observers for Perspective Time-Varying Linear Systems

Rixat Abdursul, Hiroshi Inaba(Tokyo Denki Univ., JAPAN)

Abstract. Perspective dynamical systems arise in machine vision, in which only perspective observation is available, and the essential problem is to estimate the state and /or unknown parameters for a moving rigid body based on the observed information. This paper proposes and studies a Luenberger-type observer for perspective time-varying linear systems. In particular, assuming a given perspective time-varying linear system to be Lyapunov stable and to satisfy some sort of observability condition, it is shown that the estimation error converges exponentially to zero. Finally, a simple numerical example is presented to illustrate the result obtained. Keywords: nonlinear observer, perspe...

15:10 – 15:30

FP03-6

Disturbance Observer Design for Track-following Control in Optical Disk Drive using Structured Singular Value

Jung Rae Ryoo, Myung Jin Chung(KAIST, KOREA), Tae-Yong Doh(Hanbat Nat'l Univ., KOREA)

- Disturbance observer
- Performance enhancement
- LFT formulation
- Structured singular value
- Maximum bandwidth of DOB
- DVD experiments
- Robust stable disturbance observer

