

# TM02

## Poster Session

13:30-15:30

Room : Base 2nd Floor-Zillertal

Chair1 : Young I. Son ( Dong-A Univ., Korea )

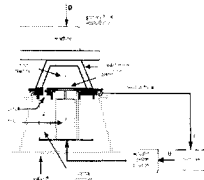
Chair2 : Hyun-Sik Ahn ( Kookmin Univ., Korea )

TM02-31

### Characteristic Ratio Assignment method and its Application to the EJC Benchmark Problem

Young Chol Kim, Seung Koo Baek, Tae Shin Cho  
(Chungbuk Nat'l Univ., KOREA)

- Introduction
- CRA method for transient response control
- Benchmark problem and specifications
- Controller design using CRA method
- Concluding Remark



TM02-32

### A Robust Direct Adaptive Controller Design for Nonlinear Systems using High-Order Neural Networks

Hyo-Seop Lee, Jin-Hyuk Cheong(Hanyang Univ., KOREA),  
Hyoung-Chan Rhee(Daejin Univ., KOREA),  
Hai-Won Yang(Hanyang Univ., KOREA)

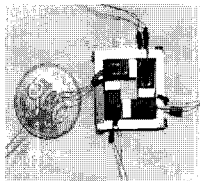
- Contents 1. Introduction
- Contents 2. System description
- Contents 3. Desired feedback control and function approximation
- Contents 4. Robust adaptive controller design
- Contents 5. Simulation study
- Contents 6. Conclusion

TM02-33

### Compact 3-DOF Mobile Microrobot for Mirco/Nano Manipulation

Taesung Kim, Jungyul Park, Deok-Ho Kim(KIST, KOREA), Kyo-Il Lee(Seoul Nat'l Univ., KOREA)

- Introduction to 3-Dimensional Nanorobotic Manipulation System
- Concept Design and Operating Principle
- Analytic Model for Target System
- Fabrication and Experimental Setup of 3-DOF Mobile Microrobot
- Experimental Works on 3-DOF Mobile Microrobot



TM02-34

### Adaptive Output Feedback Speed Control of Induction Motors with Uncertain Rotor Resistance and Load Torque

Young Ho Hwang, Hai Won Yang(Hangang Univ., KOREA),  
Hong Pil Kim(Kyungil Univ., KOREA),  
Hyung Joong Kim(Hangang Univ., KOREA)

- Contents 1 Introduction
- Contents 2 Problem Statement
- Contents 3 Adaptive Output Feedback Control Design
- Contents 4 Stability analysis
- Contents 5 Simulation Result
- Contents 6 Conclusions

TM02-35

### Digital Redesign of Observer-Based Output Feedback Controller

Ho Jae Lee, Jin Bae Park(Yonsei Univ., KOREA),  
Kwang Lae Cho(Kunsan Nat'l Univ., KOREA),  
Young Hoon Joo(Kunsan Nat'l Univ., KOREA)

This paper concerns a new digital redesign (DR) technique for an observer-based output-feedback control (OBOFC) system. The term DR involves converting an analog controller into an equivalent digital one in the sense of state-matching. The considered DR problem is formulated as convex minimization problems of the norm distances between linear operators to be matched. The stability condition is easily embedded and the separation principle on the DR of the OBOFC is explicitly shown. A numerical example is included for visualizing the feasibility of the proposed technique.

TM02-36

### Robust Controller Implementation in DCS for a MIMO Paper-making Process with Long Transport

B. K. Lee, B. K. Lee, K. Y. Lim(LGIS, KOREA)

Abstract: This paper presents a procedure of implementing a robust controller for a paper-making plant in DCSs. A paper-making process generally has triple problems to automatically tune its output qualities : Long transport delays which are not able to be simply linearized. The transfer matrix of the process is not square. And every plant model has some uncertainty in low and middle frequency region. To tackle these problems, a multi-input / multi-output (MIMO) plant model having some uncertainty was derived by considering some physical and mechanical principles of the process. Then a MIMO robust controller is designed and implemented in a real DCS as function block type. Som...