

# D-TE05

## Image Processing and Estimation

15:20-17:20  
Room : 4134

Chair : Chung Myung Jin(KAIST)  
Co-Chair : Kwang Suck Boo (Inje Univ.)

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15:20 – 15:40

D-TE05-1

### Design of Control System for Circular Knitting Machine with Tension Control Capability

Yeo Hee –Joo, Kim Jae Won, Kim Byoung Ho  
(Daejin Univ.)

Up to now, various continuous-processing systems are used in the various industrial applications such as textile machines, iron-manufacturing plants, paper-making machines, printing machines, and so on. In these applications, the tension forced on the products in the control volume can be changed according to the velocity difference between the feeding roll and the delivery roll. Specially, the tension variation generated by the velocity difference, or the inertial effect can decrease the quality of the products in the textile process. In this paper, the tension control problem in a circular knitting machine system is treated to cope these problems. Firstly, the tension relationship in the winding mechanism of general continuous-processing ...

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16:00 – 16:20

D-TE05-3

### Using a Disturbance Observer for Eccentricity Compensation in Optical storage systems

Kyung-Soo Kim, Pyo Hong Seong, Yong-Hee Han and Heuigi Son  
(LG Electronics, Inc.)

In this paper, an adaptive disturbance compensation technique is used in a tracking problem, under which the tracking reference is unknown. Based on a simple disturbance observer that effectively estimates the low frequency components of disturbance, the feedforward compensation is applied in addition to the conventional feedback control. Under the proposed compensation method, sensitivity analysis is given to illustrate the effectiveness. Finally, the proposed method is applied to the tracking problem in an optical storage system.

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16:40 – 17:00

D-TE05-5

### State-Space Model Based On-Line Parameter Estimation for Time-Delay Systems

Choi Young Woo  
(Seoul National University)

This paper considers the parameter estimation for the state-space model based time-delay systems in the case that the Lyapunov stability of the system is guaranteed. In order to estimate the parameters, two estimation methods can be proposed which are known as the parallel model and the series parallel model. It is shown that the parameters can be estimated using each method, and also certified that the results are correct by simulations.

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15:40 – 16:00

D-TE05-2

### De-correlated Compression Filter Based on Time - Propagated Measurement Fusion

Lee Hyung Keun, Lee Jang Gyu, Jee Gyu-In and Park Chan Gook  
(Seoul National Univ.)

In this paper, a new fusion architecture consisting of a host filter and a de-correlated compression filter is proposed based on propagated measurement fusion. In the proposed architecture, the host filter estimates the system states in long-term sense based on the measurements from the beginning to the current time. The de-correlated compression filter assists the host filter by providing fusion results in short-term sense based on the measurements within a block of time. The proposed de-correlated compression filter alleviates computational burden of the host filter by reducing the maximum amount of instantaneous computation, and provides an efficient environment for real-time fault detection and estimation.

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16:20 – 16:40

D-TE05-4

### A Study on a control algorithm and determinant of an optimal process condition based upon ESR process analysis.

Lim Sung-Hyun, Boo Kwang-Suck, Lim Tae-Gyoon and Wi Chul-Min  
(Inje University)

ESR(ElectroSlag Remelting) Process is secondary fine process and melts steels by electric resistance heat and fines the melting steels by an appropriate solidification process. The final products are determined through the velocity of melting and the course of solidification in the process that is achieved by way of proper course of solidification. Thus, it is very important to monitor and control the process parameters which affects the melting and solidification process to get the high quality products. This paper describes a method to derive the mathematical model and analysis the dynamic characteristics for designing a controller of the ESR processes. The process consists of a melting and solidifying process and electrical system include the contact resistance mechanism...

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