I-TMP02 International Poster Session

14:00-14:50 **Chair : Park Sun Won (KAIST)**
Room : Terrace(3F) **Co-Chair : E-Sok Kang (Chungnam National Univ.)**

14:00 – 14:50 **I-TMP-22**

Model-based Predictive Control Approach to Continuous Process based on Iterative Learning Concept

In Sik Chin, Moon Ki Cho, Jay H. Lee (Sogang Univ.)
Kwang Soon Lee (Georgia Institute of Technology)

Since the advanced control technique such as model predictive control has been introduced to industrial plant, there have been many progresses in the process control. As a way to improve the control performance, the on-line process optimizer was integrated with the advance controller. In this study, a control technique which improves the control. As the number of changes by the optimizer is increased, the control performance of the proposed algorithm is improved. Its control performance is shown via an numerical example.

14:00 – 14:50 **I-TMP-23**

The Design of Adaptive Fuzzy Controller for Vibration Suppression

Seung-Cheol Kim, Jae-Hoon Sul, Jae-Hyung Park, Young-Do Lim, Book-Kwi Choi (Dong-A Univ.)

A torque transmission system, which is composed of several gears and couplings, is flexible. Therefore, the torsion vibration occurs when the motor speed abruptly changes. Consequently, for Accuracy characteristic response of motor, we must suppressed vibration. Therefore, vibration suppression is very important motor control. To vibration suppression, various control method have been proposed. Specially, one method of vibration suppression used disturbance observer filter. This method is torsion torque passing disturbance observer filter. By feedback of the estimated torsion torque, the vibration can be suppressed. The coefficient diagram method is used to design the filter and Proportional controller.

14:00 – 14:50 **I-TMP-24**

Decentralized Input-Output Feedback Linearizing Controller for MultiMachine Power Systems : Adaptive Neural-Net Control Approach

Jang-Hyun Park, Jae-Choon Jun, Gwi-Tae Park (Korea Univ.)

In this paper, we present a decentralized adaptive neural-net(NN) controller for the transient stability and voltage regulation of a multimachine power system. First, an adaptively input-output linearizing controller using NN is designed to eliminate the nonlinearities and interactions between generators. Then, a robust control term which bounds terminal voltage to a neighborhood of the operating point within the desired value is introduced using only local information. In addition, we consider input saturation which exists in the SCR amplifier and prove that the stability of the overall closed-loop system is maintained regardless of the input saturation. The design procedure is tested on a two-machine infinite bus power system.

14:00 – 14:50 **I-TMP-25**

LQR Controller Design for Active Suspensions using Evolution Strategy and Neural Network

Jong-Min Cheon(Korea Electrotechnology Research Institute), Young-Kiu Choi, Sungshin Kim, Dae-Jun Kim, Min-Jung Lee(Pusan Univ.)

In this paper, we propose a LQR(Linear Quadratic Regulator) controller design for the active suspension using two-degree-of-freedom quarter-car model. We can improve the inherent suspension problem, the tradeoff between ride quality and suspension travel by selecting appropriate weights in the LQR-objective function. Because any definite rules for selecting weights do not exist, we replace the designer's trial and error with the optimization-algorithm, ES(Evolution Strategy). Using the ES, we can find the proper control gains for selected frequencies, which have major effects on the vibrations of the vehicle's state variables...

14:00 – 14:50 **I-TMP-26**

Neural Networks which Approximate One-to-Many Mapping

Choon-Young Lee, Ju-Jang Lee (KAIST)

A novel method is introduced for determining the weights of a regularization network which approximates one-to-many mapping. A conventional neural network will converges to the average value when outputs are multiple for one input. The capability of proposed network is demonstrated by an example of learning inverse mapping.

14:00 – 14:50 **I-TMP-27**

The Design of Controller for Unlimited Track Mobile Robot

Han-Soo Choi(Chosun Univ.), Heon Jeong(Chodang Univ.), Sei-Seung Park(Chosun Univ.)

As autonomous mobile robot become more widely used in industry, the importance of navigation system is rising, But eh primary method of locomotion is with wheels, which cause man problems in controlling tracked mobile robots. In this paper, we discuss the used navigation control of tracked mobile robots with multiple sensors. The multiple sensors are composed of ultrasonic wave sensors and vision sensors. Vision sensors gauge distance using a laser and create visual images, to estimate robot position. The 80196 is used at close range and the vision board is used at long range. Data is managed in the main PC and management is distributed to ever sensor. The controller employs fuzzy logic.