D-TMP01 Domestic Poster Session

13:00-13:50 **Chair : Han Chang Soo (Hanyang Univ.)**
Room : Terrace(3F) **Co-Chair : Kim Jeong-Ha (Kookmin Univ.)**

13:00 – 13:50 **D-TMP-07**

Study on TLS Position Decision System of Container Crane

Son Jeong-Ki (KPTI)
Park Rae-Bang (Busan Polytechnic College)
Kwon Soon-Jae (Pukyong National Univ.)

As choosing proper length of boom of container crane according as sort of vessels(18, 22, 24 columns and so on), reinforcing of capacity of DC motor to transport heavy loads, it's structure being oversized with flexibility and durability, the study is progressing on the automation for convenient operation and effective control. We often cannot but work slowly caused by swaying(pitching, rolling) of vessel. We can get productivity and efficiency by getting over it. The factors of swaying, as fellow;
- wave caused by vessels around moving
- wind and wave caused by weather change
- vessel's moving by change of load weight
- tide
- move of vessel

According to .....

13:00 – 13:50 **D-TMP-08**

Development of the Centralized Monitoring and Control System for Absorption Chiller-heaters

Lee Ji-Hyung, Ryu Sang-Hun, Park In-Wan
(Hyundai Heavy Industries)

Double-effect absorption chiller-heaters have been widely installed in large buildings and are also becoming popular in mid-sized commercial buildings. While much emphasis is put on designing energy saving and efficient chiller-heaters, careful attention must also be given to the design of control systems for these devices. Currently, these devices are controlled by their own built-in controllers, such as relay based sequence controller or microprocessor based controller. But, because large buildings require multiple chiller-heaters, a centralized supervision and control system is necessary for the efficient monitoring, control, and operations management of these devices We have developed man-machine interface software that allows the implementation of such a system. This system will support increased reliability, more efficient building management operations, and reduced ...

13:00 – 13:50 **D-TMP-09**

Precision Position Control of Piezoactuator Using Inverse Hysteresis Model and PID control

Kim jung yong , Lee byung ryong , Yang soon yong ,
Ahn kyung kwan (Univ. of Ulsan)

A piezoelectric actuator yields hysteresis effect due to its composed ferroelectric. Hysteresis nonlinearty is neglected when a piezoelectric actuator moves with short stroke. However when it moves with long stroke and high frequency, the hysteresis nonlinearty can not be neglected. The hysteresis nonlinearty of piezoelectric actuator degrades the control performance in precision position control. In this paper, in order to improve the control performance of piezoelectric actuator, an inverse modeling scheme is proposed to compensate the hysteresis nonlinearty problem. And feedforward - feedback controller is proposed to give a good tracking performance. The Feedforward controller is inverse hysteresis model ,and PID control is used ...

13:00 – 13:50 **D-TMP-10**

Desing of a Controller for Rod Balancing System

Kim Sang-Gyu, An Jung-Hun, Hong Sung-Hun, Kang Mun-Sung
(Chongju Univ.)

In this paper we have fabricated the two-dimensional Rod Balancing System which expands conventional one-dimensional inverted pendulum control system and designed its controller. The X-axis cart and Y-axis bar of the Rod Balancing System, which is composed of X-Y table, are actuated through timing belt by each of two geared DC motors, and the rod mounted on a X-axis cart can be brought to the desired position and maintained in a vertical position by motor-control. For the control of the Rod Balancing System, we used a fuzzy logic controller that is an approach to systems control when the exact mathematical model of the plant is unknown or the mathematical model is too complex to understand.

13:00 – 13:50 **D-TMP-11**

A Fuzzy Sliding Mode Controller for Nonlinear Robot System

Jeong-Joo Yun, Jang-Ku Kim, Cheol-Ki Ahn, Min-Cheul Lee
(Pusan National Univ.)

A proposed fuzzy-sliding mode controller in this paper shows that it can reduce amount of chattering inherent to sliding mode control and it is robust against parameter uncertainties. Sliding mode control is one of the control method for nonlinear systems. It can provide good transient performance and system robustness for nonlinear system. But chattering is a serious problem of the sliding mode control. The chattering is caused by steady-state error or uncertainties of the system. There are three kinds of method that can remove chattering. First, steady-state error can be removed by adding PI controller to the system. Second, putting dead-zone in sliding surface can be insensitive uncertainties.....

13:00 – 13:50 **D-TMP-12**

The Study of Error Compensation for Repeatability Improvement of Precision Positioning System

Woogeun Lee, ChangSoo Han, HyeunSeok Choi, KyeYoung Lee
(Hanyang Univ.)

In this paper, we studied the error compensation using an error budget method for repeatability improvement of the precision positioning system. The precision positioning system is developed for micro-pressing machine. We performed the force and displacement analysis about parts of the system. Proposed system determines the position and orientation of the materials manufactured by micro-pressing machine. It is consisted of x-y-z linear stages setting the position, and the gripper system setting the orientation. We executed kinematic and dynamic modeling of the whole precision positioning system. By generalizing the design variables, precision positioning system has the flexibility of material dimension. As we tried an error compensation using ...