

# D-FMP01

## Domestic Poster Session

13:00-13:50

Chair : Huh Uk-Youl (Inha Univ.)

Room : Terrace(3F)

Co-Chair : Kim In Won (Konkuk Univ.)

13:00 – 13:50

D-FMP-13

### The Development of Multi-view point Image Interpolation Method Using Real-image

Kwang-Won Yang, Young-Bin Park, Kyung-Bin Huh  
(DanKook Univ.)

In this paper, we present an approach for matching images from finding interesting points and applying new image interpolation algorithm. New algorithms are developed that automatically align the input images match them and reconstruct 3-D surfaces. The interpolation algorithm is designed to cope with simple shapes. The proposed image interpolation algorithm generate a rotation image about vertical axes by an any angle from 4 base images. Each base image that was obtained from CCD camera has an angle difference of 90°. The proposed image interpolation algorithm use the geometric analysis of image and depth information.

13:00 – 13:50

D-FMP-14

### Real-Time Analysis of Occupant Motion for Vehicle Simulator

Oh Kwang Seok, Son Kwon, Kim Kwanghoon, Oh Sangmin(Pusan National Univ.), Choi Kyunghyun(Cheju Univ.)

Visual effects are important cues for providing occupants with virtual reality in a vehicle simulator which imitates real driving. The viewpoint of an occupant is sensitively dependent upon the occupant's posture, therefore, the total body motion must be considered in a graphic simulator. A real-time simulation is required for the dynamic analysis of complex human body motion. This study attempts to apply a neural network to the motion analysis in various driving situations. A full car of medium-sized vehicles was selected and modeled, and then analyzed using ADAMS in such driving conditions as bump-pass and acceleration. A multibody system analysis software, MADYMO, was used in the motion analysis of an adult male dummy in the seated position. Position data of the head were collected as inputs to the viewpoint movement. Based on these data, a back-propagation neural network was ...

13:00 – 13:50

D-FMP-15

### Triangular Cell Map Based Complete Coverage Navigation Method for Cleaning Robot

Joon Seop Oh, Jin Bae Park(Yonsei Univ.), Yoon Ho Choi(Kyonggi Univ.)

In this paper, a novel navigation method is presented for the cleaning robot in the unknown workspace. In order to do this, we propose a new map representation method and a complete coverage navigation method. First, we discuss a triangular cell map representation which makes the cleaning robot navigate with shorter path and increased flexibility than a rectangular cell map representation. Then we proposed a complete coverage navigation and map construction method which the cleaning robot can navigate the complete workspace although it has perfectly no information about environment. Finally, we evaluate the performance of our proposed triangular cell map comparing to that of the rectangular cell map via the existing ...

13:00 – 13:50

D-FMP-16

### Gain Scheduling for Hot Strip Mill

Sung-Han Park, Byoung-Joon Ahn, Juy-Yong Choi, Dong-Wook Lee, Man-Hyung Lee  
(Pusan National Univ.)

The looper control of hot strip finishing mill is one of the most important control items in hot strip rolling mill process. Loopers are placed between finishing mill stands and control the mass flow of the two stands. Another important action of the looper is to control the strip tension which influences on the width of the strip. So it is very important to control both the looper angle and the strip tension simultaneously but the looper angle and the strip tension are strongly interacted by each other. There are many control schemes such as conventional, non-interactive, LQ(Linear Quadratic), Hinf and ILQ(Inverse Linear Quadratic), Adaptive(gain scheduling) control in the looper control system. In this paper, we present the modeling for the looper of a hot strip finishing mill to control the tension of the strip and suggest another control method.

13:00 – 13:50

D-FMP-17

### Hybrid Position/Force Control of Robot Manipulator using Fuzzy Logic Control

Ahn In Seok, Ahn Kwangseok, Kim Sangbin, Jang Junoh, Park Sangbae  
(Uiduk Univ.)

When a robot manipulator performs some task like grinding or assembling, not only the position control but also the force control of the tools connected to the robot must be controlled. But at this time we were received the uncertainty problems of system information for the force control, for example disturbance, sensor resolution and measurement noise. Therefore we proposed fuzzy logic control method instead of existing control theory for the robot manipulator control, for example PID control method. In this paper, we proposed hybrid position/force control of robot manipulator using fuzzy logic control method. To show the validity of the proposed fuzzy controller, we compared fuzzy controller with conventional PID controller.

13:00 – 13:50

D-FMP-18

### Design of Robust Control for State-Delay Systems

Kwon Taek Joon, Ha In Chul, Han Myung Chul  
(Pusan National Univ.)

In this paper, we consider a class of time-varying systems with time-varying state delay. Generally, this system is affected by many uncertainties and we assume that the information of the upper bound(time-delay, uncertainty) is known. In this work, we propose a robust control for system with state delay. The stability based on Lyapunov function is presented. Finally, a numerical example is given to demonstrate the validity of the result.