

# FE07

## Information Network I

15:40-17:40

Room : 1st Floor-Seefeld

Chair1 : Guanrong Chen ( Hong Kong City Univ., Hong Kong )

Chair2 :

15:40 – 16:00

FE07-1

### Parallel FFT and Quick-Merge Sort on the Reflective Memory Networked Computers and a Cluster of Workstations

Changhun Lee, Wook Hyun Kwon(Seoul Nat'l Univ., KOREA)

This paper is concerned with parallel FFT and Quick-Merge Sort. They are implemented on computers interconnected by VMIC 5579 reflective memory and a cluster of workstations (PCs) interconnected via Fast Ethernet. Message passing interface (MPI) parallel library is used for communication in a cluster of workstations. An improved parallel FFT is also presented to decrease an execution time in the case of a small number of hosts. Distributed shared memory (DSM), VMIC 5579 reflective memory (RM), a cluster of workstations (COW) and message passing interface (MPI) parallel library are described.

16:00 – 16:20

FE07-2

### Real-Time Response at Motion Control

Young Youl Ha, Sung Ho Han, Gap Joo Woo, Jae Hoon Kim(Samsung Heavy Industries Co. Ltd., KOREA)

- The method to have real-time response at the motion control.
- The trajectory generation method guarantees the continuous acceleration in changing the velocity during the actuator is moving.
- We propose the velocity profile generation algorithm in order to change object position or object velocity with continuous acceleration using blending method.

16:20 – 16:40

FE07-3

### Implementing Embedded systems with ORB for Distributed Control Systems

Kangsoo Kim, Myungsun Ryou, Wookhyun Kwon(Seoul Nat'l Univ., KOREA)

Modern distributed control systems focus on system openness, network system architecture and PC based controller. This paper discusses the embedded systems with ORB for distributed control systems. Embedded systems have merits such as small size, low cost and user convenience. ORB allows users to program easily by using IDL and provides client/server network for heterogeneous platforms. By using embedded systems and ORB, we implement the system and validate it by using VME system. The developed system has benefits when it is applied to distributed control systems.

16:40 – 17:00

FE07-4

### DCS Design Method based on CAN's RTR

Hyoung Yuk Kim, Hong Seong Park(Kangwon Nat'l Univ., KOREA)

Traditional control systems that consist of sensors, actuators and a controller centralized and connected with point-to-point links, have become distributed because of their performance limits and maintenance problems. Sensors and actuators are changed to smart devices having a processor and these devices and controllers are connected with fieldbuses such as Profibus, FIP, CAN, LonWorks and so on. Because they are distributed, it takes any delay to transmit data from sensor to controller and data from controller to actuator according to network characteristic. Also, the execution times of tasks in a node are not regular and depend on the node's characteristic and the number of tasks and so on...

17:00 – 17:20

FE07-5

### Complex Dynamical Networks: An Overview

Guanrong Chen(Hong Kong City Univ., HONG KONG)

The current study of complex dynamical networks is pervading all kinds of sciences today, ranging from physical to biological, even to social sciences. Its impact on modern engineering and technology is prominent and will be far-reaching. Typical complex dynamical networks include the World Wide Web, the Internet, various wireless communication networks, meta-bolic networks, biological neural networks, social connection networks, scientific cooperation and citation networks, and so on. Research on fundamental properties and dynamical features of such complex networks have become overwhelming.

This talk will provide a brief overview of some basic concepts about complex dynamical networks...