# FE06

## Intelligent Control I

15:40 – 16:00      **FE06-1**

### Chaotic System Control Considering Edge of Chaos Using Neural Network

Masanao Obayashi, Kosuke Umesako(DYamaguchi Univ., JAPAN ), Daisuke Nakayama(Yamaguchi Univ., JAPAN )

In this paper, an efficient robust control method for chaotic system introducing the concept, the edge of chaos (:boundary status between chaos and non-chaos), is proposed. To realize this concept, we introduce an extended performance index which consists of two parts. One is for achievement of the system's objects, another is for keeping the system edge of chaos. Parameters of the neural network controller are adjusted to minimize the value of the extended performance index and achieve the above two objects using Random ...

16:00 – 16:20      **FE06-2**

### Implementing Path-Finding Agents for Simulation Environments

Sang-Keon Oh, Chang-Hyun Kim, Ju-Jang Lee(KAIST, KOREA)

●Design of Path-Finding Agents in Game Programming
●Computational Efficiency vs. Realistic Motion
●Path-Finding by Planning
●Path-Finding by Behavior-based Control
●mplementation and Test of Path-Finding Program

16:20 – 16:40      **FE06-3**

### Co-Evolution Algorithm for Solving Multi-Objective Optimization Problem

Ji-Youn Kim, Dong-Wook Lee, Kwee-Bo Sim(Chungang Univ., KOREA)

●Co-evolutionary algorithms
●Nash Genetic Algorithms
●Multi-objective Optimization
●Distance dependent mutation
●Pareto Optimality

16:40 – 17:00      **FE06-4**

### A study of generation alternation model in genetic algorithm

Minoru Ito, Masanori Sugisaka(Oita Univ., JAPAN)

When the GA is applied to optimization problems, it is important to maintain the diversity in designing generation alternation model. Generally, when the diversity is not fully maintained, it is difficult to find good solution, and it is easy to stagnate the early convergenece. In this paper, we propose the Elite Correlation Selection operator (ECS) as a new selection operator for survival. This selection operator aims to keep the diversity of populations and contributes the high searching ability. This selection operator is an extension of selection operator for survival in the Minimal Generation Gap (MGG). In the selection for survival, this selection operator selects one elite individual ...

17:00 – 17:20      **FE06-5**

### A Paraconsistent Multi-Agent System

Jose Pacheco Almeida Prado, Ricardo Luis Freitas(Paulista Univ., BRAZIL)

Distributed Artificial Intelligence (DAI) aims to study and develop techniques that allow interaction among intelligent entities. In the last two decades, some types of DAI architecture have been proposed for various fields. However, it can be noticed that the inconsistency phenomenon has not been dealt with properly. This is probably due to the fact that this phenomenon cannot be handled (at least directly) with classical logic. Hence, to deal with such inconsistencies directly, one should employ a logic other than the classical one. The DAI Architecture described in this work is based on a non-classical logic called Annotated Paraconsistent Logic.

17:20 – 17:40      **FE06-6**

### A study on a collective behavior of interacting simple robots

Ken Sugawara, Masaki Sano, Toshinori Watanabe(Univ. of Electro Communications, JAPAN)

Many livings form groups that we consider as collective systems.
Their collective behaviors are good model for the development of useful distributed systems. In this paper, we discussed the group of motile elements that is described by simple model. The dynamics of each element is described by simple kinematics, but the group shows various types of motions. In addition, we found out the formation of the group changes by modifying rc which is an optimum distance between each element. This modification shows us to observe close-packed structure, face-centered lattice, simple lattice and double file.