

# I-SMP02

## International Poster Session

14:00-14:50

Chair : Kwon Oh-Kyu (Inha Univ.)

Room : Terrace(3F)

Co-Chair : Park Poo-Gyeon (POSTECH)

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14:00 – 14:50

I-SMP-16

### **Avoidance Behavior of Small Mobile Robots based on the Successive Q-Learning**

Min-Soo Kim (Soongsil Univ.)

Q-learning is a recent reinforcement learning algorithm that does not need a modeling of environment and it is a suitable approach to learn behaviors for autonomous agents. But when it is applied to multi-agent learning with many I/O states, it is usually too complex and slow. To overcome this problem in the multi-agent learning system, we propose the successive Q-learning algorithm. Successive Q-learning algorithm divides state-action pairs, which agents can have, into several Q-functions, so it can reduce complexity and calculation amounts. This algorithm is suitable for multi-agent learning in a dynamically changing environment. The proposed successive Q-learning algorithm is applied to the prey-predator problem with the one-prey and two-predators, and its effectiveness is verified from the efficient avoidance ability of the prey agent.

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14:00 – 14:50

I-SMP-18

### **Development of Image-Based Modeller Using Primitive Constraints**

Sang Hyun Seo, Dong Hwan Kim, Kyung Hyun Yoon (Chung-Ang Univ.)

In this paper, we present a method for obtaining the actual modeling data through reconstructing a 3D data from an image and a method of estimating the geometrical information and the camera location of architectural objects from a photograph containing a virtual environment are introduced. Our approach combines both geometry-based and image-based modeling techniques. The modeling system is effective and robust because it exploits constraints that are characteristic of architectural scenes. Our approach can recover models for use in either geometry-based rendering systems. We present results that demonstrate our approach's ability to create realistic renderings of architectural scenes from viewpoints far from the original photographs.

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14:00 – 14:50

I-SMP-17

### **Design of a Sliding Mode Controller with Nonlinear Boundary Transfer Characteristics**

Yoo K. Kim(Agency for Defense Development), Gi J. Jeon(Kyungpook Univ.)

Sliding mode control (SMC) with variable nonlinear boundary layer is proposed. Two Fuzzy logic controllers (FLCs) are used to decide both boundary layer thickness and nonlinear interpolation using sigmoid function in the boundary layer. The nonlinear interpolation in the boundary layer using FLC reduces steady state error and chattering. Sigmoid function is used to nonlinear interpolation in the boundary layer sigmoid function parameter with FLC. To demonstrate its performance, the Proposed control algorithm is applied to a simple nonlinear system.

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