I-SE04 Computer Vision-Man Machine Interface

15:20-17:20 **Chair : Kyung Hwan Kim (KIST)**
Room : C203 **Co-Chair : Watanabe Keigo (Saga Univ.)**

15:20 – 15:40 **I-SE04-1**

An Application of Active Vision Head Control Using Model-based Compensating Neural Networks Controller

Sisil Kumarawadu, Keigo Watanabe, Kazuo Kiguchi, Kiyotaka Izumi
(Saga Univ.)

This article describes a novel model-based compensating neural network (NN) model developed to be used in our active binocular head controller, which addresses both the kinematics and dynamics aspects in trying to precisely track a moving object of interest to keep it in view. The compensating NN model is constructed using two classes of self-tuning neural models: namely Neural Gas (NG) algorithm and SoftMax function networks. The resultant servo controller is shown to be able to handle the tracking problem with a minimum knowledge of the dynamic aspects of the system.

15:40 – 16:00 **I-SE04-2**

Intelligent User Interface for Teleoperated Microassembly

Eun-Ha Song, Deok-Ho Kim, Kyunghwan Kim, Jaehoon Lee
(KIST)

Generally, operators suffer much difficulty in manipulating micro/nano-sized objects without assisting of human interface, due to the scaling effects in micro/nano world. Thus, the micromanipulation system based on the teleopration techniques enables operators to manipulate the micro objects easily by transferring both human motion and manipulation skills to the micromanipulator. In teleoperated microassembly, it is necessary to provide a useful user interface for facilitating micro assembly task executed by human operators. In this paper, Intelligent User Interface (UI) for teleoperated microassembly is proposed. The proposed intelligent UI improves task performance by teleoperated micromanipulation as well as guides operators to succeed in desirable ...

16:00 – 16:20 **I-SE04-3**

Occurred Seasick Impression and Analysis of the Observer's Heart Rate Variability by using Ship's Bridge Simulator

K. Murai, Y. Hayashi
(Kobe Univ.)

The purpose of this paper is to find the relations between the virtual reality created by the ship's bridge simulator (simulator) at Radar Navigation Experiment and Research Facility in Kobe University of Mercantile Marine (KUMM) and the observer's response to it. In short, we analyze the observer's heart rate variability (R-R interval) in navigational condition seasick impression by simulator occurred, and present the R-R interval and the stress of observer with SNS and PNS calculated by STFT. In this experiment, rolling of the ship was simulated and presented to the observer. Rolling was simulated only visually not physically or mechanically while the balancing movement and heart beat of the observer were measured and processed to produce the measures for body response to the artificially created visual environment. The results show that even a ...

16:20 – 16:40 **I-SE04-4**

Fish School Simulation for Khepera Robot

Masayoshi Tabuse, Takahiro Horita, Tatsuro Shinchi, Tetsuro Kitazoe
(Miyazaki Univ.)

A great many species of fish congregate in schools, reducing the risk of being eaten by predators and giving one of the considerable survival advantages for fishes. Such a fish school is self-organized only due to individual behaviors for matching the speed and direction with the neighboring fishes. It is interesting to simulate these fish school by small robots, because we can understand how the group structure emerges from the interaction among neighboring individuals. We use a nice simulator for Khepera robot presented by Oliver Michel. It is shown that the Khepera simulator is easily applied to fish school due to the algorithm introduced by I Aoki. The simulator includes sensor noise so appropriately that the simulator can be transferred easily to the real environment. The results of simulation are given as follows: (1) The stability as a group is shown by plotting mean deviations from the center of group ...