

**13:00-15:00**  
**Room : C207**

**Chair : K. K Wong (The Hong Kong Polytechnic Univ.)**  
**Co-Chair : Katuki Akio (Kyushu Univ.)**

**13:00 – 13:20**

**I-FP07-1**

**Fuzzy Rules Optimizing by Neural Network-based Adaptive Fuzzy Control**

Masanori Sugisaka, Fengzhi Dai(Oita Univ.)

This paper presents a control method for the experimental mobile vehicle. By merging the advantages of neural network, adaptive and fuzzy control, neural network-based adaptive fuzzy control is proposed. It can deal with a large amount of training data by neural network, from these data producing more accurate fuzzy rules by adaptive control, and then controlling the object by fuzzy control. This is not the simple combination of the three methods, but merging them into one control system. Experiments and some future considerations are given.

**13:20 – 13:40**

**I-FP07-2**

**Self-Organized Reinforcement Learning Using Fuzzy Inference for Stochastic Gradient Ascent Method**

Masanao Obayashi, Akihiro Iseki, Kousuke Umesako (Yamaguchi Univ.)

In this paper the self-organized and fuzzy inference used stochastic gradient ascent method is proposed. Fuzzy rule and fuzzy set increase as occasion demands autonomously according to the observation information. And two rules(or two fuzzy sets)becoming to be similar each other as progress of learning are unified. This unification causes the reduction of a number of parameters and learning time. Using fuzzy inference and making a rule with an appropriate state division, our proposed method makes it possible to construct a robust reinforcement learning system.

**13:40 – 14:00**

**I-FP07-3**

**Remote Controlled Robotic Substitute via Internet**

Yoshihiko Takahashi and Takayoshi Yatsumonji (Kanagawa Institute of Technology)

A remote controlled robotic system using the Internet is proposed in this paper. The robotic system can for example act as a substitute for a child who is staying in a hospital. Using the proposed robotic system, the bedridden child can easily look around the inside of his/her classroom, and can talk to other people. The proposed robotic system will encourage a bedridden child to maintain his/her study habits. The robotic system has a CCD camera, a speaker, a microphone, and a PC display on the robot main body. An operator also has a CCD camera, a microphone, and a PC display on the operator desk. The two personal computers are connected using the Internet...

**14:00 – 14:20**

**I-FP07-4**

**Development of a Laser-Guided Deep-Hole Evaluating Probe: Measurement of Straightness and Roundness**

A. Katsuki, H. Onikura, T. Sajima, A. Mohri, T. Katayama(Kyushu Univ.), Y.Yuge(Unitac Incorporated)

The probe with a 110mm diameter is originated and fabricated to measure hole accuracies of extremely deepholes. It consists of a measuring unit, an actuator unit, an active rotation stopper and a feed unit. The rolling of the probe is restricted and adjusted by the active rotation stopper. The probe is fed by the feed unit. In this measurement, accuracies are measured by using a rolling proof apparatus and machine table of deep hole boring machine instead of the stopper and the feed unit, respectively. Straightness, roundness and a diameter of a 110-mm hole are measured by the probe and testers made for each measuring purpose...

**14:20 – 14:40**

**I-FP07-5**

**Restarting Trains Under Moving Block Signaling - An Expert System Approach**

T. K. Ho and K.K Wong (The Hong Kong Polytechnic Univ.)

A high peak power demand at substations will result under Moving Block Signalling (MBS) when a dense queue of trains begins to start from a complete stop at the same time in an electrified railway system. This may cause the power supply interruption and in turn affect the train service substantially. In a recent study, measures of Starting Time Delay (STD) and Acceleration Rate Limit (ARL) are the possible approaches to reduce the peak power demand on the supply system under MBS. Nevertheless, there is no well-defined relationship between the two measures and peak power demand reduction (PDR). In order to attain a lower peak demand at substations on different traffic conditions and system requirements, an expert system is one of the possible approaches to procure the appropriate use of peak demand reduction measures...