

# FE02

## Artificial Neural Network

15:40-17:40

Room : Base 1st Floor-Intal

Chair1 : Young Hoon Joo ( Kunsan National Univ., Korea )

Chair2 :

15:40 – 16:00

FE02-1

### A Convolutional Decoder using a Serial Input Neuron

Kyunghun Kim, Chang Wook Lee, Gi Joon Jeon(Kyungpook Nat'l Univ., KOREA)

Conventional multilayer feedforward artificial neural networks are very effective in dealing with spatial problems. To deal with problems with time dependency, some kinds of memory have to be built in the processing algorithm. In this paper we show how the newly proposed Serial Input Neuron (SIN) convolutional decoders can be derived. As an example, we derive the SIN decoder for rate code with constraint length 3. The SIN is tested in Gaussian channel and the results are compared to the results of the optimal Viterbi decoder. A SIN approach to decode convolutional codes is presented. No supervision is required. The decoder lends itself to pleasing implementations in hardware and processing ...

16:00 – 16:20

FE02-2

### The Growth Process of Interactive Virtual Life using Genetic Algorithm

Min Su Kwon, Do Wan Kim, Hoon Kang(Chungang Univ., KOREA)

In this paper, we modeled a virtual life (VL) that react to the user's action according to its own behavioral characteristics and grows itself. We established some conditions with which such a VL is designed. Genetic Algorithm is used for the growth process that changes the VL's properties. In this process, the parameter values of the VL's properties are encoded as one chromosome, and the GA operations change this chromosome. The VL's reaction to the user's action is determined by these properties as well as the general expectation of each reaction. These properties are evaluated through 5 fitness measures so as to deal with multi-objective criteria. Here, we pr...

16:20 – 16:40

FE02-3

### A GRNN Classification of Statistically Designed Experiment

Kunho Kim, Byungwhan Kim(Sejong Univ., KOREA)

Plasma processing plays a crucial role in fabricating integrated circuits (ICs). Manufacturing ICs in a cost effective way, it is increasingly demanded a computer model that predicts plasma properties to unknown process inputs. Physical models are limited in the prediction accuracy since they are subject to many assumptions. Expensive computation time is another hindrance that prevents their widespread used in manufacturing site. To circumvent these difficulties inherent in physical models, neural networks have been used to learn nonlinear plasma data. A generalized regression neural network (GRNN) [1] is one of the architectures that have been widely used to analyze complex chemical data. I...

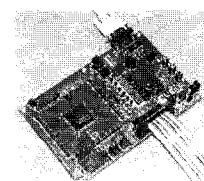
16:40 – 17:00

FE02-4

### One-chip determinism multi-layer neural network on FPGA

Ryosuke Suematsu, Ryosuke Shimizu, Tomoo Aoyama(Miyazaki Univ., JAPAN)

- Field Programmable Gate Array
- flexible hardware
- neural network
- determinism learning
- multi-valued logic
- disjunctive normal form
- multi-dimensional exclusive OR



17:00 – 17:20

FE02-5

### Quantitative structure-activity relationships (QSAR) on use of multi-valued AND/OR networks

Tomoo Aoyama, Umpei Nagashima(Miyazaki Univ., JAPAN)

The technology to predict new chemical compounds by using properties of already known compounds is a kind of data mining and an important technology in chemical industrial fields. Many knowledge have been accumulated in the fields, and especially nowadays in the field of medicine development industry, the technology is connected with the post genome technology, and generates a new conception, physiome. The word is defined as followings. It is the quantitative and integrated description of the functional behavior of the physiological state of an individual or species. The physiome describes the physiological of the normal intact organism and is built on information and structure, that is geno...