

# TP04

## Intelligent System II

13:30-15:30

Chair1 : Pyong Sik Pak ( Shanghai Jiaotong Univ., Japan )

Room : 1st Floor-Wilder Kaiser

Chair2 :

13:30 – 13:50

TP04-1

### A Model to Estimate Population by Sex, Age and District Based on Fuzzy Theory

Pyong Sik PAK, Gwan KIM(Osaka Univ., JAPAN)

A model to predict population by sex, age and district over a long-range period is proposed based on fuzzy theories. First, a fuzzy model is described. Second, a method to estimate the social increase by sex and age in each district is proposed based on a fuzzy clustering method for dealing with long-range socioeconomic changes in population migration. By the proposed methods, it became possible to predict the population by sex, age and district over a long-range period. Third, the structure and characteristics of the three models of employment model, time distance model, and land use model constructed to predict various socioeconomic indicators, which are require...

13:50 – 14:10

TP04-2

### New learning algorithm to solve the inverse optimization problems

Tomoo Aoyama(Miyazaki Univ., JAPAN)

We discuss a neural network solver for the inverse optimization problem. The problem is that find functional relations between input and output data, which are include defects. Finding the relations, predictions of the defect parts are also required. The part of finding the defects in the input data is an inverse problem. We consider the meanings to solve the problem on the neural network system at first. Next, we consider the network structure of the system, the learning scheme of the network, and at last, examine the precision on the numerical calculations. In the paper, we proposed the high-precision learning method for plural three-layer neural network system that is series-connect...

14:10 – 14:30

TP04-3

### Interactive Adaptation of Fuzzy Neural Networks in Voice-Controlled Systems.

Koliya Pulasinghe, Keigo Watanabe, Kiyotaka Izumi, Kazuo Kiguchi(Saga Univ., JAPAN)

Fuzzy Neural Network (FNN) is a compulsory element in a voice-controlled machine due to its inherent capability of interpreting imprecise natural language commands. To control such a machine, user's perception of imprecise words is very important because the words' meaning is highly subjective. This paper presents a voice based controller centered on an adaptable FNN to capture the user's perception of imprecise words. Conversational interface of the machine facilitates the learning through interaction. The system consists of a dialog manager (DM), the conversational interface, a Knowledge base, which absorbs user's perception and acts as a replica of human understanding of imprecise words, ...

14:30 – 14:50

TP04-4

### OCR Application By a FPGA Programming AND/OR Neural Network

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

With the research of simplified neural networks, we propose an AND/OR neural network; a kind of brief, fast network. Then, we present an OCR solution that equip the network in one-chip FPGA and design it by using HDL. We selected the representative hexadecimal character as the recognition feature class and used a Feature Vector Recognition Method in the statistic pattern recognition. The result feature vector was encoded into a 7 bit array and inputted into the AND/OR network to finish learning.

14:50 – 15:10

TP04-5

### Identification of Operated Protective Device in Distribution Power System using Wavelet Transform and ANN

Wha Young Yim(Kwangwoon Univ., KOREA)

1. Introduction for whole aspects.
  2. Filtering for Fault Current Waveform.
  3. Estimation for relay operation.
  4. Wavelet transform and ANN.
  5. Identification for operated protection device.
  6. Conclusion.
- Reference.

15:10 – 15:30

TP04-6

### The Design of Self-Organizing Map Using Pseudo Gaussian Function Network

Byung Man Kim, Hyung Suck Cho(KAIST, KOREA)

Kohonen's self organizing feature map (SOFM) converts arbitrary dimensional patterns into one or two dimensional arrays of nodes. Among the many competitive learning algorithms, SOFM proposed by Kohonen is considered to be powerful in the sense that it not only clusters the input pattern adaptively but also organize the output node topologically. SOFM is usually used for a preprocessor or cluster. It can perform dimensional reduction of input patterns and obtain a topology-preserving map that preserves neighborhood relations of the input patterns. The traditional SOFM algorithm[1] is a competitive learning neural network that maps inputs to discrete points that are called nodes on a lattice....