

TECHNICAL PAPER INDEX

January 31 (Thursday)

Room A

10:50~11:40 Plenary Talk

Chair H. H. Lund (University of Southern Denmark, Denmark)

- PT1 *Haptics for medical applications*
K. Ohnishi (Keio University, Japan)

Room B

12:40~14:10 Invited Talks Session

Chair J. M. Lee (Pusan National University, Korea)

- IT1 *Modular robotic tiles – Experiments for children with autism*
H. H. Lund (University of Southern Denmark, Denmark)

- IT2 *The development of robot art*
L. Pagliarini (University of Southern Denmark, Denmark)

February 1 (Friday)

Room A

11:10~12:00 Plenary Talk

Chair J. J. Lee (KAIST, Korea)

- PT2 *Membrane computing and brain modeling*
M. Oswald (Viena University of Technology, Austria)

Room B

15:55~16:40 Invited Talk

Chair T. I. J. Tsay (National Cheng Kung University, Taiwan)

- IT3 *Artificial life and embodied robotics: current issues and future challenges*
M. Eaton (University of Limerick, Ireland)

February 2 (Saturday)

Room B

8:40~9:25 Invited Talk

Chair Y. Z. Chang (Chang Gung University, Taiwan)

- IT4 *Inspection robot using the infrared thermal imaging and CCD camera*
J. M. Lee (Pusan National University, Korea)

Room A

11:20~12:10 Plenary Talk

Chair Y. G. Zhang (Academic Sinica, P. R. China)

- PT3 *A simple adaptive control of electrically driven flexible-joint robots
using function approximation techniques*
J. B. Park (Yonsei University, Korea)

January 31 (Thursday)

8:00~Registration

Room A

8:40~10:10 GS3 Artificial Life

Chair: K. Ohnishi (Niigata University, Japan)

GS3-1 *Parameter estimation of paramecium model using real-coded genetic algorithm*

A. Hirano, Z. Soh, T. Tsuji, N. Takiguchi (Hiroshima University, Japan)

H. Ohtake (Osaka University, Japan)

GS3-2 *Respiratory system modelling by using numerical integration technique via nonlinear differential equation models*

M. A. A. Halim, M. R. M. Juhari, N. A. Rahim, N. F. M. Nasir

(Kolej Universiti Kejuruteraan Utara Malaysia, Malaysia)

GS3-3 *Some state-efficient algorithms for real-time generation of non-regular sequences on cellular automata*

N. Kamikawa, H. Umeo (Osaka Electro-Communication University, Japan)

GS3-4 *Interactive musical editing system to support human errors and offer personal preferences for an automatic piano*

- *A method for searching for similar phrases using DP matching and inferring performance expression-*

Y. Chigoi, E. Hayashi (Kyusyu Institute of Technology, Japan)

GS3-5 *Development of intelligent detection modules for home security system*

Y-C. Lin, S-H. Chia (National Yunlin University of Science & Technology, Taiwan)

T-L. Chien, J-H. Guo (Wu-Feng Institute of Techonlogy, Taiwan)

GS3-6 *The diversification of proto-cells driven by membrane permselectivity*

M. Hatakeyama, T. Hashimoto (Japan Advanced Institute of Science and Technology, Japan)

12:40~14:25 GS5 Bioinformatics

Chair: M. Yokota (Fukuoka Institute of Technology, Japan)

GS5-1 *A reinforcement learning method based on immune network adapted to semi Markov decision process*

N. Kogawa, M. Obayashi, K. Kobayashi, T. Kuremoto (Yamaguchi University, Japan)

GS5-2 *Re-weighted ODP for differential gene expression analysis*

H. Nomura, S. Oba (Nara Institute of Science and Technology, Japan)

S. Ishii (Kyoto university, Japan)

GS5-3 *Efficient inferring method of genetic interactions based on time-series of gene expression profile*

M. Nakatsui (Kyushu University, Japan)
T. Ueda (CytoPathfinder Inc., Japan)
Y. Maki (Fukuoka International University, Japan)
I. Ono (Tokyo Institute of Technology, Japan)
M. Okamoto (Kyushu University, Japan)

GS5-4 *Classification of functional near-Infrared spectroscopy signals for brain functional Cognition*

T. Q. D. Khoa, M. Nakagawa (Nagaoka University of Technology, Japan)

GS5-5 *Regression analysis of amino acid substitutions and factor IX activity in Hemophilia B*

M. Utsunomiya, M. Sakamoto, H. Furutani (University of Miyazaki, Japan)

GS5-6 *Two-way factor analysis for missing value estimation of matrix data*

K. Sodebayashi, S. Oba (Nara Institute of Science and Technology, Japan)
S. Ishii (Kyoto University, Japan)

GS5-7 *System of personal identification by using tactile stimuli*

Y-I. Park, M. Uchida (The University of Electro-Communications, Japan)

14:35~15:50 GS21 Robotics-III

Chair: D-H. Kim (Hanbat National University, Korea)

GS21-1 *Obstacle recognition system using monocular camera for an autonomous robot*

T. Uewaki, E. Hayashi (Kyushu Institute of Technology, Japan)

GS21-2 *Development of distance recognition using an ocellus camera for an autonomous personal robot*

T. Kinoshita, E. Hayashi (Kyusyu Institute of Technology, Japan)

GS21-3 *Develop a power detection and faulty isolation module for mobile robot*

S-H. Chia, (National Yunlin University of Science & Technology, Wu-Feng Institute of Techonlogy, Taiwan)
K-L. Su (National Yunlin University of Science & Technology, Taiwan)
J-H. Tzou, J-H. Guo (Wu-Feng Institute of Techonlogy, Taiwan)

GS21-4 *Sensorless control of PMSM using a new adaptive sliding mode observer*

W-S. Eom, C-S. Jeon, I-Y. Kang, J-M. Lee (Pusan National University, Korea)

GS21-5 *Robot motion control with human eye command*

D. Purwanto, R. Mardiyanto (ITS, Indonesia)
K. Arai (Saga University, Japan)

15:50~17:05 GS22 Robotics-IV

Chair: H. Yamamoto (Gifu University, Japan)

- GS22-1 *A time-scaling method for near-time-optimal control of an Omni-directional robot along specified paths*
Y-Y. Fu, C-J. Wu, K-L. Su (National Yunlin University of Science and Technology, Taiwan)
C-N. Ko (Nan-Kai Institute of Technology, Taiwan)
- GS22-2 *Dynamic control of a robotic swarm using a service-oriented architecture*
V. Trifa (ETH Zurich, Switzerland)
C. M. Cianci (EPFL, Switzerland)
D. Guinard (SAP Research, Switzerland)
- GS22-3 *Control of autonomous mobile robot through template matching with laser sensor*
T. Kurita, Y. Tabuchi, N. Abe (Kyushu Institute of Technology, Japan)
H. Taki (Wakayama University, Japan)
S. He (Eastman Kodak Company, USA)
- GS22-4 *Digital control of space robot manipulators with velocity type joint controller using transpose of generalized Jacobian matrix*
S. Sagara (Kyushu Institute of Technology, Japan)
Y. Taira (National Fisheries University, Japan)
- GS22-5 *Cooperative control of multiple neural networks for indoor blimp robot*
R. Nishioka, H. Kawamura, A. Ohuchi (Hokkaido University, Japan)
T. Takaya (Ricoh Software Inc., Japan)
H. Iizuka (Future University-Hakodate, Japan)

17:05~18:35 GS23 Robotics- V

Chair: H. Kinjo (University of the Ryukyus, Japan)

- GS23-1 *Object manipulation with robot arm using motion stereo and tactile sensor*
M. Takami, Y. Tabuchi, N. Abe (Kyushu Institute of Technology, Japan)
H. Taki (Wakayama University, Japan)
S. He (Eastman Kodak Company, USA)
- GS23-2 *Indoor localization system in the multi-block workspace*
Y.Zu (Pusan National University, Korea)
D-G. Seo, M-G. Choi, J-M. Lee (Pusan National University, Korea)
- GS23-3 *Prowl of autonomous mobile robot with network camera*
R. Mizokami, N. Abe, Y. Tabuch (Kyushu Institute of Technology, Japan)
H. Taki (Wakayama University, Japan)
S. He (Eastman Kodak Company, USA)
- GS23-4 *Object tracking for mobile robot based on intelligent method*
M-J. Lee, T-S. Jin (Dongseo University, Korea),
J-H. Park (Jinju National University, Korea)
G-H. Hwang (Dongseo University, Korea)
- GS23-5 *Simulation and implement of memory-based PID control for indoor blimp robot*
Y. Yamagata, H. Kawamura, A. Ohuchi (Hokkaido University, Japan)
T. Takaya (Ricoh Software Inc., Japan)
H. Iizuka (Future University-Hakodate, Japan)

GS23-6 *Design and development of an 3 axes robotic system with intelligent sensing mechanisms*

H. Patil, R. Yanamashetti, J. Ravi, R. Jagadeesh (PDACE, India)
T. C. Manjunath (EWIT, India)

Room B

8:40~10:10 OS7 Intuitive Human-System Interaction

Chair: M. Yokota (Fukuoka Institute of Technology, Japan)

Co-Chair: K. Sugita (Fukuoka Institute of Technology, Japan)

OS7-1 *Intuitive spatiotemporal representation based on Mental Image Description Language Lmd*

M. Yokota (Fukuoka Institute of Technology, Japan)

OS7-2 *A general theory of tempo-logical connectives in Mental Image Description Language Lmd*

M. Yamamoto, T-H. Huang, M. Yokota (Fukuoka Institute of Technology, Japan)

OS7-3 *Natural language understanding based on Mental Image Description Language Lmd and its application to language-centered robot manipulation*

E. Tauchi, Y. Sakuramoto, T. Oka, K. Sugita, M. Yokota (Fukuoka Institute of Technology, Japan)

OS7-4 *Cross-media translation of human motion into text and text into animation based on Mental Image Description Language Lmd*

H. He, L. Fan, K. Sugita, M. Yokota (Fukuoka Institute of Technology, Japan)

OS7-5 *RUNA: A multi-modal command language for home robot users*

T. Oka, Y. Abe, K. Sugita, M. Yokota (Fukuoka Institute of Technology, Japan)

OS7-6 *Proposal of a new concept of universal multimedia access*

Y. Maeda, K. Sugita, T. Oka, M. Yokota (Fukuoka Institute of Technology, Japan)

14:35~15:35 GS17 Pattern recognition- II

Chair: S. Ishikawa (Kyushu Institute of Technology, Japan)

GS17-1 *Proposal of a method to extract straight line and circle using one-dimensional histogram*

S. Nakashima, S. Serikawa (Kyushu Institute of Technology, Japan)

GS17-2 *A unified approach to collaborative and feature-based recommendation based on probabilistic latent semantic models*

A. Ishihara, J. Hirayama, T. Takenouchi (Nara Institute of Science and Technology, Japan)
S. Ishii (Kyoto University, Japan)

GS17-3 *Motion capture employing an uncalibrated camera*

J. K. Tan, S. Ishikawa, K. Kouno, H. Ohbuchi, H. S. Kim (Kyushu Institute of Technology, Japan)

GS17-4 *Obtaining accurate classifiers with Pareto-optimal and near Pareto-optimal rules*
I. Kuwajima, Y. Nojima, H. Ishibuchi (Osaka Prefecture University, Japan)

15:35~17:05 GS16 Pattern recognition- I

Chair: M. Teranishi (Nara University of Education, Japan)

GS16-1 *The real-time measurement of pointing by using DSP*
T. Shiofuku, N. Abe, Y. Tabuchi (Kyushu Institute of Technology, Japan)
H. Taki (Wakayama University, Japan)
S. He (Eastman Kodak Company, USA)

GS16-2 *Effects of constructing fuzzy discretization from crisp discretization for rule-based classifiers*
I. Kuwajima, Y. Nojima, H. Ishibuchi (Osaka Prefecture University, Japan)

GS16-3 *Face recognition under varying illumination using Mahalanobis self-organizing map*
S. Aly, R. Taniguchi (Kyushu University, Japan)
N. Tsuruta (Fukuoka University, Japan)

GS16-4 *Adaptive particle allocation for multifocal visual attention based on particle filtering*
N. Yano, T. Shibata (Nara Institute of Science and Technology, Japan)
S. Ishii (Kyoto University, Japan)

GS16-5 *Automatic detection of blood vessels from contrast enhanced CT by morphological operation*
Y. Itai, A. Yamamoto, H. Kim, S. Ishikawa (Kyushu Institute of Technology, Japan)

GS16-6 *Extracting moving objects from a video by sequential background detection*
Y. Sakai, M Miyoshi, J K Tan, S Ishikawa (Kyushu Institute of Technology, Japan)

17:05~18:20 GS18 Pattern recognition-III

Chair: H-H. Lee (Waseda University, Japan)

GS18-1 *Three-dimensional object recognition using LRS*
T. Mochizuki, E. Hayashi (Kyushu Institute of Technology, Japan)

GS18-2 *Online learning method using support vector machine for surface-electromyogram recognition*
S. Kawano, D. Okumura, H. Tamura, H. Tanaka, K. Tanno (University of Miyazaki, Japan)

GS18-3 *Robust object recognition using color co-occurrence histogram and spatial relations of image patches*
H. Bang, S. Lee, D. Yu, H. I. Suh (Hanyang University, Korea)

GS18-4 *Human motion representation and recognition by directional motion history images*
M. Fukumoto, T. Ogata, J. K. Tan, H. S. Kim, S. Ishikawa (Kyushu Institute of Technology, Japan)

GS18-5 *Detection of multiple overlapping string-shaped objects using special clustering*

C. Maeda, S. Oba (Nara Institute of Science and Technology, Japan)
N. Yukinawa, S. Ishii (Kyoto University, Japan)

(Paper only)

GS18-6 *Image segmentation using decision trees method*

T. Kubik (Wroclaw University of Technology, Poland)
M. Sugisaka (Oita University, Japan)

Room C

8:40~10:10 OS14 Intelligent Control and Sensing for Robot

Chair: Jung Ju Lee (KAIST, Korea)

Co-Chair: Ju-Jang Lee (KAIST, Korea)

OS14-1 *Development of tactile sensing system of microbending fiber optic sensor*

J-S. Heo (Samsung electronics, Korea)
C-H. Han, J-Y. Kim, J-J. Lee (KAIST, Korea)

OS14-2 *Fuzzy sliding mode control for a robot manipulator*

H. Q. T. Ngo, J-H. Shin, W-H. Kim (Dong-eui University, Korea)

OS14-3 *Design of fuzzy controller for automatic steering*

S-J. Ko, S-M. Im, B-S. Choi, J-J. Lee (KAIST, Korea)

OS14-4 *Adaptive crossover, mutation and selection using fuzzy system for genetic algorithms*

S-M. Im, J-J. Lee (KAIST, Korea)

OS14-5 *Adaptive robust fuzzy control for path tracking of a wheeled mobile robot*

N-H. Giap, J-H. Shin, W-H. Kim (Dong-eui University, Korea)

OS14-6 *Development of a telemanipulator for laparoscopic surgery*

H-S. Song, K-Y. Kim, J-W. Suh, J-J. Lee (KAIST, Korea)

12:40~14:10 GS7 Chaos & DNA computing & Fuzzy Control & Others

Chair: S. Omatu (Osaka Prefecture University, Japan)

GS7-1 *Universality between the globally coupled maps and flows*

T. Shimada, T. Moriya (Meiji University, Japan)

GS7-2 *Sound-Correspondence Laws of Word-initial Consonants between Proto-Indo-European and Austronesian Languages:*

How Could New Sound Systems Have Emerged from a Pre-existing Sound System ?
K. Ohnishi (Niigata University, Japan)

GS7-3 *Periodic orbits and quantum chaos*

T. Shimada, K. Kubo (Meiji University, Japan)

GS7-4 *Integration of PSO and GA for optimum design of fuzzy PID controllers in a pendubot system*

Y-Y. Fu, C-J. Wu (National Yunlin University of Science and Technology, Taiwan)
T-L. Chien (Wu-Feng Institute of Technology, Taiwan)
C-N. Ko (Nan-Kai Institute of Technology, Taiwan)

GS7-5 *Decision support system based on cargo sensor information for liquid carrier tanker*
Y-Tae. Kim, D-H. Park, J-M. Kim, J-M. Heo, S-S. Kim (Pusan National University, Korea)

GS7-6 *Probabilistic models considering dependent relation in reasoning for decision making*
R. Azuma, H. Miyagi (University of the Ryukyus, Japan)

(Paper only)

GS7-7 *Suggestion and modeling of a novel capsular microrobot with surface*
R. Nadafi, M. Kabganian (Amirkabir University, Iran)

14:35~15:35 GS9 Computer Graphics & Genetic Algorithms

Chair: M. Obayashi (Yamaguchi University, Japan)

GS9-1 *Measurement of distance by image processing*
A. Fujiwara, N. Abe, Y. Tabuchi (Kyushu Institute of Technology, Japan)
H. Taki (Wakayama University, Japan)
S. He (Eastman Kodak Company, USA)

GS9-2 *Performance optimization of forward converters based on genetic algorithms*
Y-K. Choi, D-Y. Woo, B-W. Jung (Pusan National University, Korea)

GS9-3 *Role of properties of real world in evolution and learning*
- *Verification using two-link manipulator that has viscosity and elasticity* -
Y. Yoshioka, K. Ito (Hosei University, Japan)

GS9-4 *Production layout design system by GA with one by one encoding method*
J. A. Qudeiri, H. Yamamoto, R. Rizaiddin (Gifu University, Japan)

15:35~16:35 OS17 Intelligent System for Bioinformation

Chair: S. Omatu (Osaka Prefecture University, Japan)

Co-Chair: M. S. Mohamad (Osaka Prefecture University, Japan)

OS17-1 *A model for gene selection and classification of gene expression data*
M. S. Mohamad, S. Omatu (Osaka Prefecture University, Japan)
S. Deris, S. Zaiton MH (Universiti Teknologi Malaysia, Malaysia)

OS17-2 *A multi-objective strategy in genetic algorithm for gene selection of gene expression data*
M. S. Mohamad, S. Omatu (Osaka Prefecture University, Japan)
S. Deris, M. F. Misman (Universiti Teknologi Malaysia, Malaysia)

OS17-3 *Selecting informative genes from microarray data by using a hybrid algorithm for cancer classification*
M. S. Mohamad, S. Omatu (Osaka Prefecture University, Japan)
S. Deris, M. F. Misman (Universiti Teknologi Malaysia, Malaysia)

OS17-4 *Reliability of bank note classifier by neural networks*

S. Omatu (Osaka Prefecture University, Japan)

T. Kosaka (Glory Ltd., Japan)

M. Teranisi (Nara University of Education, Japan)

16:35~17:35 OS18 Intelligent Classification

Chair: S. Omatu (Osaka Prefecture University, Japan)

Co-Chair: T. Konishi (Osaka Prefecture University, Japan)

OS18-1 *Extraction rice-planted areas using a self-organizing feature map*

T. Konishi, S. Omatu (Osaka Prefecture University, Japan)

Y. Suga (Hiroshima Institute of Technology, Japan)

OS18-2 *Extraction rice-planted areas by RADARSAT data using neural networks*

T. Konishi, S. Omatu (Osaka Prefecture University, Japan)

Y. Suga (Hiroshima Institute of Technology, Japan)

OS18-3 *Lips detection by use of neural networks*

J. A. Dargham, A. Chekima (University Malaysia Sabah, Malaysia)

S. Omatu (Osaka Prefecture University, Japan)

OS18-4 *Data fusion for skin detection*

J. A. Dargham, A. Chekima (University Malaysia Sabah, Malaysia)

S. Omatu (Osaka Prefecture University, Japan)

17:35~18:35 GS13 Multi-agent systems

Chair: J- J. Lee (KAIST, Korea)

GS13-1 *Realization of flock behavior by using tau-margin*

A. Yokokawa, K. Ito (Hosei University, Japan)

GS13-2 *Applying a path planner based on RRT to cooperative multi-robot box-pushing*

T. Otani, M. Koshino (Ishikawa National College of Technology, Japan)

GS13-3 *A control method of agent group with emotion model*

H. Asano, T. Nagumo, T. Mizuno, H. Ide (Aoyama Gakuin University, Japan)

A. Nozawa (Meisei University, Japan)

GS13-4 *Broiler-house environment monitoring system using sensor network and mail delivery system*

A. Niimi, M. Wada, K. Ito (Future University-Hakodate, Japan)

K. Hatanaka (Tokyo University of Agriculture, Japan)

O. Konishi (Future University-Hakodate, Japan)

February 1 (Friday)

8:00~ Registration

Room A

8:40~9:40 GS6 Complexity

Chair: S. Jung (Chungnam National University, Korea)

GS6-1 *Walking and running control of small size humanoid robot 'HAJIME ROBOT'*

H. Sakamoto, R. Nakatsu (Kwansei Gakuin University, Japan)

GS6-2 *Optical beam interface for mobile robot control*

T. Sakai, S. Hashimoto (Waseda University, Japan)

GS6-3 *Construction of super-micro sense of force feedback and visual for micro object*

K.Miyamoto, T.Sonoda (Kyushu Institute of Technology, Japan)

GS6-4 *An RMRAC control for permanent magnet synchronous motor based on statistical model interpretation*

H-Z. Jin, H-S. Son, H. Lim, J-M. Lee (Pusan National University, Korea)

9:40~10:55 OS15 Robotics and Learning Control

Chair: H-H. Lee (Waseda University, Japan)

Co-Chair: H. Ogai (Waseda University, Japan)

OS15-1 *Learning type PID control system using input dependence reinforcement scheme*

H. Sawada, J-S. Shin, H-H. Lee (Waseda University, Japan)

F. Shoji (Fukuoka Institute of Technology, Japan)

OS15-2 *Wireless radio communication system for a pipe inside inspection robot*

W. You, D. Wu, H. Ogai (Waseda University, Japan)

OS15-3 *A cooperative behavior learning control of multi-robot using trace information*

T. Ohshita, J-S. Shin, H-H. Lee (Waseda University, Japan)

M. Miyazaki (Kanto Gakuin University, Japan)

OS15-4 *Development of bridge diagnosis system by using sensor network*

M. Nakayama, H Ogai, J-I. Cheon, M-Y. Hsieh, H. Inujima, N. Yamauchi (Waseda University, Japan)

OS15-5 *Model construction of production and inventory control using dynamic bayesian network*

J-S. Shin, T-H. Lee, H-H. Lee (Waseda University, Japan)

J-I. Kim (PaiChai University, Korea)

13:00~14:30 GS12 Mobile Vehicles

Chair: J. Wang (Oita University, Japan)

GS12-1 *System identification and controller design of an unmanned vehicle*

S-M. Yoon, S-T. Hwang, J-H. Ryu, M-H. Lee (Pusan National University, Korea)

GS12-2 *Positioning and navigation of mobile robot*

N. Mokhtar, L. T. Lung, A. Hamzah, M.Mubin (University of Malaya, Malaysia)

M. Sugisaka (Oita University, Japan)

GS12-3 *USAT(Ultrasonic Satellites) and odometry integrated system using lowpass filter*
M-W. Choi, C-S. Kim, S-Y. Kim, M-H. Lee (Pusan National University, Korea)

GS12-4 *Stability of two-inertia system using non-linear controller: Application to drive-control system of electric vehicle*
M. Mubin, S. N. Mokhtar, N. Soin (University of Malaya, Malaysia)
S. Ouchi, N. Kodani (Tokai University, Japan)

GS12-5 *Control of obstacle avoidance for autonomous vehicle using laser scanner*
H-G. Park, J-H. Ryu, S-M. Yoon, M-H. Lee (Pusan National University, Korea)

GS12-6 *Efficient 4WS control method of unmanned container transporter using USAT*
H-S. Lee, S-Y. Kim, S-H. Kang, M-H. Lee (Pusan National University, Korea)

14:30~15:55 Poster Session & Coffee Break

PS1 *Optimization of signal control parameters in grid street networks*
A. Taguchi, H. Sasaki, K. Shoji, F. Toyama, J. Miyamichi (Utsunomiya University, Japan)

PS2 *A human-robot cooperative system helps out with glass panels in construction*
S. Lee, C. Han (Hanyang University, Korea)
K. Lee, S. Lee (SAMSUNG Co., Korea)

PS3 *Implementation of a time-delayed controller on an FPGA for ROBOKER by estimating acceleration with different filters*
H-W. Jeon, S. Jung (Chungnam National University, Korea)

PS4 *Development of the pre-placed powder based rapid tooling system*
J-H. Tzou (Wu-Feng Institute of Technology, Taiwan)

PS5 *Fuzzy modeling with neural network compensation for human-based target tracking system*
S. J. Lee (Ground Systems R&D Institute, Agency for Defense Development, Korea)
J. Lyou (Chungnam National University, Korea)

15:55~16:55 OS19 Embracing Complexity in Natural Intelligence **Chair: Y. Ishida (Toyohashi University of Technology, Japan)** **Co-Chair: K. Harada (Toyohashi University of Technology, Japan)**

OS19-1 *A probabilistic simulator for population dynamics of oasis species*
M. Fujisawa, Y. Ishida (Toyohashi University of Technology, Japan)

OS19-2 *Reverse engineering the spatial patterns in cellular automata*
Y. Ichise, Y. Ishida (Toyohashi University of Technology, Japan)

OS19-3 *Synchrony in self-repairing network with a simple lattice*
M. Tokumitsu, Y. Ishida (Toyohashi University of Technology, Japan)

OS19-4 *Antibody-based computing*
K. Harada, Y. Ishida (Toyohashi University of Technology, Japan)

16:55~17:55 OS11 Modelling and Analysis on Complex Systems

Chair: H Suzuki (The University of Tokyo, Japan)

Co-Chair: T. Kohno (The University of Tokyo, Japan)

OS11-1 *Networked reinforcement learning*

M. Oku, K. Aihara (The University of Tokyo, Japan)

OS11-2 *Neural network controller for two-dimensional smart MEMS conveyor*

H. Watanabe, M. Ataka, T. Kohno, H. Fujita (The University of Tokyo, Japan)

OS11-3 *An integrated circuit design of a silicon neuron and its measurement results*

M. Sekikawa (Aihara Complexity Modelling Project, ERATO, JST, Japan)

T. Kohno, K. Aihara (IIS, The University of Tokyo, Japan)

OS11-4 *Trial-to-trial variability and its influence on higher order statistics*

K. Fujiwara (The University of Tokyo, Japan)

K. Aihara (The University of Tokyo, ERATO, JST, Japan)

Room B

8:40~9:40 OS9 Membrane Computing – Hardware Aspects

Chair: M. Oswald (Vienna University of Technology, Austria)

Co-Chair: Y. Suzuki (Nagoya University, Japan)

OS9-1 *Hierarchical master-slave architecture for distributed membrane systems implementation*

G. Bravo, L. Fernandez, F. Arroyo, M. A. Peña (Universidad Politécnica de Madrid, Spain)

OS9-2 *Parallel algorithm for P systems implementation in multiprocessors*

F. J. Gil, L. Fernández, F. Arroyo, J. A. de Frutos (Universidad Politécnica de Madrid, Spain)

OS9-3 *Suitability of using microcontrollers in implementing new P system communications architectures*

A. Gutiérrez, L. Fernández, F. Arroyo, S. Alonso (Universidad Politécnica de Madrid, Spain)

OS9-4 *Main modules design for a HW implementation of massive parallelism in transition P- systems*

S. Alonso, L. Fernandez, F. Arroyo, J. Gil (Universidad Politécnica de Madrid, Spain)

9:40~10:40 OS10 Unconventional Computing

Chair: M. Oswald (Vienna University of Technology, Austria)

Co-Chair: Y. Suzuki (Nagoya University, Japan)

OS10-1 *Exploring regular reversibility in Watson-Crick finite automata*

J. M. Sempere (Universidad Politécnica de Valencia, Spain)

OS10-2 *Implementing evolutionary processors in Java: A case study*

M. Campos, J. González, T. A. Pérez, J. M. Sempere (Universidad Politécnica de Valencia, Spain)

OS10-3 *Simulating of the oregonator model by using deterministic ARMS*

M. Umeki, Y. Suzuki (Nagoya University, Japan)

OS10-4 *Extended spiking neural P systems with astrocytes variants for modelling the brain*

A. Binder, R. Freund, M. Oswald (Vienna University of Technology, Austria)

13:00~14:30 GS14 Neural Networks- I

Chair: J. M. Sempere (Universidad Politécnica de Valencia, Spain)

GS14-1 *SOM for classifying data sets with missing values - application to clinical data of bladder cancer patients -*

T. Yamaguchi, K. J. Mackin (Tokyo University of Information Sciences, Japan)

GS14-2 *Emotion recognition based on extreme learning machine using advanced clonal selection immune algorithm*

J.-H. Cho, D.-H. Kim (Hanbat National University, Korea)

G.-C. Kwak (Choseon University, Korea)

GS14-3 *Natural actor-critic with baseline adjustment for variance reduction*

T. Morimura (NAIST, OIST, Japan)

E. Uchibe (OIST, Japan)

K. Doya (OIST, ATR, NAIST, Japan)

GS14-4 *A neural network model of the olfactory system of mice: Simulated the tendency of attention behavior*

Z. Soh, T. Tsuji, N. Takiguchi (Hiroshima University, Japan)

H. Ohtake (Osaka University, Japan)

GS14-5 *Collaborative filtering based on a weighted maximum margin matrix factorization*

M. Furuya, S. Oba (Nara Institute of Science and Technology, Japan)

S. Ishii (Kyoto University, Japan)

GS14-6 *A robust reinforcement learning using concept of sliding mode control*

M. Obayashi, N. Nakahara, T. Kuremoto, K. Kobayashi (Yamaguchi University, Japan)

14:30~15:45 GS15 Neural Networks- II

Chair: F. Nagata (Tokyo University of Science, Japan)

GS15-1 *Evolving homeostatic neural controller without depending on initial weight connections*

H. Iizuka (Future University-Hakodate, Japan)

GS15-2 *Chaotic dynamical associative memory model using supervised learning*

M. Obayashi, Y. Yano, K. Kobayashi, T. Kuremoto (Yamaguchi University, Japan)

GS15-3 *Remarks on tracking method of neural network weight change for adaptive type
neural network feedforward feedback controller*
T. Yamada (Ibaraki University, Japan)

GS15-4 *A Dynamic associative memory system adopting amygdala*
T. Kuremoto, T. Ohta, K. Kobayashi, M. Obayashi (Yamaguchi University, Japan)

GS15-5 *Continuous fatigue level estimation for classification of fatigued bill based on
acoustic signal feature by supervised SOM*
M. Teranishi (Nara University Education, Japan)
S. Omatu (Osaka Prefecture University, Japan)
T. Kosaka (Glory Ltd., Japan)

16:40~18:25 OS6 Simplicity and Complexity

Chair: K. Naitoh (Waseda University, Japan)

Co-Chair: N. Ito (The University of Tokyo, Japan)

OS6-1 *Inevitability of spiral-shape in DNA*
K. Naitoh, M. Yahiro (Waseda University, Japan)

OS6-2 *Asymmetry underling protein*
K. Naitoh, S. Ueki (Waseda University, Japan)

OS6-3 *Fluid dynamics underlying morphogenesis*
K. Naitoh (Waseda University, Japan)

OS6-4 *Inevitability of nTP: Information-energy carriers*
K. Naitoh (Waseda University, Japan)

OS6-5 *Nonequilibrium dynamics of reacting network system*
A. Kamimura, N. Ito, T. Shimada (The University of Tokyo, Japan)

OS6-6 *Phase diagram and stability of ecosystem*
T. Shimada, Y. Murase, N. Ito (The University of Tokyo, Japan)

OS6-7 *Adaptive gene expression beyond operator-repressor molecular regulatory system*
S. Tsuru, A. Kashiwagi, B. Ying, T. Yomo (Osaka University, Japan)

Room C

8:40~9:40 OS8 Soft Robotics

Chair: H. Kinjo (University of the Ryukyus, Japan)

Co-Chair: N. Oshiro (University of the Ryukyus, Japan)

OS8-1 *Backward movement control with two-trailer truck system using genetic programming*
T. Ogawa, N. Oshiro, H. Kinjo (University of the Ryukyus, Japan)

OS8-2 *Rushing out detection system for safe driving using foveated image processing*
M. Maeshiro, N. Oshiro, H. Kinjo (University of the Ryukyus, Japan)

OS8-3 *Neurocontroller with genetic algorithm for nonholonomic systems:*

Flying robot and four-wheel vehicle examples

H. Kinjo, D. C. Sam, E. Uezato (University of the Ryukyus, Japan)

T. Yamamoto (Tokushima College of Technology, Japan)

OS8-4 *Vibration control of load for rotary crane system using neural network with GA-based training*

K. Nakazono (University of the Ryukyus, Japan)

K. Ohnishi (Keio University, Japan)

H. Kinjo (University of the Ryukyus, Japan)

T. Yamamoto (Tokushima College of Technology, Japan)

9:40~10:40 OS13 Ubiquitous Intelligent Control

Chair: S-H. Han (Kyungnam University, Korea)

Co-Chair: Y-I. Cho (The University of Suwon)

OS13-1 *u-EMS: A design and implementation of emergency medical service based on ubiquitous sensor network using the bio-sensors*

H-K. Kim, S-J. Moon (The University of Suwon, Korea)

OS13-2 *An intelligent web information searching technology*

Y-I. Cho (The University of Suwon, Korea)

OS13-3 *A study on obstacle avoidance of mobile robot based on ultrasonic sensors*

X-T. Le, S-B. Oh, W-S. Lee, H-B. Shin, D-J. Cha, S-H. Han (Kyungnam University, Korea)

OS13-4 *A study on robust control of a three-finger hand with 15 D.O.F*

X-T. Le, W-S. Lee, S-B. Oh, D-J. Cha, S-H. Han (Kyungnam University, Korea)

13:00 ~14:30 GS10 Evolutionary Computations

Chair: K. Izumi (Saga University, Japan)

GS10-1 *Barcode design by evolutionary computation*

S. Ono, K. Morinaga, S. Nakayama (Kagoshima University, Japan)

GS10-2 *3D registration of human face using evolutionary computation and kriging interpolation*

Y-Z. Chang, Z-R. Tsai (Chang Gung University, Taiwan)

S-T. Lee (Medical Augmented Reality Research and Development Center, Taiwan)

GS10-3 *The analysis of time series signals with genetic algorithms involving dynamic bit range control for genetic operations*

R. Goto, Y. Sato, J. Miura, S. Yukita (Hosei University, Japan)

GS10-4 *Effects of non-geometric binary crossover on multiobjective 0/1 knapsack problems*

N. Tsukamoto, Y. Nojima, H. Ishibuchi (Osaka Prefecture University, Japan)

GS10-5 *Discrete particle swarm optimization for number partitioning problem*

M. Kurose, T. Imabeppu, S. Ono, S. Nakayama (Kagoshima University, Japan)

GS10-6 *Using interactive evolutionary computation to generate creative building designs*
A. Serag, S. Ono, S. Nakayama (Kagoshima University, Japan)

14:30~15:45 GS2 Artificial Intelligence- II

Chair: Y. Ishida (Toyohashi University of Technology, Japan)

GS2-1 *Modeling study of the synaptic competition induced by NMDA receptor-mediated regulation of spike-timing-dependent plasticity*
S. Kubota, T. Kitajima (Yamagata University, Japan)

GS2-2 *The medical diagnostic support system using extended rough neural network and multiagent*
D. Yamaguchi, F. Katayama, M. Takahashi (Toin University of Yokohama, Japan)
M. Arai (Hitachi Advanced Systems Corporation, Japan)
K. J. Mackin (Tokyo University of Information Sciences, Japan)

GS2-3 *An effective reinforcement learning with automatic construction of basis functions and sequential approximation*
N. Nanjo, T. Mori (Nara Institute of Science and Technology, Japan)
S. Ishii (Kyoto University, Japan)

GS2-4 *Parts closure in a kinematic self-replicating programmable constructor*
W. M. Stevens (Open University, UK)

GS2-5 *Adaptive immunity based reinforcement learning*
J. Ito, K. Sakurama, K. Nakano (The University of Electro-Communications, Japan)

15:55~16:55 GS1 Artificial Intelligence- I

Chair: S. Ono (Kagoshima University, Japan)

GS1-1 *Continuous internal-state controller for a partially observable linear dynamical system*
Y. Taniguchi, T. Mori (Nara Institute of Science and Technology, Japan)
S. Ishii (Kyoto University, Japan)

GS1-2 *Active sampling based on gaussian process for reinforcement learning*
K. Takeda, T. Mori (Nara Institute of Science and Technology, Japan)
S. Ishii (Kyoto University, Japan)

GS1-3 *Personalized emotion recognition using PLP analysis of speech signals*
S-J. Lee, S-P. Cheon, G-d. Baek, S-S. Kim (Pusan National University, Korea)

GS1-4 *A preliminary consideration on the origin of life as a cognitive system: Evolution from a simple harmonic oscillator system to chaotic learning oscillator machines*
K. Ohnishi (Niigata University, Japan)

16:55~18:10 GS4 Artificial Living, Artificial Mind Research & Virtual Reality

Chair: Y-I. Cho (The University of Suwon, Korea)

GS4-1 *2D artificial life system using network-type assembly-like language: Influence of change in environment with costs of instructions*
Y. Shiraishi, F. Takeda (Research Institute of Kochi University of Technology, Japan)

GS4-2 *Design of robotic behavior that imitates animal consciousness*

M. Shimono, E. Hayashi (Kyushu Institute of Technology, Japan)

GS4-3 *A 3D virtual orthognathic surgery planning and simulation for the prediction of post-operative facial appearance*

U.H. Obaidellah, C.S. Woo, Z.H.A Hasan, S. M. Khanafiah (University of Malaya, Malaysia)

GS4-4 *VR interactive dialog system with verbal and nonverbal communication*

S. Uchino, N. Abe, Y. Tabuchi (Kyushu Institute of Technology, Japan)
H. Taki (Wakayama University, Japan)
S. He (Eastman Kodak Company, USA)

GS4-5 *Analysis of velocity pattern prior to leaflet motions in the left ventricle utilizing 2D arbitrary lagrangian-eulerian (ALE) approach*

Z. H. A. Hasan, C. S. Woo, U. H. Obaidellah, S. M. Khanafiah (University of Malaya, Malaysia)

February 2 (Saturday)

8:00~ Registration

Room A

8:40~9:40 GS11 Human-machine cooperative systems

Chair: N. Kokubo (Mie University, Japan)

GS11-1 *A rescue robot designed for ease of use*

—Development of exploration system using behavior of bombycid —
D. Tamura, A. Fujino, K. Ito (Hosei University, Japan)

GS11-2 *A human-machine cooperative interface of a virtual 3-D space using hand Gestures*

K. Mori, J. K. Tan, S. Ishikawa (Kyushu Institute of Technology, Japan)

GS11-3 *A study on jump of two degree of freedom one-leg robot*

S. Yamashita, Y. Nomura (Mie University, Japan)

GS11-4 *Automation techniques in MIAS-PKA system*

X. Wang (Niihama National College of Technology, Japan)
M. Sugisaka (Oita University, Japan)

9:40~10:55 OS2 Robot-oriented and human-machine cooperative systems

Chair: Y. Yoshitomi (Kyoto Prefectural University, Japan)

Co-Chair: O. Sato (University of Miyazaki, Japan)

OS2-1 *Cascade formation control for multiple nonholonomic mobile robots*

Y. Hikata, H. Yoshikawa, M. Wakiyama (Kitakyushu National College of Technology, Japan)

OS2-2 *A study of manipulator with passive revoluted joint*

A. Sato (Miyakonojo National College of Technology, Japan)
O. Sato, N. Takahashi, M. Kono (University of Miyazaki, Japan)

OS2-3 *Study of autonomous work control for multiple limbed underwater robot*

T. Yaginuma, E. Shimizu, M. Ito (Tokyo University of Marine Science and Technology, Japan)

OS2-4 *Study of action control for five-fingered hand*

A. Yamanashi, E. Shimizu, M. Ito (Tokyo University of Marine Science and Technology, Japan)
T. Mori (Tokai Polytechnic College, Japan)

OS2-5 *A human-machine cooperative system for generating sign language animation using thermal image*

T. Asada, Y. Yoshitomi (Kyoto Prefectural University, Japan)
R. Hayashi (Kyoto Shinkin Bank, Japan)

13:10~14:25 OS3 Control and measurement

Chair: M. Kono (University of Miyazaki, Japan)

Co-Chair: M. Yokomichi (University of Miyazaki, Japan)

OS3-1 *Controller reduction by the block balanced realization with frequency weight*

S. Usui, M. Kono (University of Miyazaki, Japan)
T. Nagado (University of the Ryukyus, Japan)

OS3-2 *Design of nonlinear controllers for active vehicle suspensions with state constraints*

G. Makiyama, M. Yokomichi, M. Kono (University of Miyazaki, Japan)

OS3-3 *Development of a new underwater positioning system based on sensor network*

B. Fu, F. Zhang, M. Ito (Tokyo University of Marine Science and Technology, Japan)
Y. Watanabe, T. Aoki (Japan Agency of Marine-Earth Science and Technology, Japan)

OS3-4 *A numerical solution of the stochastic discrete algebraic Riccati equation*

N. Takahashi, M. Kono (University of Miyazaki, Japan)

OS3-5 *Nonlinear adaptive control system design and experiment for a 3-DOF model helicopter*

M. Nishi, M. Ishitobi, K. Nakasaki (Kumamoto University, Japan)

14:25~15:40 OS16 Biomimetic Machines and Robots

Chair: K. Watanabe (Saga University, Japan)

Co-Chair: K. Izumi (Saga University, Japan)

OS16-1 *A fuzzy logic based approach to the SLAM problem using pseudolinear models with multiframe data association*

C. D. Pathiranage, K. Watanabe, K. Izumi (Saga University, Japan)

OS16-2 *A computational model of emotion through the perspective of benevolent agents for a cooperative Task*

S. C. Banik, K. Watanabe, K. Izumi (Saga University, Japan)

OS16-3 *An underactuated control for VTOL aerial robots with four rotors via a chained form transformation*

K. Tanaka, K. Watanabe, K. Izumi, K. Okamura (Saga University, Japan)

OS16-4 *Intelligent desktop NC machine tool with compliance motion capability*

F. Nagata (Tokyo University of Science, Japan)

T. Hase, Z. Haga, M. Omoto (R&D Center, Meiho Co. Ltd., Japan)

K. Watanabe (Saga University, Japan)

OS16-5 *A robotic forceps based on a fuzzy coach-player system using hierarchical instructions*

K. Izumi, S. Ishii, K. Watanabe (Saga University, Japan)

Room B

9:25~10:55 GS19 Robotics- I

Chair: S. Sagara (Kyushu Institute of Technology, Japan)

GS19-1 *Development of rescue manipulator to search narrow space for victims*

A. Hirayama, K. Ito (Hosei University, Japan)

GS19-2 *An autonomously moving robot using network camera*

M. Sato, Y. Tabuchi, N. Abe (Kyushu Institute of Technology, Japan)

H. Taki (Wakayama University, Japan)

S. He (Eastman Kodak Company, USA)

GS19-3 *Inverse kinematic modeling of a 3-axes planar articulated robot arm (PLANBOT)*

T. C. Manjunath, Sharmila R S (EWIT, India)

A. Kusagur (JNTU, India)

H. Patil (PDACE, India)

GS19-4 *Robust binocular tracking with an auditory perception system*

T. I. J. Tsay, Y-Y. Li (National Cheng Kung University, Taiwan)

GS19-5 *Fault-tolerance of modular robots adaptively transforming a mechanical structure*

Y. Suzuki, N. Inou, H. Kimura, M. Koseki (Tokyo Tech, Japan)

GS19-6 *Development of an autonomous-drive personal robot "The object recognition system using a database"*

Y. Moritaka, E. Hayashi (Kyushu Institute of Technology, Japan)

13:10~14:25 OS1 Image Processing and Control for Robot

Chair: F. Dai (Matsue National College of Technology, Japan)

Co-Chair: H. Zhao (Oita University, Japan)

OS1-1 *Simulation of CMAC control over a robot joint actuated by McKibben muscles*

H. Zhao, M. Sugisaka (Oita University, Japan)

OS1-2 *Research on the movement control of manipulator by pattern recognition*

Y. Fujihara, S. Yamane, F. Dai (Matsue National College of Technology, Japan)

OS1-3 *Research on autonomous mobile robot for visually handicapped persons by pattern recognition*

F. Dai, S. Hamabe, Y. Fujihara (Matsue National College of Technology, Japan)

OS1-4 *A study on economical data prediction by chaos analysis*

Y. Fujihara, S. Ikeda, K. Nakamura, F. Dai (Matsue National College of Technology, Japan)

OS1-5 *Research on digit recognition by image processing for autonomous mobile robot*

F. Dai, D. Shimogaki, Y. Fujihara (Matsue National College of Technology, Japan)

14:25~15:25 OS4 Automata and Picture Languages

Chair: T. Ito (Ube National College of Technology, Japan)

Co-Chair: M. Sakamoto (University of Miyazaki, Japan)

OS4-1 *Path-bounded three-dimensional finite automata*

M. Sakamoto, M. Fukuda, S. Okatani, T. Ito, H. Furutani, M. Kono (University of Miyazaki, Japan)

OS4-2 *A relationship between turing machines and finite automata on four-dimensional input tapes*

M. Sakamoto, S. Okatani, M. Fukuda, T. Ito, H. Furutani, M. Kono (University of Miyazaki, Japan)

OS4-3 *Bottom-up pyramid cellular acceptors with three-dimensional layers*

M. Sakamoto, K. Kajisa, N. Tomozoe, T. Ito, H. Furutani, M. Kono, S. Ikeda (University of Miyazaki, Japan)

OS4-4 *Marker versus inkdot over three-dimensional patterns*

T. Ito, M. Sakamoto (University of Miyazaki, Japan)
H. Okabe (NITTETSU ELEX CO. LTD., Japan)
H. Furutani, M. Kono, S. Ikeda (University of Miyazaki, Japan)

Room C

8:40~9:55 OS12 Bio-inspired Theory and Application (2)

Chair: M. Yasunaga (University of Tsukuba, Japan)

Co-Chair: K. Yamamori (University of Miyazaki, Japan)

OS12-1 *Analysis and modeling of ants' behavior from single to multi-body*

Y. Hayashi, K. Sugawara (Tohoku Gakuin University, Japan)
T. Kikuchi, K. Tsuji (University of Ryukyus, Japan)

OS12-2 *Feature extraction of protein expression levels based on classification of functional foods with SOM*

T. Fukushima, K. Yamamori, Ikuo Yoshihara (University of Miyazaki, Japan)
K. Nagahama (Miyazaki Prefectural Industrial Foundation, Japan)

OS12-3 *Estimating physiological activities of functional foods from protein expression levels using bayesian classifier*

S. Togo, K. Yamamori, Ikuo Yoshihara (University of Miyazaki, Japan)
K. Nagahama (Miyazaki Prefectural Industrial Foundation, Japan)

OS12-4 *Haplotype estimation from genotypical data by genetic algorithm*

R. Azuma, M. Sakamoto, H. Furutani (University of Miyazaki, Japan)

OS12-5 *Effects of population size on performance of genetic algorithms and roles of crossover and mutation*

Y. Zhang, M. Sakamoto, H. Furutani (University of Miyazaki, Japan)

9:55~10:55 OS5 Bio-inspired Theory and Application (1)

Chair: I. Yoshihara (University of Miyazaki, Japan)

Co-Chair: K. Kawasue (University of Miyazaki, Japan)

OS5-1 *Stereoscopy using a single camera*

K. Kawasue, Y. Muraoka, Y. Kiyama, Y. Oya (University of Miyazaki, Japan)

OS5-2 *Three dimensional measurement of fish movement using stereo vision*

Y. Oya, K. Kawasue (University of Miyazaki, Japan)

OS5-3 *Real-world applications on the reconfigurable-VLSI-based double-lens tracking-camera*

M. Yasunaga, N. Aibe, Y. Yamaguchi (University of Tsukuba, Japan)
Y. Yamamoto (Yamamoto System Design Inc., Japan)
I. Yoshihara (University of Miyazaki, Japan)
T. Awano (Bethel Inc., Japan)

OS5-4 *On the distribution of posterior probability in Bayesian inference with a large number of observations*

A. Date (University of Miyazaki, Japan)

13:10~13:55 GS8 Complexity

Chair: Y-Z. Chang (Chang Gung University, Taiwan)

GS8-1 *Minimum nomic, a tool for studying rule dynamics*

M. Hatakeyama, T. Hashimoto (Japan Advanced Institute of Science and Technology, Japan)

GS8-2 *Effects of feedback and feedforward loops on dynamics of transcriptional regulatory model networks*

C. Oosawa (Kyushu Institute of Technology, Japan)
K. Takemoto (Kyoto University, Japan)
M. A. Savageau (UCD, USA)

GS8-3 *Method to extract stable links out of the noisy links in complex networks made from data by two body functions*

K. Yamasaki, K. J. Mackin, M. Ohshiro, K. Matusita, E. Nunohiro (Tokyo University of Information Science, Japan)

13:55~15:25 GS20 Robotics- II

Chair: T. I. J. Tsay (National Cheng Kung University, Taiwan)

GS20-1 *Design and development of a mobile robot (SOBOT) driven using automatic power supply generation*

T. C. Manjunath (ECE, EWIT, India)

H. Patil (PDACE, India)

GS20-2 *Three-dimensional scanner robot of a pipe with tilt detection*

K. Kawasue (University of Miyazaki, Japan)

S. Sakai, T. Wakiyama, S. Ohyama (B-mount Products, Japan)

M. Senda (Ohbayashi Road, Japan)

GS20-3 *Dynamic-programming approach to path-planning of autonomous mobile robots*

H-S. Yoon, T-H. Park (Chungbuk National University, Korea)

GS20-4 *Timing control of the mobile robot using tau margin*

T. Kai, Y. Shimada, K. Ito (Hosei University, Japan)

GS20-5 *Develop a multiple robot system applying in intelligent home*

T. L. Chien (Wu-Feng Institute of Techonlogy, Taiwan)

K. L. Su, S. V. Shiau, C. J. Wu (National Yunlin University of Science & Technology, Taiwan)

GS20-6 *A Replanning strategy for preplanned robot trajectory in emergency situations*

S. W. Yun, M. S. Chang, B. H. Kang, P. G. Park (POSTECH, Korea)