# Monday, July 14

------------------------------ Monday, July 14: ROOM 301A ------------------------------

**13:30 p.m.-15:30 p.m.: SESSION J-8 Monitoring, Sensing, and Control in Automated Systems**
**Co-chair Hayato Yoshioka (Tokyo Institute of Technology)**
**Co-chair Noaki Hayashi (Osaka University)**

Improvement of Anticipatory Classifier System with Internal Memory

Tomohiro Hayashida, Ichiro Nishizaki, Ryosuke Sakato (Hiroshima University)

Distributed Event-Triggered Control for Consensus Problems with Non-Linear Output Functions

Kenji Nomura, Naoki Hayashi, Shigemasa Takai (Osaka University)

Correspondence Matching for Stereo Vision Based Outdoor Measurement

András Rövid (Óbuda University), Takeshi Hashimoto, Shohei Takayanagi (Shizuoka University)

Distributed Coordination Architecture for Cooperative Multi-Robot Task Control Using Petri Nets

Gen'ichi Yasuda (Nagasaki Institute of Applied Science)

PERFORMANCE ASSESSMENT OF A WEIGH FEEDER

Hiroshi Tajika, Takao Sato (University of Hyogo), Yoshihiro Ohnishi (Ehime University), Toru Yamamoto (Hiroshima University), Nozomu Araki, Yasuo Konishi (University of Hyogo)


**15:50 p.m.-17:30 p.m.　　: SESSION J-8 Monitoring, Sensing, and Control in Automated Systems**
**　　　　　　　　: SESSION J-9 Precision Machinery System and Micro/Nano Technologies**
**　　　　　　　　: SESSION U-4 Nanomanufacturing and Nanoinformatics**
**Co-chair Qiang Huang (University of Southern California)**
**Co-chair Hayato Yoshioka (Tokyo Institute of Technology)**

Sensorless Cutting Force Estimation in Ball-Screw-Driven Stage Using Full-Closed Control

Yuki Yamada, Yasuhiro Kakinuma (Keio University)

Gear Rattle under Influence of Bearings, Lubricant Churning and Gear Tooth Sliding Friction within a Geared Mechanism

Jidong Zhang, Jaspreet S. Dhupia (Nanyang Technological University), Chandana J. Gajanayake (Advanced Technology Center, Rolls-Royce Singapore Pte. Ltd)

Manufacture on Optical Micro-Resonator of Single-Crystal Calcium Fluoride in Terms of Crystallography

Shunya Azami, Yasuhiro Kakinuma, Hiroshi Kudo, Takasumi Tanabe, Jiwang Yan (Keio University)

Vibration Reduction of Microhand for Transporting Operation

Tomoyuki Kurata (Osaka university), Ebubekir Avci (Toyota Technological Institute), Kazuto Kamiyama, Masaru Kojima (Osaka university), Kenichi Ohara (Meijo University), Mitsuhiro Horade, Toru Ejima (Osaka university), Tamio Tanikawa (Advanced Industrial Science and Technology), Yasushi Mae, Tatsuo Arai (Osaka university)

Characterizing and Identifying Variations among Nano Experimental Runs

Li Wang, Qiang Huang (University of Southern California)

**------------------------------ Monday, July 14: ROOM 301B ------------------------------**

**13:30 p.m.-15:30 p.m.: SESSION J-11** *Medical/Nursing Applications and Bio-manufacturing*
**Co-chair Hirohisa Narita (Meijo Univ.)**
**Co-chair Yoshiyuki Kagiyama (Yamanashi Univ.)**

Development of a Motion Capture System for Measuring Hidden Points on a Human Body and its Application to the Evaluation of Care Operation

> Akemi Nomura (Yokohama City University), Takako Sato, Tomohiro Yano, Yosuke Takami, Shoichiro Ito (Yokohama National University), Yasuko Ando, Akinobu Nemoto (Yokohama City University), Hiroshi Arisawa (Yokohama National University)

A Basic Study on Scaffold Creation with Using 3D Printer for Organ Regeneration

> Hirohisa Narita (Meijo University), Yumi Fujikake (Fujita Health University)

Practical Assistive Robot Cart Development to Support Hot Patients

> Masatsugu Iribe (Osaka Electro-Communication University), Gen Endo (Tokyo Medical and Dental University), Naoto Maeta, Kohei Onishi, Ryota Ikeda (Osaka Electro-Communication University), Yu Iemura (Tokyo Institute of Technology), Toshio Takubo (Tokyo Women's Medical University), Mineko Ohira (East Nagano Hospital)

Effective Co-Operation Schedule for Nurse and Medical Support Robots Based on Mas and Stochastic Network

> Miho Okada, Akira Kitamura (Tottori University)

Evaluations of Atlas-Based Total Hip Arthroplasty Planning of Two Different Types of Femoral Stems

> Yuki Nakanishi (Kobe University), Yoshiyuki Kagiyama (University of Yamanashi), Futoshi Yokota (Nara Institute of Science and Technology), Masaki Takao, Nobuhiko Sugano (Osaka University), Yukio Tada (Kobe University), Noriyuki Tomiyama (Osaka University), Yoshinobu Sato (Nara Institute of Science and Technology)

Surface Roughness Influence in Spine Implant: An Assessment of Contact Stiffness and Hysteretic Energy Loss

> Mohammad Hodaei, Kambiz Farhang (Southern Illinois University Carbondale)

**15:50 p.m.-17:30 p.m.: SESSION J-12+U-1 Additive Manufacturing**
**Co-chair Hiroyuki Narahara (Kyushu Institute of Technology)**
**Co-chair Chiyen Kim (The University of Texas at El Paso)**

Challenges in Design & Digital Fabrication of Embedable Electronics and Freeform Surface Interfaces

Eugeni L. Doubrovski, Argun Cencen (TU Delft), Steve M. van Bennekom, Jouke C. Verlinden, Jo M.P. Geraedts (TU Delft)

Direct Metal Laser Fabrication of Cu-Al alloys from powder precursor

Jorge Ramos-GRez, Raul Benavente, Magdalena Walczak (Pontificia Universidad Catolica de Chile)

Optimal Design, Numerical Simulation, and Experimental Testing of Bipolar Plates with Pin-Type Flow Fields for Polymer Electrolyte Membrane (Pem) Fuel Cells

Ming C Leu, Nannan Guo (Missouri University of Science and Technology)

A Framework and Prototype System for Cloud-Based Additive Manufacturing

Ihsan Hakan Selvi (Missouri University, Science and Technology - Sakarya University), Tijen Over Ozcelik (Sakarya University), Kenneth K. Fletcher, Osman Iyibilgin, Ming C. Leu, Xiaoqing (Frank) Liu (Missouri University of Science and Technology)

High Viscosity Multi-Material 3D Jet Printing

Hongyi Yang, Ricky Wildman, Christopher Tuck, Yinfeng He, Ian Ashcroft, Phill Dickens, Richard Hague (University of Nottingham)

**13:30 p.m.-15:30 p.m.: SESSION J-6+U-10 Digital Design and Digital Manufacturing (CAD/CAM)**
**Co-chair Keiichi Shirase (Kobe University)**
**Co-chair Jian Cao (Northwestern University)**

A Study on Estimation of 3-Dimensional Tolerance of Simulation in Boring Processes Including Kinematic Motion Deviations

> Wiroj Thasana, Nobuhiro Sugimura, Arata Yoshida, Koji Iwamura, Atsushi Takahashi, Yoshitaka Tanimizu (Osaka Prefecture University)

Magnetic Polishing and Endmilling Tool-Path to Fabricate Magic-Mirror Surface with a Machining Center

> Lei Ma, Tatsuya Furuki, Eiichi Aoyama, Toshiki Hirogaki (Doshisha University), Keiji Ogawa (The University of Shiga Prefecture)

Optimization of Cad-Based Toolpath Generation in Accumulative Double-Sided Incremental Forming

> Ebot Etchu Ndip-Agbor, Jacob Smith, Huaqing Ren, Jiachen Xu, Zhen Jiang, Jian Cao, Wei Chen (Northwestern University)

Automation of Machining Operation Planning by Reconfiguring Previous Machining Operations

> Yusaku Shinoki, Mohanmmas M Isnaini, Ryuta Sato, Keiichi Shirase (Kobe University)

Examining the Effect of Adaptive Expertise and Contextual Exercises on Students' Cad Modeling

> Xiaobo Peng, Ke Liu, Prentiss McGary (Prairie View A&M University), Bugrahan Yalvac, Elif Ozturk, Michael Johnson, Lauralee Valverde (Texas A&M University)

Parallel Distance Field Computation with GPU and Its Application for Evaluating Part Thickness

> Masatomo Inui, Nobuyuki Umezu, Kodai Kobayashi (Ibaraki University)

**15:50 p.m.-17:30 p.m. : SESSION J-6+U-10 Digital Design and Digital Manufacturing (CAD/CAM)**
**: SESSION J-3 Design and Control for Electrified Vehicles**
**Co-chair Masatomo Inui (Ibaraki University)**
**Co-chair Jaspreet Singh Dhupia (Nanyang Technological University)**

Motion Considerations Using 3D-CAD Systems for Massive Machinery

> Kazumasa Kobayashi, Satoshi Yano (iCAD Ltd.)

Basic Study on Product Design Support Considering Latent Phenomena Depending on Ways and Situations of Use

> Eiji Morinaga (Osaka University), Takuya Akasaka (Osaka University), Hidefumi Wakamatsu, Eiji Arai, Hijiri Abiru (Osaka University)

Model Aircrafts for Information System and Rescue Activity When Disaster

> Haruo Sakamoto (Kochi University of Technology)

Control Optimization for Electric Tugboats Powertrain with a Given Load Profile

> Thanh Long Vu, Jaspreet Dhupia, Aaron Ayu (Nanyang Technological University), Louis Kennedy, Alf Adnanes (ABB (Singapore) Pte. Ltd.)

A Convertor System for a Syncronous AC Motor Having a Center Tap Improving Its Energy Consumption

> Tohru Watanabe (Ritsumeikan University), Mikio Totani (Totani Corporation)

**13:30 p.m.-15:30 p.m.: SESSION J-5 Production Planning and Scheduling**
**Co-chair Haruhiko Suwa (Setsunan University)**
**Co-chair Tatsushi Nishi (Osaka University)**

Lagrangian Relax and Fix Heuristics for Integrated Production Planning and Warehouse Layout Problem under Demand Uncertainty

Keisuke Oga, Tatsushi Nishi (Osaka University), Guoqing Zhang (University of Windsor)

An Improved IP Formulation of the Single-Machine Scheduling Problem with a Finite Capacity Input Buffer

Shunji Tanaka (Kyoto University)

A New Train Marshaling Method Considering Rearrangement-Collection Using Reinforcement Learning

Yoichi Hirashima (Osaka Institute of Technology)

A Study on Optimization Method for Re-Lot Assignment in Semiconductor Device Manufacturing

Takayuki Kita (Kobe University, Tokyo Electron Ltd.), Toshiya Kaihara, Nobutada Fujii, Tomomi Nonaka (Kobe University), Ichiro Namioka (Tokyo Electron Ltd.)

A Study on CPM-BASED Dynamic MULTI-PROJECT Scheduling

Toshihisa Fujiwara (Osaka University), Haruhiko Suwa (Setsunan University), Hiroshi Morita (Osaka University)

Facility Location Design Methodology of Global Supply Chain -An Example of Cost-Based Factory Location Optimization-

Yasutaka Koga, Satoshi Yoshida (Toshiba Corporation Corporate Manufacturing Engineering Center), Toshiya Kaihara (Kobe University)

**15:50 p.m.-17:30 p.m.: SESSION J-5 Production Planning and Scheduling**
**Co-chair Shunji Tanaka (Kyoto University)**
**Co-chair Yoshihiro Yao (i-Process Planning LLC)**

Autonomous Distributed Scheduling by Using Multi-Agent Reinforcement Learning for Minimizing Sum of Earliness and Tardiness

Koji Iwamura, Takayuki Yokote, Yoshitaka Tanimizu, Nobuhiro Sugimura (Osaka Prefecture University)

Analysis on Dynamic Machine Tool Assembly

Keiichi Ota, Atsushi Matsubara (Kyoto University), Hajime Mizuyama (Aoyama Gakuin University)

The Rewriting Strategy of an Assembly Process Plan for Production Efficiency in an Agent-Based Manufacturing System

Yasuhiro Sudo, Michiko Matsuda (Kanagawa Institute of Technology)

A Study on Tool Allocation Method Considering Load Balancing and Optimization of Transportation

Kentaro Tanaka, Koji Iwamura, Yoshitaka Tanimizu, Nobuhiro Sugimura (Osaka Prefecture University)

# Tuesday, July 15

**------------------------------ Tuesday, July 15: ROOM 301A ------------------------------**

**9:00 a.m.-10:40 a.m.: SESSION J-7+U-11 Machine Tools and Cutting**
**Co-chair Takashi Matsumura (Tokyo Denki University)**
**Co-chair Syh-Shiuh Yeh (National Taipei University of Technology)**

R-Test Analysis Software for Error Calibration of Five-Axis Machine Tools -Application to a Five-Axis Machine Tool with a Tilting Rotary Table-
        Soichi Ibaraki, Yu Nagai (Kyoto University), Hisashi Otsubo (Otsubo Engineering Research Center), Yasutaka Sakai, Shigeki Morimoto (Fukuda Corporation)

On-Machine Measurement on Five-Axis Machining Center by Using Touch Trigger Probe
        Masahito Saito, Yukitoshi Ihara (Osaka Institute of Technology)

A Study on Modeling and Analysis of Kinematic Motion Deviations of Five-Axis Machine Tool
        Arata Yoshida, Nobuhiro Sugimura, Atsushi Takahashi, Wiroj Thasana, Yoshitaka Tanimizu, Koji Iwamura (Osaka Prefecture University)

Modeling and Identification of Geometric Error for Heavy-Duty CNC Machine Tool Using a Laser Tracker
        Zhenyu Han, Hongyu Jin, Hongya Fu (Harbin Institute of Technology)

Population of Compensation Tables for 5-Axis Machine Tools Using Genetic Algorithms
        Jennifer R. Creamer, Douglas A. Bristow, Robert G. Landers (Missouri University of Science and Technology), Philip L. Freeman, Samuel J. Easley (Boeing Research and Technology)


**13:30 p.m.-15:30 p.m.: SESSION J-7+U-11 Machine Tools and Cutting**
**Co-chair Keichi Shirase (Kobe University)**
**Co-chair Hideki Aoyama (Keio University)**

Design and Experimental Verification of an Improved Cutting Torque Estimator for CNC Tapping Machines
        Syh-Shiuh Yeh, Po-Hsiang Tang (National Taipei University of Technology), Shih-Chang Liang (Industrial Technology Research Institute)

Suppression of Low-frequency Vibration in Precision Turning Processes by Band-limited Force Control
        Takayuki Hirano, Kazuto Enomoto, Ryo Koike, Yasuhiro Kakinuma (Keio University)

Material Removal Mechanism of SIC Monocrystal Based on Acoustic Emission
        Shujuan Li, Dan Cui, Zi Li (Xi'an University of Technology), Robert G. Landers (Missouri University of Science and Technology)

Heat transfer in polycrystalline diamond compact cutters in rock turning
        Demeng Che, Jacob Smith, Kornel_F. Ehmann (Northwestern University)

Estimation of Workpiece Flow Stress and Friction for FEM Simulation of High-Speed Orthogonal Cutting Process Using Inverse Calculation Method
        Norfariza binti Wahab, Hiroyuki Sasahara (Tokyo University of Agriculture and Technology)

Cutting Force Simulation in Milling of Cobalt Chromium Molybdenum Alloy
        Takashi Matsumura, Michiaki Takagi, Hidekazu Fujita (Tokyo Denki University), Takafumi Komatsu (Komatsu Seiki Kosakusho Co., Ltd.)

**15:50 p.m.-17:30 p.m.: SESSION J-7+U-11 Machine Tools and Cutting**

**Co-chair Soichi Ibaraki (Kyoto University)**

**Co-chair Zhenyu Han (Harbin Institute of Technology)**

Development of an Energy Consumption Estimation Model for Feed Drive Systems in NC Machine Tools

    Yuta Inoue, Ryuta Sato, Keiichi Shirase (Kobe University), Akio Hayashi

Practical Friction Modeling and Compensation Method for High-Precision Positioning Control

    Tomoya Fujita, Kotaro Nagaoka (Mitsubishi Electric Corporation)

Gain Optimization for High Speed and High Accuracy Control of Machine Tool

    Duo Zhang, Hideki Aoyama (Keio University)

**9:00 a.m.-10:40 a.m.: SESSION J-12+U-1 Additive Manufacturing**
**Co-chair Ming C Leu (Missouri University of Science and Technology)**
**Co-chair Yasusi Kanada (Dasyn.com)**

Preliminary Study of the Influence of Process Parameters on the Porosity of Lens-Processed 316L Stainless Steel
> Sarah J Wolff, Hong-Cin Liou, Jian Cao, Kornel Ehmann, Oluwaseyi Balogun (Northwestern University)

Design and Construction of a Multi-Material, Multi-Technology FDM System
> David Espalin, Chiyen Kim, Jorge Ramirez, Mireya Perez, Eric MacDonald, Ryan Wicker (The University of Texas at El Paso)

Development of Machine Vision Integrated MULTI-FDMS and Micro Machining System
> Chiyen Kim, Ryan B. Wicker, David Espalin, Mireya A. Perez, Alfonso Fernandez, Eric MacDonald (The University of Texas at El Paso)

Towards Real Time Control of Exposure Controlled Projection Lithography
> Harrison H. Jones, Amit S. Jariwala, David W. Rosen (Georgia Institute of Technology)

**13:30 p.m.-15:30 p.m.: SESSION J-2 Service Engineering**
**Co-chair Toshiya Kaihara (Kobe University)**
**Co-chair Giacomo Liotta (University of Southern Denmark)**

A Study on Staff Shift Scheduling Method in Restaurant Business -Proposal of Scheduling Considering Difference in Employee Abilities-
> Nobutada Fujii, Toshiya Kaihara, Tomomi Nonaka, Jumpei Oda (Kobe University), Takeshi Shinmura (Ganko Food Service Co, Lts.)

Production-Related Information Effects on Service Valuation -A Study Using Food Purchasing and Eating Experiments with Human Subjects-
> Keiko Aoki (Yokohama National University), Kenju Akai (The University of Tokyo), Kiyokazu Ujiie (University of Tsukuba), Takeshi Shinmura (Ganko food service Co. Ltd.), Nariaki Nishino (The University of Tokyo)

A Complex Negotiation Model under the Equal Negotiation Power for Multi-Echelon Supply Chain Networks
> Fang Yu, Toshiya Kaihara, Nobutada Fujii, Tomomi Nonaka (Kobe University)

A Simulation-Based Framework to Innovate Logistics and Supply Chains of Healthcare Systems
> Giacomo Liotta (University of Southern Denmark)

A Study on Logistics Network Design Including Operational Resources
> Noriyasu Yoshimura, Toshiya Kaihara, Nobutada Fujii, Tomomi Nonaka (Kobe University)

Electrical and Electronic Equipment Recycling Analyisis and Simulation for Urban Reverse Logistics Services
> Giuseppe Stecca (Istituto di Analisi dei Sistemi ed Informatica del Consiglio Nazionale delle Ricerche)

**15:50 p.m.-17:30 p.m.　　: SESSION J-12+U-1 Additive Manufacturing**

**　　　　　　　　　　　　: SESSION U-2 Additive Manufacturing Process Controls**

**Co-chair Ming C Leu (Missouri University of Science and Technology)**

**Co-chair Jorge Ramos-GRez (Pontificia Universidad Catolica de Chile)**

Improvement in the Interlaminar Bonding Strength of the FDM Parts by In-Process Surface Treatment Using Atmospheric-Pressure Plasma

　　　　Hiroyuki Narahara, Yota Shirahama, Hiroaki Sanematsu, Hiroshi Koresawa, Hiroshi Suzuki (Kyushu Institute of Technology)

3D Inkjet-Printed UV-Curable Inks for Multi-Functional Electromagnetic Applications

　　　　Ehab Saleh, Christopher Tuck, Chanikarn Thiantanukij (University of Nottingham), Peter Woolliams, Bob Clarke (The National Physical Laboratory–UK), Ricky Wildmam, Ian Ashcroft, Richard Hague, Phill Dickens (University of Nottingham)

Method of Designing, Partitioning, and Printing 3D Objects with Specified Printing Direction

　　　　Yasusi Kanada (Dasyn.com)

Frequency Domain Identification of a Repetitive Process Control Oriented Model for Laser Metal Deposition Processes

　　　　Patrick M. Sammons, Douglas A. Bristow, Robert G. Landers (Missouri University of Science and Technology)

**9:00 a.m.-10:40 a.m.: SESSION J-10 Machine and Robot Control**
**Co-chair Yasuhiro Sugimoto (Osaka University)**
**Co-chair Katsumi Moriwaki (Daido University)**

Investigation for the stability of standing posture and stiffness of robot driven by McKibben pneumatic actuator
> Daisuke Nakanishi, Yuichiro Sueoka, Yasuhiro Sugimoto, Koichi Osuka (Osaka University), Yoshiyuki Sankai (Tsukuba University)

Robust Concurrent Design of Inputs and Proportional-Derivative Feedback Controllers
> Ali Baheri, Joshua Vaughan (University of Louisiana at Lafayette)

Trajectory Tracking Control Using a Hydraulic Transformer
> Sangyoon Lee, Perry Y. Li (University of Minnesota)

A New Control Method of an Electromagnetic Spherical Motor with Three Degrees of Freedum
> Nagayoshi Kasashima, Kiwamu Ashida (National institute of Advanced Industrial Science and Technology), Tomoaki Yano (Kinki University), Akio Gofuku, Mitsunobu Shibata (Okayama University)

Level Control for the Loading Bed of a Harvest Cart by the Pneumatic Servo System and its Simulation and Experimental Study
> Katsumi Moriwaki (Daido University)


**13:30 p.m.-15:30 p.m.: SESSION J-10 Machine and Robot Control**
**Co-chair Tetsuya Kinugasa (Okayama University of Scinece)**
**Co-chair Satoshi Ito (Gifu University)**

High Energy-Efficient SCARA Robots based on Resonance: A New Motion Control Method by using Variable Elasticity
> Kento Matsusaka (Ritsumeikan University), Mitsunori Uemura (Osaka University), Sadao Kawamura (Ritsumeikan University)

Cluster-Dividing Control for Sheep Agents by Dual Sheepdog Robots
> Yuichiro Sueoka, Masato Ishikawa, Yasuhiro Sugimoto, Koichi Osuka (Osaka University)

3D Dynamic Biped Walker 'RW04' with Telescopic Knees, Flat Feet and Ankle Springs
> Tetsuya Kinugasa, Takashi Ito, Shinsaku Fujimoto, Koji Yoshida (Okayama University of Science), Masatsugu Iribe (Osaka Electro-Communication University)

Incline Change Detection by Passive Dynamic Walker's Crotch Angle
> Takumi Iwao, Kenichi Tokuda (Wakayama University), Iribe Masatsugu (Osaka Electro-Communication University), Koichi Osuka (Osaka University)

Biped Balance Control Based on the Feedback of Ground Reaction Forces with Gravity Compensation
> Satoshi Ito, Shingo Nishio, Yuki Fukumoto, Minoru Sasaki (Gifu University)

**15:50 p.m.-17:30 p.m.: SESSION J-10 Machine and Robot Control**
**Co-chair Ryota Hayashi (Kagoshima University)**
**Co-chair Yuki Minami (Kyoto University)**

Dynamic Quantizer Synthesis Based on Multi-Objective Optimization

Takao Muromaki (Maizuru National College of Technology), Yuki Minami (Kyoto University)

Nonlinear Control for Induction Motors using a Simple Rotor Flux Observer

Febry Pandu Wijaya, Naoki Uchiyama, Shigenori Sano (Toyohashi University of Technology)

Posture Control of One-Link Torque Unit Manipulator under Friction Condition -Relation between Angular
Momentum of a Reaction Wheel and Friction Condition-

Yasuyuki Setoyama, Ryota Hayashi, Yong Yu (Kagoshima University), Tetsuya Kinugasa, Koji Yoshida
(Okayama University of Science), Koichi Osuka (Osaka University)

**9:00 a.m.-10:40 a.m.    : SESSION U-7 Smart and Intelligent Manufacturing**
**: SESSION U-5 Precision Manufacturing**

**Co-chair A.Galip Ulsoy (University of Michigan)**
**Co-chair Shaopeng Liu (GE Global Research)**

Human-System Interaction in Factory of Future -A Case Study about Using New Generation of Hand-Held Devices in Industry-

Mohammad Givehchi (MSc. in Automation Engineering), Lihui Wang (KTH Royal Institute of Technology)

Cloud-Enabled Industrial Machine Pervasive Monitoring System

Shaopeng Liu, Judith A. Guzzo, Li Zhang, David Smith, Michael Grossner (GE Global Research)

Reconfigurable Process Control for Stamping

A. Galip Ulsoy (University of Michigan), Yongseob Lim (Samsung Techwin), Ravi Venugopal (Opal-RT)

Selective Iterative Learning Control with Non-Repetitive Disturbance Rejection

Liting Sun (University of Science and Technology of China), Xu Chen, Masayoshi Tomizuka (University of California, Berkeley)

Smart Manufacturing for Handicrafts Industry in India

Hardik Makhija (TERI University, New Delhi)


**13:30 p.m.-15:30 p.m.: SESSION J-5 Production Planning and Scheduling**
**Co-chair Toru Eguchi (Hiroshima University)**
**Co-chair Tatsuhiko Sakaguchi (Toyohashi University of Technology)**

Efficient Job Shop Scheduling by Sequentially Fixing Partial Schedules

Mitsunobu Yoda, Toru Eguchi, Takeshi Murayama (Hiroshima University)

Genetic Algorithm Based Nesting Method with Considering Schedule for Sheet Metal Processing

Tatsuhiko Sakaguchi, Hayato Ohtani, Yoshiaki Shimizu (Toyohashi University of Technology)

Production Cost Analysis and Production Planning with Surrounding Environment of Plant Factory

Kousuke Nakai, Nobuhiro Sugimura, Koji Iwamura, Yoshitaka Tanimizu (Osaka Prefecture University)

A Solution Method for Comprehensive Solution Candidates by Zero-Suppressed Binary Decision Diagram in Dynamic Production Planning

Keita Takahashi, Masahiko Onosato, Fumiki Tanaka (Hokkaido University)

Application of RCPSP to Heat-Treatment Processes -a Case Study-

Toshiyuki Miyamoto (Osaka University), Kazuyuki Mori, Shoichi Kitamura, Yoshio Izui (Mitsubishi Electric Corporation)

High Efficiency AGV Transportation System Based on Knowledge of Taxis and Taking into Account Number of Interactions

Ito Taichi (Doshisha University), Keiji Ogawa (The University of Shiga Prefecture), Toshiki Hirogaki, Eiichi Aoyama, Tsuguhito Suzuki (Doshisha University)

**15:50 p.m.-17:30 p.m.: SESSION U-6 Sensing and Information Extraction**
**Co-chair Robert Gao (University of Connecticut)**
**Co-chair Xingwei Wang (University of Massachusetts Lowell)**

A Novel Monitoring Method of Temperature Hysteresis on Tooth Contact Surface of Hypoid Gears from Middle-Infrared Ray Imagery Based on Thermal Network Model

Raphael Pihet, Hirogaki Toshiki, Eiichi Aoyama, Koudai Niwa (Doshisha University)

Theoretical Design of an Ultra-High Pressure Fiber Optic Transducer

Nan Wu, Yang Zhang, Tyler Schmitt, Julie Chen, Christopher Niezrecki, Xingwei Wang (University of Massachusetts Lowell)

Design and Evaluation of an Embedded Pressure Sensor for Microrolling Process Monitoring

Zhaoyan Fan, Xiyue Zou, Robert_X Gao (University of Connecticut), Man-Kwan Ng, Jian Cao (Northwestern University), Edward_F Smith (Deringer-Ney, Inc.)

Autonomous Modeling of Unknown Hand Grasp Object VIA Tracking in Cluttered Environments

Krishneel Chand Chaudhary, Yasushi Mae, Masaru Kojima, Tatsuo Arai (Osaka University)

# Wednesday, July 16

**9:00 a.m.-10:40 a.m.: SESSION J-14 Agricultural Machine and Plant Factory**
**Co-chair Satoru Sakai (Shinshu University)**
**Co-chair Michihisa Iida (Kyoto University)**

Camera Based Velocity Estimation for UGV without Feature Extraction
>Satoru Sakai, Makoto Tsukagoshi (Shinshu University)

Tracking Control of Cutting Blade of Automatic Spinach Harvester
>Takamitsu Hatakeyama, Yuichi Chida, Kosuke Hirano, Yuta Nakamura, Takashi Tsuchiya, Tatsuya Yamaguchi, Akihiro Fujisawa (Shinshu University), Shinichi Kitazawa (Nishizawa Electric Meters Manufacturing Corporation), Takeshi Shimada (JA National Federation of Agricultural Cooperative Associations Nagano)

Autonomous Harvesting by Head-Feeding Combine Robot
>Hiroki Kurita, Michihisa Iida, Wonjae Cho, Masahiko Suguri (Kyoto University)

Autonomous Packing System for Strawberries Using 3D Sensor
>Hiromi Omori (Bio-oriented Technology Research Advancement Institution, NARO), Suguru Yamamne (Shizuoka Prefectural Research Institute of Agriculture and Forestry), Shigehiko Hayashi, Sadafumi Saito, Yoshiji Ochiai, Satoshi Yamamoto (Bio-oriented Technology Research Advancement Institution, NARO)

**------------------------- Wednesday, July 16: ROOM 301B -------------------------------**

**9:00 a.m.-10:40 a.m.: SESSION J-15 Nushima Project -- An Experimental Study on a
Self-Sustainable Decentralized Energy System for an Isolated Island
Co-chair Hisashi Tamaki (Kobe University)
Co-chair Kazutoshi Sakakibara (Toyama Prefectural University)**

A High-Performance DC Micro Grid Power System Based on High Efficiency Power Convertres with a Practical
Energy Management and Power Flow Control Scheme

   Tomokazu Mishima (Kobe University)

Power Management Estimation and Optimization for Nushima Micro Grid

   Takeho Ikeda, Ryousuke Miyahara, Masahiro Fukui (Ritsumeikan Univercity)

An Accurate SOC Estimation System for Lithium Ion Batteries

   Lei Lin, Masashi Fujimoto, Naoki Kawarabayashi, Masahiro Fukui (Ritsumeikan University)

A Social Experiment for Controlling Electric Power Demand by Visualization – A Case of Nushima Island

   Koji Shimada (Ritsumeikan University), Yuki Ochi (E-konzal), Takuya Matsumoto (Kobe University),
   Hiroshi Matsugi (Hyogo Prefectural Institute of Technology)

A Mathematical Programming Model for Planning and Utilization of Decentralized Energy Networks

   Kazutoshi Sakakibara (Toyama Prefectural University), Takuya Matsumoto (Hyogo Prefectural Institute of
   Technology), Ittetsu Taniguchi (Ritsumeikan University), Hisashi Tamaki (Kobe University)

**-------------------------- Wednesday, July 16: ROOM 311A --------------------------**

**9:00 a.m.-10:40 a.m.: SESSION J-1 Sustainable Green Engineering**
**Co-chair Toshiki Hirogaki (Doshisha University)**
**Co-chair Stefanie Robinson (University of California, Berkeley)**

Basic Characteristics of Natural Fiber Gears Made from Only Bamboo Fibers Extracted with Machining Center
> Akihiro Oishi, Toshiki Hirogaki, Eiichi Aoyama (Doshisha University), Keiji Ogawa (Hyogo The University of Shiga Prefecture), Hromichi Nobe (Gunma Mifuji Kikai Inc.)

Experimental Study of Straight Blade Wind-Power Generaton
> Kazuki Kida, Hironori Fujii, Yasuhisa Osada, Yukihide Motegi (Kanagawa Institute of Technology), Yusuke Maruyama (Maeda Corporation)

Energy-Block Model based Energy Optimization in Production Systems considering Combination of Each Machine's Energy Consumption Pattern
> Tomomi Nonaka (Aoyama Gakuin University), Toshiya Kaihara, Nobutada Fujii (Kobe University)

Leveraging Advanced Manufacturing for Sustainable Production
> Stefanie L. Robinson, David A. Dornfeld (University of California, Berkeley)

A Practical Demonstration of Battery Control for Electric-Power Management of Multiple Homes
> Yoshihiko Yamaguchi, Yoshihiko Susuki, Takashi Hikihara (Kyoto University)

**13:30 p.m.-15:30 p.m.: SESSION J-13 Simulation, CAE**
**Co-chair Koji Teramoto (Muroran Institute of Technology))**
**Co-chair Tetsuo Oya (Keio University)**

Design Support System Using Mass-Spring Simulation for Vehicle Crashworthiness
> Akihiro Nakaishi, Tetsuo Oya, Hideki Aoyama (Keio University)

Modeling of Curling of Plain-Knitted Fabrics toward Its Suppression
> Hidefumi Wakamatsu (Osaka University), Mari Inoue (Kobe University), Tetsusei Kurashiki, Eiji Morinaga, Eiji Arai (Osaka University), Shunji Takeuchi (Precision Fukuhara Works, Ltd.)

Estimation of Mechanical Characteristics of Knitted Fabric Composites
> Hidefumi Wakamatsu, Tetsusei Kurashiki, Eiji Morinaga, Eiji Arai (Osaka University), Shunji Takeuchi (Precision Fukuhara Works, Ltd.)

**9:00 a.m.-10:40 a.m.: SESSION J-4 Manufacturing Systems**
**Co-chair Hironori Hibino (Tokyo University of Science)**
**Co-chair Yoshitaka Tanimizu (Osaka Prefecture University)**

A Study on Operator Allocation Considering Skill Education in Cell Manufacturing Systems
Harumi Haraguchi, Toshiya Kaihara, Nobutada Fujii, Tomomi Nonaka (Kobe University)

Work Allocation in Transportation Scheduling Considering Carbon Dioxide Emissions Reductions in Dynamic Supply Chains
Hiromasa Ito, Yoshitaka Tanimizu (Osaka Prefecture University)

Modeling Method to Concurrently Analyze Environmental and Productivity Aspects in Factory
Hironori Hibino (Tokyo University of Science), Yoshiro Fukuda, Yuichi Tanioka (Hosei University),
Naohisa Matsushita (Fujitsu), Shigeo Oshita (Jtekt), Masami Kobayashi (Kawasaki Heavy Industries),
Tomoaki Kondo (KT system)

Modeling and Simulation for an Automated Warehouse System with Mixed Loading
Aya Ishigaki, Takayuki Sekino, Hironori Hibino (Tokyo University of Science)

Value of Information Method for Tool Life Testing and Milling Cost Optimization Using Kriging
Jaydeep M. Karandikar, Thomas Kurfess (Georgia Institute of Technology)

**13:30 p.m.-15:30 p.m.: SESSION J-4 Manufacturing Systems**
**Co-chair Eiji Morinaga (Osaka University)**
**Co-chair Tomomi Nonaka (Aoyama Gakuin University)**

An Extension of CO-Evolutionary Genetic Algorithm for Alternative Machine Tools in Reactive Scheduling
Yoshitaka Tanimizu, Michisuke Sakamoto, Yuuki Sakai, Sousuke Uchino, Koji Iwamura, Iwamura Sugimura
(Osaka Prefecture University)

Development of Dynamic Production Management System Considering Assembly Time Prediction for Cellular Manufacturing Systems
Yoshitaka Tanimizu, Takashi Yokotani, Tatsuya Iwakura, Koji Iwamura, Nobuhiro Sugimura (Osaka
Prefecture University)

Agent-Based Control System to Respond to Situation Changes in Assembly Processes
Tsutomu Yoshikawa, Toshiya Kaihara, Nobutada Fujii (Kobe University)

Basic Study on Facility Layout Planning Considering Production Scheduling
Eiji Morinaga, Yutaro Shintome, Hidefumi Wakamatsu, Eiji Arai (Osaka University)