



Program
The 49th ISCIE International Symposium on Stochastics
Systems Theory and Its application (SSS17) at
Hiroshima campus of Hiroshima Institute of Technology on
November 3rd and 4th, 2017

Sponsored by

Institute of Systems, Control and Information Engineers (ISCIE)

In Cooperated with

The Society of Instrument and Control Engineers (SICE)

The Institute of Electrical Engineers of Japan (IEE)

The Institute of Electronics, Information and Communication Engineers (IEICE)

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IEEE Control Systems Society Japan Chapter

IEEE Control Systems Society Kansai Chapter

IEEE Signal Processing Society Tokyo Joint Chapter

IEEE Signal Processing Society Kansai Chapter

and Hiroshima Institute of Technology

Sessions (Rooms)

Friday November 3rd. 2017									
10:00-10:25	Opening (201)			Check-in desk and coffee lounge (101)	Presenters' preparation (403)	Secretariat (303)			
10:25-10:45	Break								
10:45-12:00	03A1 (201) System identification and parameter estimation Chair: Yoshiki Takeuchi (Osaka Kyoiku University)	03B1 (301) Medical and biomedical systems I Chair: Yukihiro Kubo (Ritsumeikan University)	03C1 (402) Time series analysis and stochastic optimization Chair: Ihor Lubashevsky (Aizu University)						
12:00-13:30	Lunch								
13:30-14:45	03A2 (501) Modeling, filtering and control of stochastic systems I Chair: Kenji Sugimoto (Nara Institute of Science and Technology)	03B2 (301) Medical and biomedical systems II Chair: Kunihiko Oura (Kokushikan University)	03C2 (402) Signal detection and statistical signal processing Chair: Hiroyuki Fujioka (Fukuoka Institute of Technology)						
14:45-15:05	Break								
15:05-16:20	03A3 (501) Modeling, filtering and control of stochastic systems II Chair: Shuichi Ohno (Hiroshima University)	03B3 (301) Medical and biomedical systems III Chair: Yoshiharu Koya (Kobe City College of Technology)	03C3 (402) Analyses of stochastic systems Chair: Ken'ichi Nishiguchi (Osaka University)						
16:20-16:40	Break								
16:40-17:40	03S Special Lecture (501) Progress in coding technologies for speech and audio signals Guest speaker: Takehiro Moriya (NTT Fellow, NTT Communication Science Laboratorys)								
17:40-18:00	Break								
18:00-20:00	Welcome ceremony and banquet (201)								
Saturday November 4th 2017									
10:00-11:15	04A4 (201) Control of networks Chair: Yuichi Sawada (Kyoto Institute of Technology)	04B4 (301) Applications in engineering related to stochastic processes I Chair: Tokuo Fukuda (Otemon Gakuin University)	04C4 (402) Mathematical finance I Chair: Kazuhiro Yasuda (Hosei University)				Check-in desk and coffee lounge (101)	Presenters' preparation (403)	Secretariat (303)
11:15-11:35	Break								
11:35-12:25	04A5 (201) Modeling, filtering and control of stochastic systems III Chair: Hirokazu Ohtagaki (Okayama University of Science)	04B5 (301) Applications in engineering related to stochastic processes II Chair: Akinori Hidaka (Tokyo Denki University)	04C5 (402) Mathematical finance II Chair: Yoji Morita (Kyoto Gakuen University)						
12:25-13:25	Lunch								
13:25-14:40	04A6 (201) Modeling, filtering and control of stochastic systems IV Chair: Masahiro Tanaka (Konan University)	04B6 (301) Statistical methods for GNSS navigation Chair: Shuji Murakami (Hiroshima Institute of Technology)	04C6 (402) Neural networks and Fuzzy systems Chair: Osamu Fukayama (University of Tokyo)						

Rooms 201 & 501, Friday, November 3rd, 2017

03S (501): Special Lecture

Chair: Yukio Fukayama (Hiroshima Institute of Technology)

16:40-17:40 03S Progress in coding technologies for speech and audio signals

Takehiro Moriya (NTT Communication Science Laboratory)

03A1 (201): System identification and parameter estimation

Chair: Yoshiki Takeuchi (Osaka Kyoiku University)

10:45-11:10 03A1-1 Left-right polynomial matrix factorization for MIMO pole/zero cancellation

Kenji Sugimoto (Nara Institute of Science and Technology)
Wataru Imahayashi (Nara Institute of Science and Technology)

11:10-11:35 03A1-2 Identification of Hammerstein-Wiener systems in closed-loop

Hajime Ase (Mathematical Technology Institute)
Tohru Katayama (Ritsumeikan University)

11:35-12:00 03A1-3 Identification of errors-in-variables models based on bias compensation of weighted least squares estimator

Masato Ikenoue (National Institute of Technology, Ariake College)
Shunshoku Kanae (Junshin Gakuen University)
Kiyoshi Wada (Kyushu University)

03A2 (501): Modeling, filtering and control of stochastic systems I

Chair: Kenji Sugimoto (Nara Institute of Science and Technology)

13:30-13:55 03A2-1 New filtering algorithms with disturbance decoupling property for nonlinear stochastic systems with unknown disturbances

Akio Tanikawa (Osaka Institute of Technology)

13:55-14:20 03A2-2 Design of a continuous-time loop filter for $\Delta\Sigma$ modulators with excess loop delay

M. Rizwan Tariq (Hiroshima University)
Shuichi Ohno (Hiroshima University)

14:20-14:45 03A2-3 Modelling of lips movement from facial muscles electromyography signal and its application to pronunciation training

Hirotake Sato (Tokyo Denki University)
Izumi Hanazaki (Tokyo Denki University)

03A3 (501): Modeling, filtering and control of stochastic systems II

Chair: Shuichi Ohno (Hiroshima University)

15:05-15:30 03A3-1 Stability of optimally controlled nonlinear stochastic systems

Shazlan Mohammad Wan (Okayama University of Science)
Masahiko Tamai (Toshiba Lighting and Technology Corporation)
Hirokazu Ohtagaki (Okayama University of Science)

15:30-15:55 03A3-2 A result on the finite-step injection of discrete-time Kalman filter into the stationary-state with the optimal observation gain matrix

Yoshiki Takeuchi (Osaka Kyoiku University)

15:55-16:20 03A3-3 On ensemble Kalman filter and smoother

Masaya Murata (University of Tokyo)

Room 301, Friday, November 3rd, 2017

03B1 (301): Medical and biomedical systems I

Chair: Yukihiro Kubo (Ritsumeikan University)

10:45-11:10 03B1-1 Eye movement detection using EOG for communication of people with disabilities

Ryosuke Baba (Saga University)
Takenao Sugi (Saga University)
Yoshitaka Matsuda (Saga University)
Satoru Goto (Saga University)
Takao Yamasaki (Kyushu University)
Ayame Oishi (Kyushu University)
Naruto Egashira (National Institute of Technology, Kurume College)

11:10-11:35 03B1-2 The change of event related hemodynamics and event related potentials in frontal lobe caused by modified PVSAT

Kanako Mikami (Kokushikan University)
Kunihiko Oura (Kokushikan University)

11:35-12:00 03B1-3 Analysis of walking motion influenced by walking training apparatus for crutch-walk

Toshimitsu Iioka (Tokyo Denki University)
Jun Inoue (Tokyo Denki University)
Izumi Hanazaki (Tokyo Denki University)

03B2 (301): Medical and biomedical systems II

Chair: Kunihiko Oura (Kokushikan University)

13:30-13:55 03B2-1 Estimation of local movement of ovarian follicle for infertility treatment

Yoshiharu Koya (Kobe City College of Technology)
Tomomoto Ishikawa (Ishikawa Hospital)
Hidehiko Matsubayashi (Reproduction Clinic Osaka)
Yutaka Hata (University of Hyogo)

13:55-14:20 03B2-2 Line spectrum pair representation of neural and myoelectric signals for brain-machine interface applications

Osamu Fukayama (University of Tokyo)
Naoki Sudo (University of Tokyo)
Kunihiko Mabuchi (University of Tokyo)

14:20-14:45 03B2-3 A study of offline calligraphy learning system

Haruka Yamaa (Kobe City College of Technology)
Yoshiharu Koya (Kobe City College of Technology)

03B3 (301): Medical and biomedical systems III

Chair: Yoshiharu Koya (Kobe City College of Technology)

15:05-15:30 03B3-1 Mathematical analysis of the stochastic delayed epidemic model with reinfection

Masaaki Ishikawa (Yamaguchi University)

15:30-15:55 03B3-2 Development of communication system using eye movement extraction via image processing with blink detection

Masaya Minoda (Saga University)
Takenao Sugi (Saga University)
Yoshitaka Matsuda (Saga University)
Satoru Goto (Saga University)
Takao Yamasaki (Kyushu University)
Ayame Oishi (Kyushu University)
Naruto Egashira (National Institute of Technology, Kurume College)

15:55-16:20 03B3-3 Feature extraction for EEG activity during 4 limbs motor imagery in time domain

Kenji Hontani (Kyushu Institute of Technology)
Ryosuke Shibata (Kyushu Institute of Technology)
Makoto Maeda (Kyushu Sangyo University)
Katsuhiro Inoue (Kyushu Institute of Technology)

Room 402, Friday, November 3rd, 2017

03C1 (402): Time series analysis and stochastic optimization

Chair: Ihor Lubashevsky (Aizu University)

10:45-11:10 03C1-1 Analysis of exchange rates and gold price using relative noise contribution

Yuta Shimazaki (Meiji University)
Kazuyuki Nakamura (Meiji University)
Yoko Tanokura (Meiji University)

11:10-11:35 03C1-2 Hybrid method of tone-injection and clipping-and-filtering for suppressing nonlinear distortion of OFDM signal

Noritaka Shigei (Kagoshima University)
Motofuyu Takaki (Kagoshima University)

11:35-12:00 03C1-3 Design of compact B-spline curves using optimal control point selection

Hiroyuki Fujioka (Fukuoka Institute of Technology)
Rachanart Soontornvorn (Fukuoka Institute of Technology)
Hiroyuki Kano (Tokyo Denki University)

03C2 (402): Signal detection and statistical signal processing

Chair: Hiroyuki Fujioka (Fukuoka Institute of Technology)

13:30-13:55 03C2-1 Towards emergent mechanism of categorical perception

Ren Namae (Aizu University)
Ihor Lubashevsky (Aizu University)

13:55-14:20 03C2-2 An improvement of symbol synchronization performance and circuit scale reduction of Fourier transform in IEEE 802.11ah physical layer

Shuji Murakami (Hiroshima Institute of Technology)
Akihiro Nagata (Hiroshima Institute of Technology)

14:20-14:45 03C2-3 Error analysis for 3D shape sensing by fiber-optic distributed sensors

Ken'ichi Nishiguchi (Osaka University)
Yoshiaki Yamauchi (Neubrex Company Limited)
Kinzo Kishida (Neubrex Company Limited)

03C3 (402): Analyses of stochastic systems

Chair: Ken'ichi Nishiguchi (Osaka University)

15:05-15:30 03C3-1 Quantum mechanics formalism in describing human intermittent control

Ihor Lubashevsky (Aizu University)
Takashi Suzuki (Aizu University)

15:30-15:55 03C3-2 Human response delay time in pendulum balancing as random variable with nonlinear properties

Takashi Suzuki (Aizu University)
Ihor Lubashevsky (Aizu University)

15:55-16:20 03C3-3 An averaging consensus algorithm and its stopping rule over noisy undirected networks of MIMO linear symmetric agents

Kenta Hanada (Osaka University)
Takayuki Wada (Osaka University)
Izumi Masubuchi (Kobe University)
Toru Asai (Nagoya University)
Yasumasa Fujisaki (Osaka University)

Room 201, Saturday, November 4th, 2017

04A4 (201): Control of networks

Chair: Yuichi Sawada (Kyoto Institute of Technology)

- 10:00-10:25 04A4-1 Design of a performance-driven PID controller using a hierarchical-clustering CMAC
Yuntao Liao (Hiroshima University)
Takuya Kinoshita (Hiroshima University)
Kazushige Koiwai (Hiroshima University)
Toru Yamamoto (Hiroshima University)
- 10:25-10:50 04A4-2 Design of a data-driven adaptive controller for discrete nonlinear systems
Zhe Guan (Hiroshima University)
Shin Wakitani (Hiroshima University)
Ikuro Mizumoto (Kumamoto University)
Toru Yamamoto (Hiroshima University)
- 10:50-11:15 04A4-3 Distributed network topology control for multi-agent target searching in presence of probabilistic packet loss
Toru Murayama (National Institute of Technology, Wakayama College)

04A5 (201): Modeling, filtering and control of stochastic systems III

Chair: Hirokazu Ohtagaki (Okayama University of Science)

- 11:35-12:00 04A5-1 Hybrid optimal tracking control for linear discrete-time systems by simultaneous optimization approach of system states and mode distributions
Gou Nakura
- 12:00-12:25 04A5-2 Bilateral control system of flexible master-slave arms with random delay affected by contact force with obstacle
Masaharu Yagi (Kyoto Waterworks Bureau)
Genki Idei (Kyoto Institute of Technology)
Yuichi Sawada (Kyoto Institute of Technology)

04A6 (201): Modeling, filtering and control of stochastic systems IV

Chair: Masahiro Tanaka (Konan University)

- 13:25-13:50 04A6-1 Hybrid optimal tracking control with preview for linear continuous-time systems by simultaneous optimization approach of system states and mode distributions
Gou Nakura
- 13:50-14:15 04A6-2 Gain scheduling LEQG control for two-wheeled inverted pendulum moving on rough grounds
Yoshiaki Takano (Kyoto Institute of Technology)
Yuichi Sawada (Kyoto Institute of Technology)
- 14:15-14:40 04A6-3 H_∞ state estimation for linear continuous-time systems driven by Wiener and Poisson processes
Gou Nakura

Room 301, Saturday, November 4th, 2017

04B4 (301): Applications in engineering related to stochastic processes I

Chair: Tokuo Fukuda (Otemon Gakuin University)

10:00-10:25 04B4-1 Construction of water level model for after condenser in spray flash desalination system via stochastic process
Yoshitaka Matsuda (Saga University)
Yoshihiro Eishima (Saga University)
Satoru Goto (Saga University)
Takenao Sugi (Saga University)
Takafumi Morisaki (Saga University)
Takeshi Yasunaga (Saga University)
Yasuyuki Ikegami (Saga University)

10:25-10:50 04B4-2 Hierarchical Bayesian methods for reliability predictions based on real options
Toru Kaise (University of Hyogo)

10:50-11:15 04B4-3 Learning automata with 2-state Bayesian estimators
Mothoshi Hara (National Institute of Technology, Matsue College)
Wataru Aoto (Internet Initiative Japan Inc.)
Noriyo Kanayama (National Institute of Technology, Matsue College)
Toru Watanabe (National Institute of Technology, Matsue College)
Hiroyuki Kamaya (National Institute of Technology, Hachinohe College)

04B5 (301): Applications in engineering related to stochastic processes II

Chair: Akinori Hidaka (Tokyo Denki University)

11:35-12:00 04B5-1 Distributed stochastic control of microgrids based on PV power predictions
Koki Takeda (Ritsumeikan University)
Kiyotsugu Takaba (Ritsumeikan University)

12:00-12:25 04B5-2 On the initial guess of posture of mobile depth sensor for detecting the primary surface in the environment
Masahiro Tanaka (Konan University)

04B6 (301): Statistical methods for GNSS navigation

Chair: Shuji Murakami (Hiroshima Institute of Technology)

13:25-13:50 04B6-1 GNSS integer ambiguity resolution methods applied by Kalman filter - the review and comparison
Koji Abe (Ritsumeikan University)
Yuma Arakawa (Ritsumeikan University)
Yukihiro Kubo (Ritsumeikan University)
Sueo Sugimoto (Ritsumeikan University)

13:50-14:15 04B6-2 A new GNSS relative positioning algorithm based on alternative use of the positions of reference receivers
Hirokazu Hasegawa (Ritsumeikan University)
Goshi Okuda (Ritsumeikan University)
Yukihiro Kubo (Ritsumeikan University)
Sueo Sugimoto (Ritsumeikan University)

Room 402, Saturday, November 4th, 2017

04C4 (402): Mathematical finance I

Chair: Kazuhiro Yasuda (Hosei University)

10:00-10:25 04C4-1 Optimal consumption/investment and retirement with necessities and luxuries

Hyeng Keun Koo (Ajou University)
Kum-Hwan Roh (Hannam University)
Yong Hyun Shin (Sookmyung Women's University)

10:25-10:50 04C4-2 Efficiency of QQE and negative interest rates in Abenomics during (2013,2017)

Yoji Morita (Kyoto Gakuen University)
Shigeyoshi Miyagawa (Kyoto Gakuen University)

10:50-11:15 04C4-3 Time consistent mean-variance portfolio under regime-switching co-integration

Mei Choi Chiu (The Education University of Hong Kong)

04C5 (402): Mathematical finance II

Chair: Yoji Morita (Kyoto Gakuen University)

11:35-12:00 04C5-1 Optimal inventory control of mean-reverting multi-product systems

Mei Choi Chiu (Education University of Hong Kong)
Tat Wing Wong (Chinese University of Hong Kong)
Hoi Ying Wong (Chinese University of Hong Kong)

12:00-12:25 04C5-2 Numerical experiments with respects to optimal interventions of exchange rate using stochastic impulse control

Ryosuke Naito (Hosei University)
Kazuhiro Yasuda (Hosei University)

04C6 (402): Neural networks and Fuzzy systems

Chair: Osamu Fukayama (University of Tokyo)

13:25-13:50 04C6-1 On two-dimensional Fuzzy random data as vague perceptions of random phenomena

Tokuo Fukuda (Otemon Gakuin University)

13:50-14:15 04C6-2 Convolutional neural networks as general nonlinear classifiers

Akinori Hidaka (Tokyo Denki University)
Takio Kurita (Hiroshima University)

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Information for attendee

- 1) Every attendee is invited to the welcome ceremony and banquet in room 201 at 18:00 on November 3rd.
- 2) Box lunches will be provided at room 101 during 11:30 - 13:30 on both November 3rd and 4th.
- 3) Coffee, tea and snacks are served in rooms 101 and 403.
- 4) Wi-Fi services with wireless routers are available in the 1st, 3rd and 4th floors, the passwords of which are posted in corridors. Please pardon us for the slow speed connections.
- 5) The SSS'17 name tag is eligible for a complimentary admission to the peace memorial museum near the symposium venue during 08:30 - 18:00 from November 2nd to 4th, which is courtesy of Hiroshima city.
- 6) No parking lots are reserved for SSS'17.