T E C H N I C A L P R O G R A M

WEDNESDAY, AUGUST 29

Wednesday, August 29, 9:30–11:20
White Hall

Opening Ceremony, ALCOSP'07 and PSYCO'07 Joint Plenary Session I
Chair: S. Veres (*UK*)

9:45–10:30
Historical, Generic and Current Challenges of Adaptive Control
B. D. O. Anderson (*Australian National University; National ICT Australia*)

10:35–11:20
Optimal Periodic Motions of Two-mass Systems in Resistive Media
F. L. Chernousko (*Institute for Problems in Mechanics of RAS, Russia*)

11:20–11:45 — Coffee Break

Wednesday, August 29, 11:45–13:20
White Hall

ALCOSP'07 and PSYCO'07 Joint Plenary Session II
Chair: A. Kurzhanski (*Russia*)

11:45–12:30
Adaptive Control of Partial Differential Equations
M. Krstic (*University of California at San Diego, USA*)

12:35–13:20
Can We Make a Robot Ballerina Perform a Pirouette? Orbital Stabilization of Periodic Motions of Underactuated Mechanical Systems
A. Shiriaev (*Umeå University, Sweden; Norwegian University of Science and Technology, Norway*)

13:20–15:00 — Lunch

Wednesday, August 29, **15:00–17:00**
White Hall

Session ALCOSP–WeP1 Modelling Technique for Adaptive Control Design (*invited*)
Organizer and Chair: S. Masuda (*Japan*)

15:00–15:20
An Identification by Adapting the Fictitious Controller to Data
O. Kaneko, M. Miyachi (*Osaka University, Japan*),
T. Fujii (*Fukui University of Technology, Japan*)

15:20–15:40
Modeling and Compensating Input Distortion in MIMO Systems via Blind Deconvolution
J. Even, K. Sugimoto (*Nara Institute of Science and Technology, Japan*)

15:40–16:00
Bias-Compensated Adaptive Observer for a Continuous-time Model Estimation
K. Ikeda, **Y. Mogami, T. Shimomura** (*The University of Tokushima, Japan*)

16:00–16:20
Closed-Loop Identification Based on MIMO Feedback Error Learning
B. Alali, K. Hirata, K. Sugimoto (*Nara Institute of Science and Technology, Japan*)

16:20–16:40
Design of a Data-driven Performance-adaptive PID Controller
T. Kono, T. Yamamoto, T. Hinamoto (*Hiroshima University, Japan*)
S. L. Shah (*University of Canada, Canada*)

16:40–17:00
Moving Horizon Simultaneous Estimation of Process Gain and Disturbances for an Oxygen Converter Gas Recovery Process Model
S. Masuda (*Tokyo Metropolitan University, Japan*),
A. Fujimori, H. Nishida (*Fuji Electric Systems Co., Japan*),
C. Nakazawa, T. Matsui (*Fuji Electric Advanced Technology Co., Japan*),
Y. Fukuyama (*Fuji Electric Systems Co., Japan*)

17:00–17:20 — Coffee Break

Wednesday, August 29, **15:00–17:00**
Blue Hall

Session ALCOSP–WeP2. Model Reference Adaptive Control
Co-chairs: E. Panteley (*France*)**, S. D. Zemlyakov** (*Russia*)

15:00–15:20
Decentralized Model Reference Adaptive Precise Control of Complex Objects
S. D. Zemlyakov, V. Yu. Rutkovsky, V. M. Glumov, V. M. Sukhanov (*V.A. Trapeznikov Institute of Control Science, RAS, Russia*)

15:20–15:40
Necessary and sufficient conditions for stability of MRAC systems
A. Loría E. Panteley (*CNRS, LSS-Supelec, France*)

15:40–16:00
A New Approach to MRAC Problem with Disturbance Rejection
A. Bobtsov, A. Pyrkin (*St. Petersburg State University of Information Technologies Mechanics and Optics*, *Russia*)

16:00–16:20
Auto-Tuning Method of Expanded PID Control for MIMO Systems
K. Tamura, H. Ohmori (*Keio University, Japan*)

16:20–16:40
Robustness Analysis of a Model-Reference Adaptive Voltage Controller With Respect to No-Load Voltage Disturbance in Power Systems
G. Fusco, M. Russo (*Università degli Studi di Cassino*, *Italy*)

16:40–17:00
Adaptive Output-feedback Servocompensator Design Using High-gain Scaling
P. Krishnamurthy, F. Khorrami (*Polytechnic University, Six Metrotech Center, USA*)

17:00–17:20 — Coffee

Wednesday, August 29, **17:00–18:00**
Dancing Hall

Poster Session
Moderator: M. Ananyevskiy

Closed-loop Identification Properties in a Generic Two-degree of Freedom Control System
Cs. Bányász, L. Keviczky (*Computer and Automation Research Institute, Control Engineering Research Group, Hungarian Academy of Sciences, Hungary*)

Bounded Adaptive Stabilization
I. V. Burkov (*St. Petersburg State Polytechnical University, Russia*)

Maximal Correlation Applied to the Statistical Linearization: An Analysis and Approaches
K. Chernyshov (*V.A. Trapeznikov Institute of Control Sciences, RAS, Russia*)

Suboptimal State Estimation for Uncertain Multisensor Discrete-time Linear Stochastic Systems
T. Deepak, G. Shevlyakov, K. Kim, V. Shin (*Gwangju Institute of Science and Technology, Republic of Korea*)

Adaptive Control of a Continuous Stirred Tank Reactor by Two Feedback Controllers
P. Dostál, F. Gazdoš, V. Bobál, J. Vojtěšek (*Tomas Bata University in Zlín, Czech Republic*)

MIMO Adaptive Output Feedback Sliding Mode Control with Parallel Feedforward Compensator for Linear Systems
K. Eguchi, Z. Iwai, I. Mizumoto (*Kumamoto University, Japan*)**,**
T. Funasako, M. Kumon (*Kyushu University, Japan*)

The Adaptive Approach to Active Fault Tolerance Maintenance of Automatic Control Systems
O. Gavrilenko, A. Kulik, O. Reznikova (*National Aerospace University "Kharkiv Aviation Institute", Ukraine*)

Learning a Controller for a Coupled Drives Apparatus Using VRFT Strategy
F. Gazdoš, P. Dostál (*Tomas Bata University in Zlín, Czech Republic*)

Adaptive Control Strategy for Active Magnetic Bearings
F. Gürleyen, Ç. Bahadir (*Istanbul Technical University, Turkey*)

Adaptive Control for Attenuating Vibrations Using Nonuniform Sampling
J. Jugo, I. Arredondo (*F. Ciencia y Tecnología (UPV/EHU) Campus Leioa, Spain*)

Equivalence-motivated Non-linear Recursive Estimation
M. Kárný, J. Andrýsek (*Institute of Information Theory and Automation Academy of Sciences of the Czech Republic*)

Complexity and Level Logical Description of Classes for Pattern Recognition Problems
T. M. Kosovskaya (*St. Petersburg Institute of Informatics and Automatization, Russia*)

Periodic Control of Circadian Rhythms in Drosophila Based on Speed Gradient Algorithm
H. Maezono, H. Ohmori (*Keio University, Japan*)

Discrete-time Adaptive Control for Continuous-time Systems Using *N*-delay Limiting-zero Model and its Application to a DD Servo System
N. Mizuno, T. Minamihama, T. Asai (*Nagoya Institute of Technology, Japan*)

Multiestimation Scheme for Adaptive Control of Three Tank System
P. Navrátil, V. Bobál (*Tomas Bata University in Zlín, Czech Republic*)

Neural Networks for Parameter Identification of Servo-Drives of the Flying Device
V. M. Ponyatsky (*Instrument Design Bureau, Russia*),
E. N. Nadezhdin (*Tula Artillery Engineering Institute, Russia*)

Analysis of Rain Effects on Ultrasonic Propagation
L. A. Rentería, J. P. Oria, P. Agüero, M. Fernández (*University of Cantabria, Spain*)

Remote Process Control Using MATLAB
M. Sysel, I. Pomykacz (*Tomas Bata University in Zlín, Czech Republic*)

THURSDAY, AUGUST 30

Thursday, August 30, 9:00–11:00
White Hall

Session ALCOSP–ThA1. Identification and Learning
Co-chairs: P. Dostál (*Czech Republic*), **D. H. Owens** (*UK*)

9:00–9:20
Identification of Frequency of Biased Harmonic Signal
S. Aranovskiy, A. Bobtsov, A. Kremlev, N. Nikolaev (*St. Petersburg State University of Information Technologies Mechanics and Optics*, *Russia*),
O. Slita (*Baltic State Technical University, Russia*)

9:20–9:40
Experimentally Verified Robustness Properties of a Class of Model Inverse Iterative Learning Control Algorithms
J. J. Hätönen, D. H. Owens (*University of Sheffield, UK*),
J. D. Ratcliffe, P. L. Lewin, E. Rogers (*University of Southampton, UK*)

9:40–10:00
Robust Gradient-based Iterative Learning Control
D. H. Owens, J. Hätönen, S. Daley (*University of Sheffield, UK*)

10:00–10:20
Constructing Stable Recursive Schemes for Estimating Parameters of Stochastic Systems
K. Chernyshov, E. Jharko (*V.A. Trapeznikov Institute of Control Sciences, RAS, Russia*)

11:00–11:20 — Coffee Break

Thursday, August 30, 9:00–11:00
Blue Hall

Session ALCOSP–ThA2. Applications in Mechanical Systems
Co-chairs: A. Sano (*Japan*), **Ye. I. Somov** (*Russia*)

9:00–9:20
Frequency Domain Iterative Feedforward/Feedback Tuning for MIMO Active Noise and Vibration Control
J. Luo, S. Veres (*University of Southampton, UK*)

9:20–9:40
Adaptive Payload and Dynamic Friction Compensation in Robotic Systems
L. Márton (*Budapest University of Technology and Economics, Hungary; Sapientia Hungarian University of Transylvania, Romania*),
B. Lantos (*Budapest University of Technology and Economics, Hungary*)

9:40–10:00
Adaptive Semi-active Control of Suspension System with MR Damper
T. Mori, I. Nilkhamhang, A. Sano (*Keio University, Japan*)

10:00–10:20
Piezoelectric Actuator Based Adaptive Vibration Control of Flexible Arm
A. Inoue, M. Deng (*Okayama University, Japan*)

10:20–10:40
Guidance, Onboard Signal Processing and Robust Control of Agile Flexible Remote Sensing Spacecraft
Ye. I. Somov, S. A. Butyrin (*Samara Scientific Center, RAS, Russia; State Research & Production Rocket-Space Center "TsSKB-Progress", FKA, Russia*),
S. Ye. Somov (*Samara State Aerospace University, Russia*)

10:40–11:00
Real-time Visual Servoing Control of a Four-rotor Rotorcraft
H. Romero (*HEUDIASyC Centre de Recherches Royallieu, France*),
S. Salazar (*Instituto de Investigaciones Eléctricas Reforma, Mexico*),
R. Lozano (*HEUDIASyC Centre de Recherches Royallieu, France*),
R. Benosman (*LISIF, France*)

11:00–11:20 — Coffee Break

Thursday, August 30, 11:20–13:20
White Hall

Session ALCOSP–ThM1. Passification-based Adaptive and Robust Control (*invited*)
Organizers and Co-chairs: D. Peaucelle (*France*)**, A. L. Fradkov** (*Russia*)

11:20–11:40
Synthesis of Robust Discrete-time Systems Based on Comparison with Stochastic Model
P. V. Pakshin (*Nizhny Novgorod State Technical University at Arzamas,* Russia),
S. G. Soloviev (*N.I. Lobachevsky State University of Nizhny Novgorod*, *Russia*)

11:40–12:00
LMI Conditions for Robust Adaptive Control of MIMO LTI Systems
D. Peaucelle (*LAAS-CNRS, France*),
A. L. Fradkov (*Institute for Problems of Mechanical Engineering of RAS, Russia*)

12:00–12:20
A Randomized Method for Solving Semidefinite Programs
B. T. Polyak, P. S. Shcherbakov (*V.A. Trapeznikov Institute of Control Science, RAS, Russia*)

12:20–12:40
Speed-gradient Adaptive High-gain Observers for Synchronization of Chaotic Systems
A. Loría, E. Panteley (*CNRS, LSS-Supelec, France*)**,**
A. Zavala (*CNRS, LSS-Supelec, France; Instituto Potosino de Investigación Científica y Tecnológica, Mexico*)
12:40–13:00
Algorithmic and Software Implementation of Anisotropy-based Analysis and Controller Design Problems
I. G. Vladimirov (*The University of Queensland, Australia*)*,*
A. P. Kurdyukov, M. M. Tchaikovsky (*V.A. Trapeznikov Institute of Control Science, RAS, Russia*)

13:00–13:20
Adaptive Parameter Identification for Simplified 3D-Motion Model of 'LAAS Helicopter Benchmark'
S. Le Gac, D. Peaucelle (*LAAS-CNRS, France*)**,**
B. Andrievsky (*Institute for Problems of Mechanical Engineering of RAS, Russia*)

13:20–15:00 — Lunch

Thursday, August 30, 11:20–13:20
Blue Hall

Session ALCOSP–ThM2. New Approaches in Adaptation and Learning
Co-chairs: M. Karny (*Czech Republic***), S. M. Veres** (*UK*)

11:20–11:40
Cooperative Decision Making without Facilitator
M. Kárný, J. Kracík, T. V. Guy (*Institute of Information Theory and Automation Academy of Sciences of the Czech Republic*)

11:40–12:00
Adaptation and Learning in an Autonomous Physical Agent Architecture
S. M. Veres (*University of Southampton, UK*),
A. G. Veres (*SysBrain Ltd, UK*)

12:00–12:20
Adaptive Model Tracking with Mitigated Passivity Conditions
I. Barkana (*Kulicke & Soffa Industries, Inc., USA*)

12:20–12:40
Adaptive Output Regulation of Nonlinear Systems Described by Multiple Linear Models
M. Bando*,* **A. Ichikawa** (*Kyoto University,* Japan)

12:40–13:00
Adaptive Control for the Systems with Hysteresis and Uncertainties
X. Chen (*Shibaura Institute of Technology, Japan*)

13:00–13:20
Output Adaptive Control for Plants Using Time Delay in Output Signal Based on the Modified Algorithm of Adaptation of the High Order
I. B. Furtat, A. M. Tsykunov (*Astrakhan State Technical University, Russia*)

13:20–15:00 — Lunch

Thursday, August 30, 15:00-16:35
White Hall

ALCOSP'07 Plenary Session
Chair: K. Furuta (*Japan*)

15:00–15:45
Adaptive Control via Finitely Convergent Algorithms
V. A. Bondarko, V. A. Yakubovich (*St. Petersburg State University, Russia*)

15:50–16:35
Towards Applied Nonlinear Adaptive Control
A. Astolfi (*Imperial College London, UK; Università di Roma "Tor Vergata", Italy*)

16:35–16:50 — Coffee Break

Thursday, August 30, 16:50–18:50
White Hall

Session ALCOSP–ThP1. Simple Adaptive Control (*invited*)
Organizers and Co-chairs: I. Barkana (*USA*), **A. L. Fradkov** (*Russia*)

16:50–17:30
Simple Adaptive Control – A Stable Direct Model Reference Adaptive Control Methodology – Brief Survey
I. Barkana (*Kulicke & Soffa Industries, Inc., USA*)

17:30–17:50
PFC Design Realizing Output Feedback Exponential Passivity for Exponentially Stable Non-linear Systems
I. Mizumoto, S. Ohishi, Z. Iwai (*Kumamoto University, Japan*)

17:50–18:10
Adaptive Output Control of Linear Time-varying Systems
A. A. Bobtsov, A. G. Nagovitsina (*St. Petersburg State University of Information Technologies Mechanics and Optics*, *Russia*)

18:10–18:30
Passification-Based Adaptive Control with Implicit Reference Model
A. L. Fradkov, B. Andrievsky (*Institute for Problems of Mechanical Engineering of RAS, Russia*)

18:30–18:50
Simplified Adaptive Control with Guaranteed H_∞ Performance
R. Ben Yamin, I. Yaesh (*I.M.I, Advanced Systems Division, Israel*),
U. Shaked (*Tel-Aviv University, Israel*)

Thursday, August 30, 16:50–18:50
Blue Hall

Session ALCOSP–ThP2. Robust Systems
Co-chairs: P. Apkarian (*France*), **P. S. Shcherbakov** (*Russia*)

16:50–17:10
Nonsmooth Structured Control Design
P. Apkarian (*ONERA-CERT, Centre d'études et de recherche de Toulouse, France*),
V. Bompart (*ONERA, France*),
D. Noll (*Université Paul Sabatier, France*)

17:10–17:30
A "Worst Case" Uncertainty Selection within a Probabilistic Criterion Control Problem Statement
K. Chernyshov (*V.A. Trapeznikov Institute of Control Sciences, RAS, Russia*)

17:30–17:50
Data-based l_1 Optimal Robust Synthesis for the First Order Plant
V. Sokolov (*Komi Scientific Center, RAS, Russia*)

17:50–18:10
Fixed-order Controller Design for SISO Systems Using Monte Carlo Technique
Ya. I. Petrikevich, B. T. Polyak, P. S. Shcherbakov (*V.A. Trapeznikov Institute of Control Sciences, RAS, Russia*)

18:10–18:40
Minimax *R*-stage Strategy for the Multi-armed Bandit Problem
A. V. Kolnogorov, S. V. Melnikova (*Novgorod State University, Russia*)

18:40–19:00
D-robust Control by Uncertain Objects
V. N. Afanasyev (*Moscow Institute of Electronics and Mathematicians, Russia*)

FRIDAY, AUGUST 31

Friday, August 31, 9:00–11:00
White Hall

Session ALCOSP–FrA1. Neural Networks (*invited*)
Organizer and Chair: O. A. Stepanov (*Russia*)

9:00–9:20
Neural Network Augmentation of Attitude Estimation Using Navigation Satellite Signal Phase
R. Katoch (*Centre for Airborne Systems, India*),
P. R. Mahapatra (*Indian Institute of Science, India*)

9:20–9:40
The Comparison of the Monte-Carlo Method and Neural Networks Algorithms in Nonlinear Estimation Problems
O. A. Stepanov (*CS&RI Elektropribor, Russia*),
O. S. Amosov (*Komsomolsk-on-Amur State Technical University, Russia*)

9:40–10:00
Adaptive Stabilization of Non-minimum Phase Nonlinear Systems Using Neural Networks
S. M. Hoseini, M. Farrokhi (*Iran University of Science and Technology*, *Iran*)

10:00–10:20
Neural Network Aided Adaptive Kalman Filter for GPS/INS Navigation System Design
Dah-Jing Jwo (*National Taiwan Ocean University, Taiwan*),
Jyh-Jeng Chen (*Quanta Computer Inc., Taiwan*)

11:00–11:20 — Coffee Break

Friday, August 31, 9:00–11:00
Blue Hall

Session ALCOSP–FrA2. Stochastic Systems
Co-Chairs: V. Katkovnik (*Finland*), **O. N. Granichin** (*Russia*)

9:00–9:20
Mix-distribution Modeling for Overcomplete Denoising
V. Katkovnik, A. Foi, K. Egiazarian (*Tampere University of Technology, Finland*)

9:20–9:40
Self-tuning Control Based on Generalized Minimum Variance Criterion
A. Patete, K. Furuta (*Tokyo Denki University, Japan*)
M. Tomizuka (*University of California, USA*)

9:40–10:00
The Minimax Posterior Wonham Filtering/Identification
A. V. Borisov (*Institute of Informatics Problems of the RAS, Russia*)

10:00–10:20
Semi-Recursive Kernel Estimation of Functions of Density Functionals and Their Derivatives
A. V. Kitayeva, G. M. Koshkin (*International Management Institute, Russia*)

10:20–10:40
SPSA-based Adaptive Control: Accuracy of Estimates
A. T. Vakhitov, O. N. Granichin (*Saint Petersburg State University, Russia*)

10:40–11:00
Recursive Subspace Identification of Hammerstein Models Based on LS-SVM
L. Bako (*Ecole des Mines de Douai; Gėnie Informatique et Signal, France*),
G. Mercère (*Laboratoire d'Automatique et d'Informatique Industrielle, France*),
S. Lecoeuche (*Ecole des Mines de Douai; Gėnie Informatique et Signal, France*),
M. Lovera (*Politecnico di Milano, Italy*)

11:00–11:20 — Coffee Break

Friday, August 31, 11:20–13:20
White Hall

Session ALCOSP–FrM1. Hybrid and Networked Systems
Co-chairs: B. Lang (*Germany*), **B. Andrievsky** (*Russia*)

11:20–11:40
Model-based Predictive Adaptive Delta Modulation
A. Al-korj, S. M. Veres (*University of Southampton, UK*)

11:40–12:00
Variable Sampling Rate in Networked Control System
Da Xu, Chih-Chung Chen (*Technical University Munich, Germany*)
D. Obradovic, B. Lang (*Siemens AG, Germany*)

12:00–12:20
Adaptively Tunable Coding Procedure for Transmission of Position Information over the Limited-band Communication Channel
B. Andrievsky (*Institute for Problems of Mechanical Engineering of RAS, Russia*)

12:20–12:40
Improving the Intersample Behavior by Using a Multiestimation Scheme with Multirate Sampling
A. Bilbao-Guillerna, M. de la Sen, S. Alonso-Quesada (*University of the Basque Country, Spain*)

13:20–15:00 — Lunch

Friday, August 31, 11:20–13:20
Blue Hall

Session ALCOSP–FrM2. Applications and CAD
Co-chairs: V. Bobál (*Czech Republic*), **V. Sima** (*Romania*)

11:20–11:40
Physiological Events Identification Based on Electric Measurements, and Rescaled-range R/S Analysis
I. A. Novikov (*D. I. Mendeleyev Institute for Metrology, Russia*),
D. V. Elkin (*I. I. Polzunov Scientific and Development Association on Research and Design of Power Equipment, Russia*)

11:40–12:00
Adaptive Estimation of Periodic Noise Energy Distributions for Speech Enhancement
Th. Weickert, U. Kiencke (*Universität Karlsruhe (TH), Germany*)

12:00–12:20
Sound Source Classification Using Support Vector Machine
M. Kumon, Y. Ito, T. Nakashima, T. Shimoda, M. Ishitobi (*Kumamoto University, Japan*)

12:20–12:40
Environment for CAD and Verification of Self-tuning Controllers
M. Kubalcik, V. Bobál, M. Maca (*Tomas Bata University in Zlín, Czech Republic*)

12:40–13:00
Fast System Identification and Model Reduction Solvers
V. Sima (*National Institute for Research & Development in Informatics*, *Romania*),
P. Benner (*TU Chemnitz*, *Germany*)

13:00–13:20
Adaptive Dual Control of Nonlinear Liquid System
V. Bobál, P. Chalupa, P. Dostál (*Tomas Bata University in Zlín, Czech Republic*)

13:20–15:00 — Lunch

Friday, August 31, 15:00–16:35
White Hall

ALCOSP'07 and PSYCO'07 Joint Plenary Session III
Chair: M. Gitsels (*Germany*)

15:00–15:45
Impulse Control Synthesis, Fast Controls and Hybrid System Modeling
A. B. Kurzhanski (*Moscow State University, Russia; University of California at Berkeley, USA*)

15:50–16:35
From Wireless Networks to Sensor Networks and Onward to Networked Embedded Control
P. Kumar (*University of Illinois at Urbana-Champagne, USA*)

Friday, August 31, 16:40–17:50
White Hall

Panel Discussion: "Control and Signal Processing: What are Industry Needs?"
Moderator: Martin Gitsels (*Siemens Company, Germany*)

Panelists:
Itzhak Barkana (*Kulicke & Soffa Industries, Inc.*)
Yevgeny Somov (*State Research & Production Rocket-Space Center TsSKB-Progress, FKA, Russia*)
Oleg Stepanov (*CS&RI Elektropribor, Russia*)

17:50–18:10 — Closing Ceremony