

# The IDAACS 2003 Workshop's Technical Program

*Sunday, September 07, 2003*

03:00 pm            **Registration**

07:00 pm            **Welcome cocktail**

*Monday, September 08, 2003*

08:00 - 09:00 am   **Registration and Coffee**

09:00 - 10:00 am   **Opening** (*Green Room*)

10:00 - 11:40 am

**M11            Advanced Instrumentation and Data Acquisition Systems**

(*Oral*)            *Brown Room*

Chairmen:   *Fernando Lopez Pena*, Universidade da Coruña, Spain  
              *Vladimir Haasz*, Technical University in Prague, Czech  
              Republic

1. Self-Calibration of Ultrasonic Transducers in an Intelligent Data Acquisition System  
*Chris Papageorgiou, Theodore Laopoulos, Greece*
2. Testing of High-Resolution / Middle-Speed A/D Converters and Modules - Problems and Ways of their Solving  
*Vladimir Haasz, Czech Republic*
3. Intelligent Measurement Multiplex System  
*O. Ivakhiv, T. Dominyuk, B. Stadnyk, Ukraine*
4. First Ukrainian Multi-channel Magnetocardiograph: Assembling and Testing  
*Igor Voytovych, Mykola Budnyk, Yuriy Minov, Larisa Artemenko, Evgen Paslavsky, Pavlo Shpilyovy, Ukraine*
5. Developing an Environment for Embedded Software Energy Estimation  
*S. Nikolaidis, A. Chatzigeorgiou, T. Laopoulos, Greece*

10:00 - 11:40 am

**M12          Advanced and High Performance Computing Systems**

*(Oral)          Green Room*

Chairmen: *Robert E. Hiromoto*, University of Idaho, USA  
*Pierre M. Fiorini*, University of Southern Maine, USA

1. Availability Versus Performance  
*Pierre M. Fiorini, Lester Lipsky, USA*
2. Code Compression for the Embedded ARM/THUMB Processor  
*Xianhong Xu, Simon Jones, UK*
3. A Proposal for a Sort-Middle Cluster Rendering System  
*Jorge Luis Williams, Robert E. Hiromoto, USA*
4. Bluetooth Indoor Channel Simulation  
*J.K. Pollard, N.P. Kontakos, UK*
5. Intelligent Solving Machines on Modern Parallel Architectures  
*Valeriy N. Koval, Volodymyr V. Savyak, Ukraine*

11:40 - 12:00 am    **Coffee Break**

12:00 - 01:40 pm

**M21          Artificial Intelligence for Advanced Data Acquisition and  
Computing Systems**

*(Oral)*

*Brown Room*

Chairmen: *Akira Imada*, Brest State Technical University, Belarus  
*Orest Ivakhiv*, National University "Lviv Polytechnic",  
Ukraine

1. A Genetic Based Technique for the Determination of Power System  
Topological Observability  
*S. Vázquez-Rodríguez, R. J. Duro, Spain*
2. A New Hybrid Heuristic Technique for Solving Job-shop Scheduling Problem  
*Cheng-Fa Tsai, Feng-Cheng Lin, Taiwan*
3. Decision Concepts  
*Miki Sirola, Finland*
4. Investigation of a Hybrid Algorithm for Decision Tree Generation  
*Yuri Kornienko, Arkady Borisov, Latvia*
5. Conceptual Decision Model  
*Miki Sirola, Finland*

12:00 - 01:40 pm

**M22**            **Advanced Mathematical Methods for Data Acquisition and High Performance Computing**  
(Oral)

*Green Room*

Chairmen: *Vladimir A. Oleshchuk*, Agder University College,  
Norway  
*Olena Mul*, Ternopil Academy of National Economy,  
Ukraine

1. An Approach for Determining the Periodicity of Regulation Work of Risk Technical Systems  
*Nikolay Petrov*, Bulgaria
2. Ad-Hoc Sensor Networks: Modeling, Specification and Verification  
*Vladimir A. Oleshchuk*, Norway
3. Evaluation of Reliability Characteristics for Ramified Computing Systems  
*Andriy Sydor*, Ukraine
4. Wave Type Solutions for Hyperbolic Conservation Laws in a Chromatography Reactor  
*Galina Panayotova, Nikolay Petrov*, Bulgaria
5. Incomplete Cholesky Factorization in Fixed Memory with Flexible Drop-Tolerance Strategy  
*Sergey Saukh*, Ukraine

01:40 - 02:40 pm    **Lunch**

02:40 - 04:20 pm

**M31**            **Artificial Neural Networks for Advanced Data Acquisition and Computing Systems**  
(Oral)

*Brown Room*

Chairmen: *Richard J. Duro*, Universidade da Coruna, Italy  
*Vladimir Golovko*, Brest State Technical University,  
Belarus

1. Estimation of the Lyapunov Spectrum from One-Dimensional Observations Using Neural Networks  
*Vladimir Golovko, Nikolay Chumerin*, Belarus
2. Reconstructing Irregularly Sampled Laser Doppler Velocimetry Signals by Using Artificial Neural Networks  
*F. López Peña, F. Bellas, R. J. Duro, M. Sánchez Simón*, Spain

3. A Mesa Rather Than a Peak? – A Fitness Landscape on Weight Space of an Application Using Spiking Neurons Under Rate Coding  
*Akira Imada, Belarus*
4. Adaptive Selection of Neural Networks for a Committee Decision  
*A. Lipnickas, Lithuania, J. Korbicz, Lithuania*
5. On-line Linear System Parameter Estimation Using the Neo-Fuzzy-Neuron Algorithm  
*André S. Bacelar, Eurico B. de Souza Filho, Francisco A. S. Neves, Régis P. Landim, Brazil*

02:40 - 04:20 pm

**M32 Homeland & Cyber Security**

(Oral) *Green Room*

Chairmen: *George Markowsky, University of Maine, USA*  
*Natalia Kussul, Space Research Institute NASU-NSAU, Ukraine*

1. Intelligent Multi-Agent Information Security System  
*Natalia Kussul, Andrey Shelestov, Anton Sidorenko, Vladimir Pasechnik, Sergey Skakun, Yuri Veremeyenko, Natalia Levchenko, Ukraine*
2. Smart License Plate Recognition System Based on Image Processing Using Neural Network  
*V. Koval, V. Turchenko, V. Kochan, A. Sachenko, Ukraine, G. Markowsky, USA*
3. Distributed Traceroute Approach to Geographically Locating IP Devices  
*Gene Connolly, George Markowsky, USA, Anatoly Sachenko, Ukraine*
4. Investigations of the Basic Component of FCSR – Generator  
*V. P. Shyrochin, I. V. Vasylytsov, B. Z. Karpinskij, Ukraine*
5. Transfer of Aerospace Technologies for Ensuring Safety of Industrial and Civil Objects  
*Vladimir Kotyegov, Sergey Kutovoy, Ukraine*

04:20 - 04:30 pm **Coffee Break**

04:30 - 05:30 pm

**MP1           Advanced Distributed and Virtual Instrumentation**

(Poster)       *Balcony*

Chairman: *Mykola Karpinskyy*, Ternopil Academy of National  
Economy, Ukraine

1. Development of Computer Input Device for Patients with Tetraplegia  
*Yoshio Tanimoto, Yasuhiko Rokumyo, Kazunari Furusawa, Akihiro Tokuhira,  
Hideki Yamamoto, Japan*
2. Time Analysis of Virtual Spectrum Analyser  
*Wieslaw Winiiecki, Piotr Bilski, Poland*
3. Advanced DAQ Board for Frequency-Time Parameters of Electric Signals  
*Nikolay V. Kirianaki, Sergey Y. Yurish, Ukraine*
4. Model-Based Method to Measure Thermal Comfort in Buildings  
*Konstantyn Spasokukotskiy, Hans-Rolf Trankler, Germany, Kateryna  
Lukasheva, Ukraine*
5. Implementation of the USB Interface in the Instrumentation for Sound and  
Vibration Measurements and Analysis  
*Andrzej Podgórski, Rafał Nedwidek, Michał Pochmara, Poland*
6. On a Possibility of Determination of Underground Pipeline Corrosion State by  
Contactless Methods  
*Liudmyla Dykmarova, Vitalij Nichoga, Petro Dub, Ukraine*
7. Approach to Development Metrological Software Test for Verification  
Intelligent Instrumentation  
*Roman Kochan, Ukraine*
8. HART Protocol Analyser Based in LabVIEW  
*J.M. Dias Pereira, O. Postolache, P. Silva Girão, Portugal*
9. Industrial Test of A/D Converters in LabVIEW  
*Stéphane Raze, Dominique Dallet, Phillipe Marchegay, France*
10. URAN-2 Radio Telescope-Based System for Researches Into Gravity  
Variations  
*Sergey Matvienko, Ukraine*

04:30 - 05:30 pm

**MP2           Artificial Intelligence and Applications**

(Poster)       *Hall*

Chairman: *Francisco A. S. Neves*, Universidade Federal de  
Pernambuco, Brazil

1. Meta-Textual Models of Relational Knowledgebase  
*Sergey Rippa, Ukraine*
2. Multilayer Neural Networks Training Methodic  
*Vladimir Golovko, Nikolaj Maniakov, Leonid Makhnist, Belarus*
3. Application, Acceleration and Extension of Marching Cube Algorithm in 3-D Radiation Treatment Plan System  
*Nuo Chen, Dali Zhang, Jiecheng Xie, China*
4. Fuzzy Clusterization For Logical Function System Minimization  
*R. A. Melnyk, A. A. Alexeyev, Ukraine*
5. The Component Method of Scene Analysis and Object Recognition  
*Aleksander Vechur, Aleksey Chayka, Yuriy Chemodakov, Ukraine*
6. Data Mining a High-Speed Bursty Stream on a Limited Buffer in Pseudo-Stationary States  
*Sam Sengupta, Bruno Andriamanalimanana, Stuart W. Card, Kaustav Das, Rachita Sharma, Anitha Gunasekaran, USA*
7. Towards Data Mining Temporal Patterns for Anomaly Intrusion Detection Systems  
*Sam Sengupta, Bruno Andriamanalimanana, Stuart W. Card, Pradnya Kadam, Saket Ranwadkar, Kaustav Das, Sagar Parikh, USA*
8. Testing of Microprocessor Devices on the Basis of Artificial Neural Networks with Changeable Parameters  
*Lokazyuk Viktor, Cheshun Viktor, Chornenkiy Vitaliy, Ukraine*
9. The Algorithms of Quasi-Optimal Picture Areas Matching  
*A.A. Doudkin, R.Kh. Sadykhov, M.E. Vatin, Belarus*
10. Predetermined Movement of Mobile Robot Using Neural Networks  
*Oleh Adamiv, Vasyl Koval, Iryna Turchenko, Ukraine*
11. Approaches to Construction for Intellectual Test Systems of Computing Means  
*Viktor Lokazuk, Oksana Pomorova, Ukraine*
12. Time Series Prediction using ICA Algorithms  
*Juan M. Górriz, Carlos G. Puntonet, Moisés Salmerón, E.W. Lang, Spain*

05:30 pm

Lviv City Tour

**Tuesday, September 09, 2003**

08:00 - 08:30 am **Registration**

08:30 - 10:10 am

**T11 Artificial Intelligence for Advanced Data Acquisition and Computing Systems**  
(Oral)

*Brown Room*

Chairmen: *Miki Sirola*, Helsinki University of Technology, Finland  
*Roman A. Melnyk*, National University "Lviv Polytechnics", Ukraine

1. Computer-Aided Inspection of Some Design Rules of Integrated Circuit Layers  
*A.A. Doudkin, D.A. Vershok*, Belarus
2. A Tool for the Automatic Design of Electronic Control Systems and Circuits for Manufacturing Plants  
*A. Lamas, R. J. Duro*, Spain
3. The System of Video-data Processing for the Autonomous Control of Mobile Robot  
*Denis Vershok, Rauf Sadykhov, Andrei Selikhanovich*, Belarus, *Klaus Schilling, Hubert Roth*, Germany
4. Fuzzy Conditional Statements- An Alternative Approach for Data Representation  
*Germano Lambert-Torres, Luiz Eduardo Borges da Silva*, Brazil
5. A Classification Method of Fuzzy Association Rules  
*Jianjiang Lu, Baowen Xu, Hongji Yang*, China

08:30 - 10:10 am

**T12 Modelling and Data Analysis**  
(Oral)

*Green Room*

Chairmen: *A. Vande Wouwer*, Faculte Polytechnique de Mons, Belgium  
*Mykola Dyvak*, Ternopil Academy of National Economy, Ukraine

1. Interval Calibration Model of Multisensor System  
*Alexander Voschinin, Nikita Skibitski*, Russia
2. Modeling of Expenses Caused by Enterprises Economic Activity Influence on Social-Ecological Environment by Means of Computer System  
*Lyudmyla Bartkova, Mykola Dyvak*, Ukraine

3. Stochastic Approximation Techniques Applied to Parameter Estimation in a Biological Model  
*C. Renotte, A. Vande Wouwer, Belgium*
4. Improved Model Order Estimation for Nonlinear Dynamic Systems  
*László Sragner, Gábor Horváth, Hungary*
5. Identification and Forecasting of Sharp Changes in Economical Systems by Tracking of Local Lyapunov Exponents  
*Dmitry Malyuk, Georgy Boyarintsev, Belarus*

10:10 - 10:30 am **Coffee Break**

10:30 - 12:10 am

**T21 Intelligent Instrumentation in Distributed and Virtual Systems**

(Oral) *Brown Room*

Chairmen: *Wieslaw Winiiecki, Warsaw University of Technology, Poland*  
*Alexander S. Sovlukov, Institute of Control Sciences, Russia*

1. An Advanced and Distributed Control Architecture Based on Intelligent Agents and Neural Networks  
*Juan V. Capella, Alberto Bonastre, Rafael Ors, Spain*
2. Networking Paradigm for Distributed Sensor Networks  
*S. Sitharama Iyengar, Qishi Wu, Nageswara S.V. Rao, USA*
3. The New Prospects of Distributed Measurement Systems Using Java™ 2 Micro Edition Mobile Phone  
*T. Knyziak, W. Winiiecki, Poland*
4. Improving Sensitivity and Selectivity of SnO<sub>2</sub> Gas Sensors by Temperature Variation  
*J. Zakrzewski, W. Domanski, Poland, P. Chaitas, Th. Laopoulos, Greece*
5. Experimental Dynamics of Electromechanical Pulse Energy Conversion Systems  
*Y. V. Kolokolov, S. L. Koschinsky, V. V. Bagrov, Russia*

10:30 - 12:10 am

**T22 Industrial Signal and Image Processing**

(Oral) *Green Room*

Chairmen: *John K. Pollard, University College London, UK*



*Victor Backmutsky, Holon Academic Institute of  
Technology, Israel*

1. Data Acquisition in Power Systems and Its Digital Processing for Measurement and Automation  
*L. Asnin, V. Backmutsky, Israel*
2. An Instrument for Classification and Characterization of Disturbances on QAM Signals  
*L. De Vito, S. Rapuano, G. Truglia, Italy*
3. Inherent Signal Preprocessing in the Line CCD Sensor  
*Luděk Kejzlar, Jan Fischer, Czech Republic*
4. Neural Network Based Microcalcification Detection in a Mammographic CAD System  
*László Lasztovicza, Béla Pataki, Nóra Székely, Norbert Tóth, Hungary*
5. Removal of Impulse Bursts in Satellite Images  
*O. V. Tsymbal, V. V. Lukin, Ukraine, P. T. Koivisto, V. P. Melnik, Finland*

12:10 - 12:20 am **Coffee Break**

12:20 - 01:20 pm

**TP1            Advanced Mathematical Methods and Signal Processing**

*(Poster)        Balcony*

Chairman: *Nicolay Petrov, Prof. Assen Zlatarov University –  
Bourgas, Bulgaria*

1. DSP-Algorithms for Cardiac Symptoms Investigations  
*Ivan Kalchev, Bulgaria*
2. Estimation of Higher Order Harmonics in Electric Power Systems and their Compensation by Situation Control Method  
*A. M. Prokhorenkov, V. M. Remezovskiy, A. S. Sovlukov, Russia*
3. Some Informational Methodologies for Risk Evaluation in Large Heterogeneous Technical Systems  
*Yuri Belov, Alexander Makarenko, Yuri Samoilenko, Vitaliy Yatsenko, Ukraine*
4. DSP Based Measuring Line-scan CCD Camera  
*Jan Fischer, Tomas Radil, Czech Republic*
5. An Influence of Parameter Variation on Model-Based Emergency Forecasting in the Pulse System  
*Yury V. Kolokolov, Anna V. Monovskaya, Russia*

6. Interval Methods of Assigning the Nominal Tolerances and Choosing Elements  
*Galina Shilo, Nikolay Gaponenko, Ukraine*
7. Optimization Search Process in Database of Learning System  
*Yuriy Rashkevych, Dmytro Peleshko, Mykola Pasyeka, Ukraine*
8. Method of Randomization and its Application for Adaptive Data Compression  
*Igor Lazarovich, Yaroslav Nikolaychuk, Ukraine*
9. Time-of-flight Measurement in Ultrasound Transducer by Means of Wavelet Networks  
*Domenico Grimaldi, Italy*

12:20 - 01:20 pm

**TP2 Information Computing Systems**

(Poster) *Hall*

Chairman: *Alexander A. Doudkin*, National Academy of Sciences of Belarus, Belarus

1. “Green” Multi-layered “Smart” Memory Management System  
*Andriy Kot, Nikos Chrisochoides, USA*
2. Virtual Computational Chemistry Laboratory: Internet Tool for Remote Modeling and Design in Chemical Problems  
*Igor Tetko, Vsevolod Tanchuk, Ukraine, Germany, Alexander Makarenko, Ukraine*
3. Multi-Channel Magnetocardiograph: Control and Software  
*Igor Voytovych, Myhailo Primin, Valery Vasyliiev, Pavlo Sutkovyy, Mykola Budnyk, Igor Nedayvoda, Anatoly Rusanov, Tetyana Ryzhenko, Ukraine*
4. CAPE Applications in Special Glasses Manufacturing  
*Francesco Longo, Giovanni Mirabelli, Enrico Papoff, Italy*
5. High Performance Fault Simulation for Digital Systems  
*Vladimir Hahanov, Gennadiy Krivoulya, Irina Hahanova, Olga Melnikova, Vladimir Obrizan, Ukraine*
6. Planning of Interactive Information Retrieval by Means of Reinforcement Learning  
*Vitaliy Vitsentiy, Anatoly Sachenko, Ukraine, Amanda Spink, USA*
7. Nanotechnological Quatronum Eye-Processors on the Basis of New Generation of Data Conversion  
*Volodymyr P. Kozhemyako, Leonid I. Timchenko, Andriy A. Yarovy, Mutasim Abu-Shaban, Olha V. Asmolova, Ukraine*

8. Compression of the Technological Data in Terms of Galois Basic Functions  
*Nataliya Yatskiv, Ukraine*
9. Perspective Architecture and Components of Computer Networks  
*Yaroslav Nykolaychuk, Nazar Krutskevych, Oleg Zastavniy, Taras Grinchyshyn, Ukraine*
10. Distributed Scheduling of Independent Tasks on a Grid  
*L. Grandinetti, G. Ghiani, F. Guerriero, M. Mancini, Italy*
11. Adaptive Real-Time Publish-Subscribe Messaging for Distributed Monitoring Systems  
*Qiang Wang, Jun-gang Xu, Hong-an Wang and Guo-zhong Dai, China*
12. Geophysical Parameters-based Space System of Earth Remote Diagnosis  
*A. V. Agarkov, A. L. Makarov, S. A. Matvienko, A. V. Meleshko, Ukraine*

01:20 - 03:00 pm **Lunch**

03:00 pm **Departure to Olesko Castle from Dnister Hotel**

04:30 pm **Excursion in Olesko Castle**

06:00 pm **Workshop Dinner in Olesko Castle**

08:00 pm **Concert and Wine**

09:00 pm **Back trip to Lviv**

**Wednesday, September 10, 2003**

08:00 - 08:30 am **Registration**

08:30 - 10:10 am

**W11 Intelligent Instrumentation in Distributed and Virtual Systems**  
(Oral) *Brown Room*

Chairmen: *Theodore Laopoulos, Aristotle University of Thessaloniki, Greece*  
*Yury V. Kolokolov, State Technical University of Orel, Russia*

1. Methodology for Distributed Designing of Distributed Virtual Instruments  
*Wieslaw Winiiecki, Poland*

2. Intelligent Control of the Lift Model  
*P. Cernys, V. Kubilius, V. Macerauskas, K. Ratkevicius, Lithuania*
3. Methodology of Virtual Instruments' Time Analysis  
*Wieslaw Winiiecki, Poland*
4. Approach to Improvement the Network Capable Application Processor  
Compatible with IEEE 1451 Standard  
*Volodymyr Kochan, Roman Kochan, Anatoly Sachenko, Ukraine,  
Kang Lee, USA*
5. Modern Data Acquisition System in the Road Weather  
Stations Monitoring  
*Michał Karkowski, Wiesław Winiiecki, Poland*

08:30 - 10:10 am

**W12 Information Computing Systems for Education and Commercial  
(Oral) Applications**

*Green Room*

Chairmen: *Peter J. A. Reusch, University of Applied Sciences  
Dortmund, Germany  
Masami Iwase, Tokyo Denki University Hatoyama,  
Japan*

1. Development of a Teaching Material System for the Fundamental Mathematics  
Education for Information, Computers and Systems Engineering  
*Masami Iwase, Shoshiro Hatakeyama, Katsuhisa Furuta, Japan*
2. Classification of Products and Services to Support Business Process  
Engineering and e-Commerce  
*Peter J. A. Reusch, Pascal Reusch, Germany*
3. Measured Data Recording Compliant to 21 CFR 11 – Blessing or Curse?  
*Dieter H. Schmidt, Germany*
4. A Collaborative Platform for Heterogeneous CSCW Systems: Case Study of  
Academic Applications  
*Rahat Iqbal, Anne James, Richard Gatward, UK*
5. Intelligent Software Design: Challenges and Solutions  
*Yefim Kats, USA*

10:10 - 10:20 am **Coffee Break**

10:20 - 11:20 am

**WP1 Homeland and Cyber Security**

(Poster) *Balcony*

Chairman: *Igor V. Vasylytov*, Ternopil Academy of National Economy, Ukraine

1. Analysis of Requirements and Peculiarities of Design of Electromagnetic Field Sensors when Using Them for People Life and Health Protection  
*Eugeniusz Grudziński, Krzysztof Rozwalka*, Poland, *Vitalij Nichoga, Petro Dub*, Ukraine
2. A Scalable Inferencing System for Civilian Terrorism Intelligence  
*Thomas J. Wheeler, Karpagavalli Vel*, USA
3. Users Behavior Model in Tasks of Computer Systems Security Analysis  
*V. P. Shyrochin, V.E. Mukhin*, Ukraine, *Hu Zheng Bing*, China
4. Modern Approach to Protection of Computer Systems and Networks  
*Valerij Dudykevych, Andrian Piskozub, Igor Lomnytskyj*, Ukraine
5. Reliability of RSA Algorithm and Its Computational Complexity  
*Mykola Karpinskyy, Yaroslav Kinakh*, Ukraine

10:20 - 11:20 am

**WP2 Advanced Computing Techniques in Economics and Education**

(Poster) *Hall*

Chairman: *Sergey Rippa*, Academy of a State Tax Service of Ukraine, Ukraine

1. Modeling of Dynamic Harmonious Development of Economic Systems  
*I. S. Tkachenko, O. R. Ishchuk*, Ukraine
2. Projects Selection Model in Venture Investments  
*Roman Pasichnyk, Bogdan Maslyjak*, Ukraine
3. Project Management Using in Distance Education  
*Taras Lendyuk, Sergey Rippa*, Ukraine, *Edward Strime*, USA
4. Computer Support of Business-Processes and Multi-Perspective Management as the Basis of Business Operation  
*Lyudmyla Honchar, Taras Lendyuk*, Ukraine
5. Implementation of the Information Technologies on Educational Process in National University of Uzbekistan  
*Sergey Garnov, Abdugapur Karimkhodjaev, Tursunali Norboev*, Uzbekistan
6. Software Processes for the Development of Electronic Commerce Systems  
*Volker Gruhn*, Germany, *Mykhaylo Dubinskyy*, Ukraine

11:20 - 12:00 am **Round table + Closing**

12:00 - 01:00 pm **Lunch**

01:30 – 05:30 pm **Excursion to the Museum of Folk Architecture and Peasant  
Homes**

07:00 pm **Lviv opera**