



**The Second IEEE International Workshop on
Intelligent Data Acquisition and Advanced
Computing Systems:
Technology and Applications**

Final Program



IDAACS'2003

**Lviv, Ukraine
September 8 - 10, 2003**

ORGANISED BY
INSTITUTE OF COMPUTER INFORMATION TECHNOLOGIES,
TERNOPII ACADEMY OF NATIONAL ECONOMY

IN COOPERATION WITH
INSTITUTE OF COMPUTER TECHNOLOGIES, AUTOMATION AND METROLOGY,
NATIONAL UNIVERSITY "LVIV POLYTECHNIC"

SPONSORED BY
Ternopil Academy of National Economy
Science and Technology Center in Ukraine
Ministry of Education and Science of Ukraine
Post Pensional Bank "Aval"



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Workshop Co-Chairmen



Anatoly Sachenko,
The Institute of Computer
Information Technologies,
Ternopil Academy of National
Economy
Ternopil, Ukraine



Bohdan Stadnyk,
The Institute of Computer
Technologies, Automation and
Metrology,
National University "Lviv
Polytechnic"
Lviv, Ukraine

Program Committee Co-Chairmen



Lucio Grandinetti,
Parallel Computing Laboratory,
University of Calabria
Italy



Fernando Lopes Pena,
Group of Autonomous Systems,
University of La Coruna
Spain

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Yuriy Rudavsky, Ukraine
Ivan Sergienko, Ukraine

Yaroslav Yatskiv, Ukraine
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Workshop Co-Chairmen:

Anatoly Sachenko, Ukraine

Bohdan Stadnyk, Ukraine

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Local organizing committee:

Volodymyr Turchenko, Ukraine (Deputy of Chairman)

Volodymyr Kochan, Ukraine (Deputy of Chairman)

Oleh Adamiv, Ukraine
Andriy Bortnyk, Ukraine
Pavlo Bykovyy, Ukraine
Borys Kharchuk, Ukraine
Orest Ivakhiv, Ukraine
Roman Kochan, Ukraine

Vasyl Koval, Ukraine
Taras Lendyuk, Ukraine
Olena Mul, Ukraine
Vasyl Pavlus, Ukraine
Yuriy Pigovsky, Ukraine
Vitaliy Vitsentiy, Ukraine

Message from Chairmen

It's our pleasure to invite all of you to participate in the Second IEEE International Workshop on Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications (IDAACS), held in the House of Scientists, Lviv, Ukraine.

The IDAACS Workshop is organized by the Institute of Computer Information Technologies of the Ternopil Academy of National Economy in cooperation with the Institute of Computer Technologies, Automation and Metrology of the National University "Lviv Polytechnic". It is supported by the Ternopil Academy of National Economy, the Science and Technology Center in Ukraine, the Ministry of Education and Science of Ukraine, and the Post Pensional Bank "Aval". Technical cooperation and support is also provided by the Aristotle University of Thessaloniki, Greece, the IEEE Instrumentation and Measurement Society (IMS), the IEEE/IMS/Technical Committee on Education for Instrumentation and Measurement (EdIM), the University of Maine, U.S., the "Nova Center" Company, Lviv, Ukraine, the State International Committee of Science and Culture of the National Academy of Sciences of Ukraine, and the Ukrainian State Research Institute of Metrology, Measurement and Control Systems "Systema".

The main goal of the IDAACS'2003 is to provide a forum for researchers and engineers to present high quality reports on the state-of-the-art Theory, Technology and Applications of Intelligent Data Acquisition and Advanced Computer Systems currently used in scientific research, industry and business. Recent rapid developments in these areas have resulted in more intelligent, sensitive, and accurate methods for data acquisition and processing in manufacturing, environmental monitoring, homeland security, medical and bio systems, and laboratories.

A long term goal of IDAACS'2003 is to promote scientific contacts between research teams and scientists from different countries allowing them to characterize a common and articulated research activity aiming to establish future joint research collaborations. The achievement of this type of activities is

being proved to be very successful after the first IDAACS Workshop, which was held in 2001 in Foros, Crimea, Ukraine.

The Program Committee has accepted 112 papers by authors coming from different countries of Europe, America and Asia. We would like to thank very much all the reviewers of the submitted papers -their names are listed on the proceedings-, their contribution to the quality and success of this Workshop is hereby grateful acknowledged. As a result of the selection process 60 papers have been chosen and scheduled for oral presentations and 52 papers more for poster presentations, they are organized in 12 oral and 6 poster sessions. A selection of these papers will be proposed for publication in a Special Issue of the International Journal of Computer Standards & Interfaces, in the IEEE Transactions on Instrumentation & Measurement, Sensors and Systems (Datchiki i Sistemy in Russian), in Computing, and in other international journals.

We would like to mention that the Workshop is going to be held in Lviv, an old city very well known as a historical and cultural center that was inscribed in the UNESCO list of World Heritage Cities in 1998. There are many attractive places in Lviv, including the Old Market Square, called Rynok Square, the City Hall surrounded by a fascinating variety of wonderful mansions with renaissance and baroque facades, a lot of original churches, the Lychakiv Cemetery, the Opera Theatre, the Jewish Heritage, many nice Galleries and Museums, as well as several beautiful parks. Some magnificent castles are situated in Lviv region as, for instance, the Olesko castle, the Zolochiv castle, and the Pidgirtsy castle. Also a number of mountain skiing places are placed in the Carpathians near Lviv, as Slavsko, Tysovets and some others.

We welcome all the participants to the IEEE Second International Workshop on Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications. We believe that this Workshop will be a successful and fruitful event for all of you and will contribute to further developments in this field.

Have a good time in Lviv !

Workshop Timetable

Sunday, September 7th

05:00 pm	Registration
07:00 pm	Welcome Cocktail

Monday, September 8th

08:00 am	Registration and Coffee	
09:00 am	Opening (<i>Green Room</i>)	
10:00 am	<i>Brown Room</i> Session M11 – Advanced Instrumentation and Data Acquisition Systems	<i>Green Room</i> Session M12 – Advanced and High Performance Computing Systems
11:40 am	Coffee Break	
12:00 am	<i>Brown Room</i> Session M21 – Artificial Intelligence for Advanced Data Acquisition and Computing Systems	<i>Green Room</i> Session M22 – Advanced Mathematical Methods for Data Acquisition and High Performance Computing
01:40 pm	Lunch	
02:40 pm	<i>Brown Room</i> Session M31 – Artificial Neural Networks for Advanced Data Acquisition and Computing Systems	<i>Green Room</i> Session M32 – Homeland & Cyber Security
04:20 pm	Coffee Break	
04:30 pm	<i>Balcony</i> Poster session MP1 – Advanced Distributed and Virtual Instrumentation	<i>Hall</i> Poster session MP2 – Artificial Intelligence and Applications
05:30 pm	Lviv City Tour	

Tuesday, September 9th

08:00 am	Registration	
08:30 am	<i>Brown Room</i> Session T11 – Artificial Intelligence for Advanced Data Acquisition and Computing Systems	<i>Green Room</i> Session T12 – Modelling and Data Analysis
10:10 am	Coffee Break	
10:30 am	<i>Brown Room</i> Session T21 – Intelligent Instrumentation in Distributed and Virtual Systems	<i>Green Room</i> Session T22 – Industrial Signal and Image Processing

12:10 am	Coffee Break	
12:20 am	<i>Balcony</i> Poster session TP1 – Advanced Mathematical Methods and Signal Processing	<i>Hall</i> Poster session TP2 – Information Computing Systems
01:20 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 10th

08:00 am	Registration	
08:30 am	<i>Brown Room</i> Session W11 – Intelligent Instrumentation in Distributed and Virtual Systems	<i>Green Room</i> Session W12 – Information Computing Systems for Education and Commercial Applications
10:10 am	Coffee Break	
10:20 am	<i>Balcony</i> Poster session WP1 – Homeland and Cyber Security	<i>Hall</i> Poster session WP2 – Advanced Computing Techniques in Economics and Education
11:20 am	Round Table + Closing	
12:00 am	Lunch	
01:30 pm	Excursion to the Museum of Folk Architecture and Peasant Homes	
07:00 pm	Lviv Opera	

Workshop Technical Program

Sunday, September 7th, 2003

05:00 pm **Registration**

07:00 pm **Welcome cocktail**

Monday, September 8th, 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. Decision Concepts
Miki Sirola, Finland
3. The Component Method of Scene Analysis and Object Recognition
Aleksander Vechur, Aleksey Chayka, Yuriy Chemodakov, Ukraine
4. Fuzzy Clusterization For Logical Function System Minimization
R. A. Melnyk, A. A. Alexeyev, Ukraine

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, 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, Poland
5. Multilayer Neural Networks Training Methodic
Vladimir Golovko, Nikolaj Maniakov, Leonid Makhnist, Belarus

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, Anatoly Sachenko, George Markowsky, USA
4. Investigations of the Basic Component of FCSR – Generator
V. P. Shyrochin, I. V. Vasyltsov, 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 Tokuhiko, Hideki Yamamoto, Japan
2. Time Analysis of Virtual Spectrum Analyser
Wieslaw Winiiecki, Piotr Bilski, Poland
3. Modern Data Acquisition System in the Road Weather Stations Monitoring
Michał Karkowski, Wiesław Winiiecki, Poland
4. Model-Based Method to Measure Thermal Comfort in Buildings
Konstantyn Spasokukotskiy, Hans-Rolf Trankler, Germany, Kateryna Lukasheva, Ukraine
5. An Advanced and Distributed Control Architecture Based on Intelligent Agents and Neural Networks
Juan V. Capella, Alberto Bonastre, Rafael Ors, Spain
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: *Volodymyr Turchenko*, Ternopil Academy of National Economy, Ukraine

1. Meta-Textual Models of Relational Knowledgebase
Sergey Rippa, Ukraine
2. 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
3. Application, Acceleration and Extension of Marching Cube Algorithm in 3-D Radiation Treatment Plan System
Nuo Chen, Dali Zhang, Jiecheng Xie, China
4. Investigation of a Hybrid Algorithm for Decision Tree Generation
Yuri Kornienko, Arkady Borisov, Latvia
5. A New Hybrid Heuristic Technique for Solving Job-shop Scheduling Problem
Cheng-Fa Tsai, Feng-Cheng Lin, Taiwan
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. Vatkin, Belarus
10. Fuzzy Conditional Statements- An Alternative Approach for Data Representation
Germano Lambert-Torres, Luiz Eduardo Borges da Silva, Brazil

11. A Classification Method of Fuzzy Association Rules

Jianjiang Lu, Baowen Xu, Hongji Yang, China

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 9th, 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. Predetermined Movement of Mobile Robot Using Neural Networks
Oleh Adamiv, Vasyl Koval, Iryna Turchenko, Ukraine
5. Approaches to Construction for Intellectual Test Systems of Computing Means
Viktor Lokazuk, Oksana Pomorova, Ukraine

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. Implementation of the USB Interface in the Instrumentation for Sound and Vibration Measurements and Analysis
Andrzej Podgórski, Rafał Nedwidek, Michał Pochmara, Poland
2. Multi-Channel Magnetocardiograph: Control and Software
Igor Voytovych, Myhailo Primin, Valery Vasyliev, Pavlo Sutkovyy,

*Mykola Budnyk, Igor Nedayvoda, Anatoly Rusanov,
Tetyana Ryzhenko, Ukraine*

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 SnO₂ 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. Networking Paradigm for Distributed Sensor Networks
S. Sitharama Iyengar, Qishi Wu, Nageswara S.V. Rao, USA
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, Ukraine, Amanda Spink, USA, Anatoly Sachenko, Ukraine
7. Nanotechnological Quantronum Eye-Processors on the Basis of New Generation of Data Conversion
Volodymyr P. Kozhemyako, Leonid I. Timchenko, Andriy A. Yarovyy, 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 10th, 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 Winiacki, 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 Winiacki, Poland
4. Approach to Improvement the Network Capable Application Processor Compatible with IEEE 1451 Standard
Volodymyr Kochan, Ukraine, *Kang Lee*, USA,
Roman Kochan, Anatoly Sachenko, Ukraine
5. Advanced DAQ Board for Frequency-Time Parameters of Electric Signals
Nikolay V. Kirianaki, Sergey Y. Yurish, Ukraine

08:30 - 10:10 am

W12 **Information Computing Systems for Education and
(Oral) Commercial 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. Software Processes for the Development of Electronic Commerce Systems
Volker Gruhn, Germany, *Mykhaylo Dubinskyy*, Ukraine

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

10:20 - 11:20 am

WP1 **Homeland and Cyber Security**

(Poster) *Balcony*

Chairman: *Igor V. Vasyltsov*, 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 Pisko Zub, Igor Lomnytskyj, Ukraine
5. Reliability of RSA Algorithm and Its Computational Complexity
Mykola Karpinsky, 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. Intelligent Software Design: Challenges and Solutions
Yefim Kats, USA

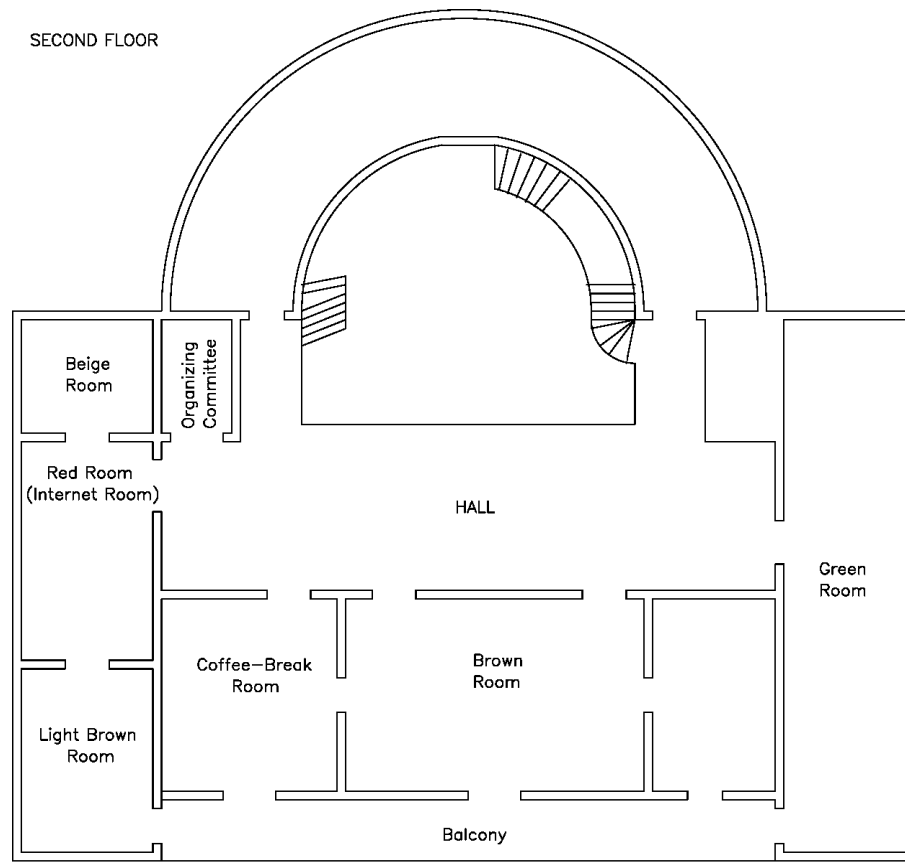
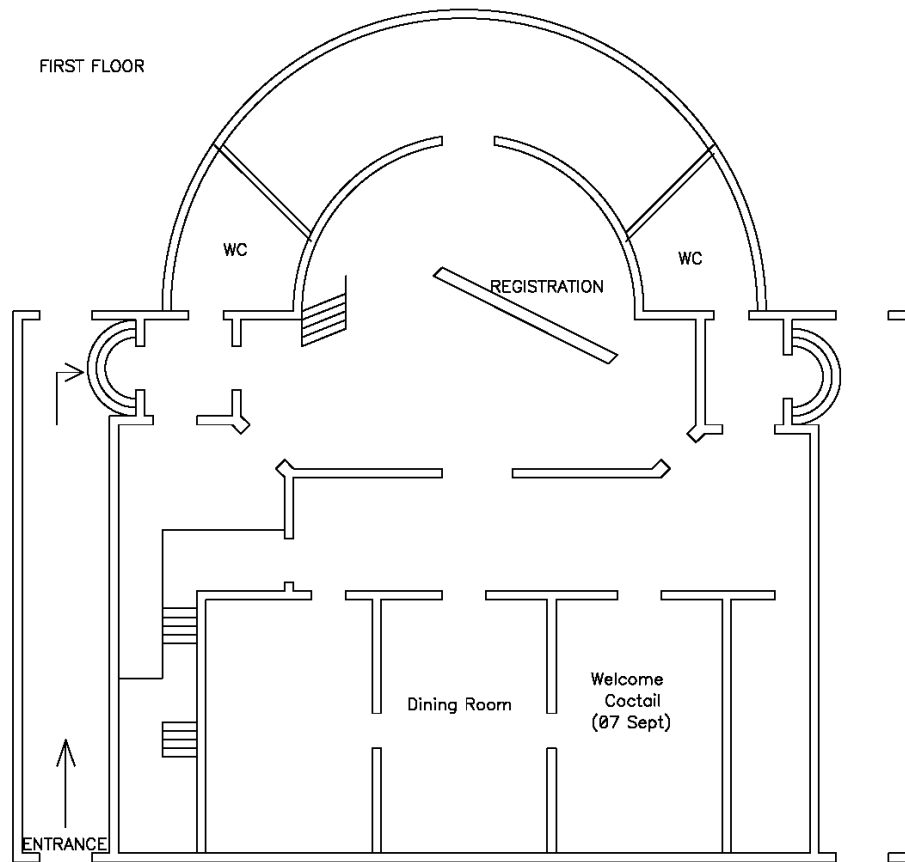
11:20 - 12:00 am **Round table + Closing**

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**

Scheme of the Lviv's Scientists House



How to get to Lviv

- **By air**

Lviv has an airport servicing both domestic and international flights. The city has air connections with Warsaw (Warsaw Frederic Chopin Airport - WAW), Toronto, Manchester, Frankfurt-am-Main, Vienna, and several airports in Russia, Caucasus and Middle Asia. The most frequent services are daily flights to and from Warsaw and Kyiv; on twice weekly on Tuesdays and Fridays to and from Frankfurt and Vienna. For more information please contact the Airport Information Bureau by telephone on +380-322 692.112.

Getting from the airport. The best way to get to the city centre is to order a radio taxi by telephone on arrival (39 34 34 or 39 33 33), which will be much cheaper than taking one of the cabs standing in front of the airport. The journey to the city centre will cost some UAH 15.00 (\$US 3.00).

Alternatively by transport you could take a No.9 trolley-bus (UAH 0.5) or any of the taxi-buses (UAH 0.80) called “marshrutka” that leave from the stop opposite the airport entrance – all of them go to the city centre too.

- **By train**

There is a Railway Booking Office in the centre of Lviv at 20, Hnatyuka St. Train Schedule 005, 748-20-68. The best way to get to the city centre is to order a radio taxi on arrival by telephone (39 34 34 or 39 33 33), which will be much cheaper than taking one of the cabs standing in front of the railway station. The journey to the centre will cost about UAH 15.00 (\$US 3.00). Alternatively by public transport you could also take a No.9 or No.1 tram (UAH 0.5) or taxi-buses, called “marshrutka”, No.66, 67 or 68 (UAH 0.80) that leave from the stop opposite the railway station entrance. They all go to the city centre and tickets are sold on board.

- **By bus**

Lviv has regular long distance bus communication with Poland, Hungary, Germany, Great Britain, Italy, Greece, France, Russia and Moldova. The City Bus Terminal is at 189, Stryiska St., telephone: 0322 63-24-73 or 63-25-31. Getting from the Bust Terminal: Bus "marshrutka" (taxi van) No. 71 or trolley bus No.5 will take you from the bus station to the city centre.

- **By car**

The main international motorways to Lviv are E-40 (Shehyni – Lviv) and E-573 (Chop – Lviv). The speed limit in populated areas is 60 km/hour. In other areas it is 80 km/hour for buses, 60 km/hour for lorries transporting people, 130 km/hour for all other vehicles on motorways and 110 km/hour for all other vehicles on other roads. At filling stations in Ukraine the price for fuel can fluctuate by up to 15% depending the area where the filling station located. However the average prices per litre are: diesel – \$US 0.35, petrol (95-98 Octane) – \$US 0.40.

Registration

Registration will take place on the first floor of the Lviv's Scientists House, which located on city centre, Lystopadovogo Chynu Str., 6 (see a scheme on page 23).

The Registration Desk is open on

- Sunday, September 07 from 5:00 pm to 7:00 pm
- Monday, September 08 from 8:00 am to 12:00 am
- Tuesday, September 09 from 8:00 am to 12:00 am
- Wednesday, September 10 from 8:00 am to 12:00 am

Internet Access

Each participant of the IDAACS'2003 Workshop will have free Internet access capability. There are 8 computers connected to the Internet for your need, located in Red Room (see p. 23). Web pages related to the IDAACS'2003 Workshop will be available locally on each computer. The computers will have all necessary Internet-software: Telnet, Secure Telnet (ssh) and Web Browsers, therefore you can connect to your home servers and remotely read your messages as well as send new ones.

About Lviv

History. The first records about Lviv were made in the Halychyna and Volyn chronicles. Lviv as a town-fortress was founded by King Danylo, the sovereign of Halychyna and Volyn state, and was named after his son Lev (Leo). In 1356 the town of Lviv acquired Magdeburg Law's privileges of local self-government, granted by Kazimierz, King of Poland. In 1939 in accordance with the Ribbentrop-Molotov Pact, Lviv together with Western-Ukrainian lands was annexed to the Soviet Union. 24 August 1991 Ukraine was proclaimed an independent state. In 1998 Lviv was inscribed on the UNESCO list of World Heritage Cities.

The Old City. A walking tour starting in the Old Market Square called Rynok Square, built according to the prescriptions of the Magdeburg Law established here in 14th century. In the centre is the rather heavy and dominating City Hall and this is surrounded by a fascinating variety of beautiful mansions with their renaissance and baroque facades, some of them still bearing traces of Ukrainian folk architecture. An original Armenian church and the ruins of the elegant Golden Rosa Synagogue are of particular interest and the city is rich in art galleries and museums. Finally, after a browse round the many antique shops and the open air art and craft market called "Vernisage", you can relax at one of the numerous candle lit cafes spreading the welcome aroma of fresh coffee.

Lychakiv Cemetery. The Lychakiv Cemetery was the first public cemetery in Lviv, founded in 1786 after the prohibition by Austrian

authorities of further burials in ancient churchyards within the city limits. A large number of Ukrainians prominent in the fields of learning and politics have also found their final resting place here.

Galleries and Museums

“Dzyga” Art-cultural Center. Exhibitions of modern and classic art, Gallery of Antiques and Paintings, “Antique” Cafe. Opening hours 10 a.m. – 10 p.m. every day, address 35, Virmens’ka St.

The Museum of Folk Architecture and Peasant Homes. The museum is within the picturesque Shevchenko Hai in the open air. It includes a number of miniature villages containing 15-20 architectural examples. Opening hours 10 a.m. – 6 p.m. except Monday, address 1, Chernecha Gora St.

The Pharmacy Museum. Its collection traces the history of pharmacy from ancient times to the present and includes exhibits from the old Lviv pharmacies and some from other Western Ukrainian cities and towns. In the basement one can taste medicinal “iron wine”. Opening hours 10 a.m.–5 p.m. every day, address 2, Drukars’ka St.

The Museum of History of Religion. Exhibits and displays are of unique cultural, artistic and historical value. The Lviv Museum of History of Religion is in the Dominican Church and Monastery. Exhibits and displays are of unique cultural, artistic and historical value. Opening hours 10 a.m. – 5 p.m. except Thursday, address 1, Stavropihiys’ka St.

Furniture and Porcelain Museum. The Furniture and Porcelain Museum includes Ukrainian and European furniture, textile, metal, porcelain and pottery from the Renaissance to the early 20th century. Opening hours 10 a.m. – 5 p.m. except Monday and Tuesday, address 10, Rynok Sq.

The Museum of Ethnography and Crafts. The Museum of Ethnography and Crafts is one of the most specialized at its kind in Europe and one of the richest artistic depositories of decorative-applied art of Ukraine. A permanent exhibition covers the subjects of material and spiritual culture of our people: household occupations, folk artistic trades, interiors of folk dwelling of different ethnographic regions of Ukraine. Opening hours 9 a.m. – 7 p.m. except Monday and Tuesday, address 15, Svobody Av.

The National Museum in Lviv. This is one of the most significant museums of Ukraine, containing masterpieces of European artists: Pinsel, Polejowski, Filevych and others. Icon-paintings are the substance of the collection. The museum halls in Svobody Avenue house a permanent exhibition of old Ukrainian art and the art of the 19th-early 20th century. Opening hours 10:00 – 17:00 except Tue and Wed; 10:00 - 17:00 except Fri, address 42, Drahomanova St., 20, Svobody Av.

The Lviv Historic Museum. The museum, based in three buildings on Rynok Square, includes more than 270,000 exhibits covering the history of

Western Ukraine and her inhabitants from prehistoric times down to the present. Opening hours 10 a.m. – 6 p.m. except Wednesday, address 4, 6, 24, Rynok Sq.

Parks

Castle Hill Park. The High Castle is the name of the highest hill, which rises above Lviv. This site was chosen by Halicia princes to build a fortress and today at the summit (413 m above sea level) there is a observation terrace from which one can get a panoramic view of the old city. Address: Uzhhorods'ka St.

Znesinnya Park. Mountainous landscape, rare vegetation, picturesque forest paths, ponds and streams naturally meet the conditions of the best active rest. Shevchenko Hai is a part of regional landscape Znesinnya Park. Address Lychakivs'ka St., M. Kryvonosa St.

Stryis'ky Park. Stryis'ky Park is the most beautiful and the largest recreational park in Lviv and is a marvelous place for quite relaxation. Features include inhabited by swans, a glazed green-house with tropical plants, a modern restaurant and cinema. Address Parkova St., Stryis'ka St.

Bohdan Khmel'nits'ky Central Park. Bohdan Khmel'nits'ky Central Park is one of Lviv's most modern parks with attractions for people of all ages and tastes. One may enjoy visiting the room of crooked mirrors, rise in the sky by Ferris wheel to see a wonderful view of Lviv, drive a car with your child or simply have the rest under the trees.

Theatres

Lviv Opera and Ballet Theatre. The building intrigues with its sculptural and picturesque richness. The Opera Theatre is the former Grand Opera House, now Solomia Krushelnitska State Academic Theatre of Opera and Ballet stands at the northern end of Ploshcha Svobody (Liberty avenue). Erected between 1897 and 1900 by Zigmunt Gorgolevsky, in the Viennese neo-Renaissance style. The theatre can seat over 1000 and has virtually no "blind" seats. Address: 28, Svobody Av.

The Maria Zankovetska Drama Theatre. This theatre is the national theatre with national repertoire. Address: 1, Lesya Ukrainka St.

The Les Kurbas Theatre. This is one of Ukraine's most critically acclaimed theatres – both in Ukraine and abroad.

Ukrainian Children's Theatre. Ukraine's oldest theatre for children and youth founded in 1920 in Kharkiv, the former capital of Ukraine.

Olesko Castle

The castle stands on the top of 50 m hill. The plan of the castle is oval. One can see the wall and a moat under it. There is a swamp around the castle's

