

# 6<sup>th</sup> International Symposium of Hungarian Researchers

on

## COMPUTATIONAL INTELLIGENCE

### *PROGRAM*

## Magyar Kutatók 6. Nemzetközi Szimpóziuma

2005  
NOVEMBER 18-19  
BUDAPEST



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## VENUE

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The Symposium will be held in Budapest Tech  
On Friday: Room 103, Doberdó út 6, 1034 Budapest  
On Saturday: Rooms F7 and F8, Bécsi út 96/B

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## REGISTRATION

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The participants are guests of Budapest Tech; all the authors are welcome without registration fee.

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## PROCEEDINGS

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Each accepted paper reaching us in time will be published in the volume of proceedings that will be distributed at the registration desk.

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## OPENING HOURS OF THE REGISTRATION DESK

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The registration desk will be open during the symposium.

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## LANGUAGE

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The official languages of the Symposium are English and Hungarian. All the camera-ready manuscripts should be submitted in English, the presentations can be made either in English or in Hungarian.

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## LUNCH AND RECEPTION

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All the participants are cordially invited by Budapest Tech for lunches and the evening reception on Friday.

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## PRESENTATION

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Presentations can be made by using OHP or data projector. All authors are kindly asked to take their presentation on CD or USB drive. To present the paper it is not allowed to use own computer. Conference room is supplied with OHP and data projector with PC.

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## SMOKING

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Please, be so kind to your lungs and your colleagues by not smoking in the building and social events of the symposium.

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## SYMPOSIUM SECRETARIAT

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# TECHNICAL PROGRAM

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November 18, 2005, Friday

**9:00 – 9:15 OPENING CEREMONY**

**Room 103 (Doberdó út)**

Chairman: *Prof. Dr. habil Imre J. Rudas, PhD*  
Budapest Tech, Hungary

**9:00 OPENING ADDRESS OF THE CHAIRMAN**

**9:05 OFFICIAL OPENING OF THE SYMPOSIUM**

*Prof. Dr. Annamária R. Várkonyi-Kóczy, PhD*  
Budapest University of Technology and Economics, Hungary

**9:15 – 10:30 MORNING SESSION I**

Chairman: *Prof. Dr. habil Imre J. Rudas, PhD*  
Budapest Tech, Hungary

**9:15 The Sign Dependent Expected Utility Functional Representations**

*Professor Endre Pap*  
University of Novi Sad, Serbia and Montenegro

**9:30 Support System for Modeling and Design of Control Systems**

*Prof. Dr. Baltazár Frankovič, Ivana Budinská, Jolana Sebestyénová, Viktor Oravec*  
Institute of Informatics, Slovak Academy of Sciences, Slovakia

**9:45 On P Colonies, a Simple Bio-Chemically Inspired Model of Computation**

*Jozef Kelemen, Alica Kelemenova*  
Silesian University, Czech Republic

**10:00 A Probabilistic View on Possibility Distributions**

*Christer Carlsson\*, Robert Fullér\*\*, Péter Majlender\**

\*IAMSR, Abo Akademi University, Finland

\*\*Eötvös Loránd University, Hungary

**10:15 Teaching and Research Problems in the Center for Intelligent Technologies (CIT) at Department of Cybernetics and AI, Faculty of EE&I, TU Košice, Slovakia**

*Peter Sinčák*  
Technical University of Košice, Slovakia

**10:30 – 10:45 COFFEE BREAK**

**10:45 – 12:00 MORNING SESSION II**

Chairman: *Professor Endre Pap*

University of Novi Sad, Serbia and Montenegro

**10:45 Kernel CMAC: an Efficient Neural Network for Classification and Regression**

*Gábor Horváth*

Budapest University of Technology and Economics, Hungary

**11:00 Genetic Algorithm with Gradient Based Tuning for Constructing Fuzzy Rules**

*Zsolt Gera, József Dombi*

University of Szeged, Hungary

**11:15 Some Aspects of Ambient Intelligence**

*George Kovács, Sándor Kopácsi*

SZTAKI, Hungary

**11:30 Fuzzy Logic Supported High Dynamic Range Image Reproduction Techniques**

*Annamária R. Várkonyi-Kóczy, András Rövid*

Budapest University of Technology and Economics, Hungary

**11:45 Stability and Sensitivity Analysis of Fuzzy Control Systems. Mechatronics Applications**

*Radu-Emil Precup, Stefan Preitl*

„Politehnica” University of Timisoara, Romania

**12:00 – 13:00 LUNCH**

**13:00 – 14:00 SPECIAL SESSION**

**Dedicated to Professor György Bárdossy on his 80<sup>th</sup> Birthday**

Special Session Organizer: *János Fodor*

Chairman: *János Fodor*

Budapest Tech, Hungary

**13:00 Application of the Fuzzy Set Theory for the Quantitative Phase Analysis of Rocks Using Thermal Analysis Applied to the Boda Siltstone Formation, Hungary**

*Mária Földvári*

Geological Institute of Hungary

- 13:15 Numerical Taxonomy  
Contribution to the History of Quantitative Nummulites Research**  
*Tibor Kecskeméti*  
Hungarian Natural History Museum
- 13:30**  
*Péter Molnár, Gyula Tungli*  
Golder Associates Hungary Ltd., Hungary
- 13:45 The Cross Product of Fuzzy Numbers and its Applications in Geology**  
*Barnabás Bede, János Fodor*  
Budapest Tech, Hungary
- 14:00 – 15:00 ANNUAL MEETING OF HUNGARIAN FUZZY ASSOCIATION**
- 15:00 – 16:30 AFTERNOON SESSION I**
- Chairman: *Annamária R. Várkonyi-Kóczy*  
Budapest University of Technology and Economics, Hungary
- 15:00 An Intelligent Wearable Computer Environment**  
*János Nacsá\*, Géza Bognár\*\**  
\* MTA SZTAKI, Hungary  
\*\* Gábor Dennis College, Hungary
- 15:15 A New Worst Case Lower Bound for the Width of Single Row Routing in the Unconstrained Two-Layer Model**  
*Balázs Drága, András Recski*  
Budapest University of Technology and Economics, Hungary
- 15:30 A Canonical Form of RT-Level FSM Controlled Data Path Descriptions for Formal Verification**  
*Péter Keresztes*  
Széchenyi István University, Hungary
- 15:45 Using Genetic Algorithms in System Identification**  
*Ecaterina Vladu*  
University of Oradea, Romania
- 16:00 Challenges of an Aspect Driven Way in Product Model Supported Robotics**  
*László Horváth\*, Imre J. Rudas\*, Gerhard Hancke\*\**  
\* Budapest Tech, Hungary  
\*\* University of Pretoria, South Africa

**16:15 FPGA Implementation Vector Control of Tandem Converter Fed Induction Machine**

*József Vásárhelyi\**, *Csaba Szabó\*\**, *Ioan Iov Incze\*\**, *Mária Imecs\*\**

\* University of Miskolc, Hungary

\*\* Technical University of Cluj-Napoca, Romania

**16:30 – 16:45 COFFEE BREAK**

**16:45 – 18:15 AFTERNOON SESSION II**

Chairman: *Peter Sinčák*

Technical University of Košice, Slovakia

**16:45 Two Feature Extraction Methods in the Construction of a Visual Feature Array**

*Barna Reskó, Zoltán Petres, Péter Baranyi*

SZTAKI, Hungary

**17:00 Concepts and Experiences of Quantum Mechanical Density Matrix Optimization**

*Gergely Dezső*

College of Nyíregyháza, and University of Szeged, Hungary

**17:15 Recognizing Unusual Behavior for Intelligent Space**

*Andor Gaudia, Péter Szemes, Béla Takarics, Péter Korondi*

Budapest University of Technology and Economics, Hungary

**17:30 Information Extraction with AI Planning**

*Csaba Dezsényi, Tadeusz Dobrowiecki, Tamás Mészáros*

Budapest University of Technology and Economics, Hungary

**17:45 Categorizing Gigabytes: Experiments on the RCV1 Corpus**

*Domonkos Tikk\**, *Zoltán Bánsághi\**, *György Biró\*\**

\* Budapest University of Technology and Economics, Hungary

\*\* Textminer Ltd, Hungary

**18:00 Set Overlap in Mining of Frequent Itemsets**

*László Kovács*

University of Miskolc, Hungary

**18:30 RECEPTION**

# November 19, 2005, Saturday

8:45 – 10:15 MORNING SESSION I A

Room F7 (Bécsi út)

Chairman: *Professor Baltazár Frankovič*

Institute of Informatics Slovak Academy of Sciences, Slovakia

- 8:45 **Aspect-Oriented Techniques in Metamodel-Based Model Transformation**  
*László Lengyel, Tihamér Levendovszky, Hassan Charaf*  
Budapest University of Technology and Economics, Hungary
- 9:00 **Architecture of Intelligent Intermodal Logistics Centres**  
*Tamás Hartványi, László T. Kóczy, Péter Németh, Lajos Tóth*  
Széchenyi István University, Hungary
- 9:15 **The Geometry of Associativity and its Applications**  
*Sándor Jenei*  
University of Pécs, Hungary
- 9:30 **The Parallel Rings Topology in Semantic Peer-to-Peer Networks**  
*Bertalan Forstner, Hassan Charaf*  
Budapest University of Technology and Economics, Hungary
- 9:45 **A Brief Survey and Comparison on Various Interpolation Based Fuzzy Reasoning Methods**  
*Zsolt Csaba Johanyák\*, Szilveszter Kovács\*\**  
\* Kecskemét College, Hungary  
\*\* University of Miskolc, Hungary
- 10:00 **Possibility Theory Based Approach to Verifying the Fuzzy Rule-Base**  
*Márta Takács, Anikó Szakál*  
Budapest Tech, Hungary

8:45 – 10:15 MORNING SESSION I B

Room F8 (Bécsi út)

Chairman: *Péter Baranyi*

SZTAKI, Hungary

- 8:45 **Mapping XML-documents into Object Model**  
*Tanja Sieber, László Kovács*  
University of Miskolc
- 9:00 **Computer Controlled Up-to-date Experimental Equipment for AC Drive Development**  
*János Jób Incze, Csaba Szabó, Mária Imecs, István Mátis, Enikő Szőke*  
Technical University of Cluj-Napoca

- 9:15**      **A Probabilistic Knowledge Base Using Annotated Bayesian Network Features**  
*Péter Antal, András Millingchoffer*  
 Budapest University of Technology and Economics, Hungary
- 9:30**      **High Dimensional Data Visualization**  
*Sándor Kromesch, Sándor Juhász*  
 Budapest University of Technology and Economics, Hungary
- 9:45**      **Analysis and Extensions of Popular Clustering Algorithms**  
*Renáta Iváncsy, Attila Babos, Csaba Legány*  
 Budapest University of Technology and Economics, Hungary
- 10:00**      **Weaving with Air Jet**  
*István Patkó*  
 Budapest Tech, Hungary
- 10:15 – 10:30**      **COFFEE BREAK**
- 10:30 – 12:00**      **MORNING SESSION II A**      **Room F7 (Bécsi út)**
- Chairman:    *Professor Stefan Preitl*  
 “Politehnica” University of Timisora, Romania
- 10:30**      **Different Aspects of Web Log Mining**  
*Renáta Iváncsy, István Vajk*  
 Budapest University of Technology and Economics, Hungary
- 10:45**      **Practical Identification Method for Striebeck Friction**  
*Lőrinc Márton, Nimród Kutasi*  
 Sapientia Hungarian University of Transylvania
- 11:00**      **Simple Geometric Approach of Identification and Control Using Floating Basis Vectors for Representation**  
*József K. Tar\*, Imre J. Rudas\*, Miklós Rontó\*\*, J. A. Tenreiro Machado\*\*\**  
 \* Budapest Tech, Hungary  
 \*\* Eötvös Loránd University, Hungary  
 \*\*\* Institute of Engineering of Porto, Portugal
- 11:15**      **Programable Arithmetic Units in the Neural Networks, The IREN Architecture**  
*Timót Hidvégi\*,\*\*, Péter Keresztes\**  
 \* Széchenyi István University, Hungary  
 \*\* Budapest Tech, Hungary



**11:30**      **New Approach for Interactive Communication Between Distant Places Using Intelligent Space**  
*Péter Szemes, Grégory Audureau, Béla Takarics, Péter Korondi*  
Budapest University of Technology and Economics, Hungary

**11:45**      **Communication Tools in E-learning Systems**  
*Marian Bučko\*, Igor Sivý\*, József Gáti\*\*, Gyula Kártyás\*\*, Ladislav Madarász\**  
\* Technical University of Košice, Slovakia  
\*\* Budapest Tech, Hungary

**10:30 – 12:00**      **MORNING SESSION II B**      **Room F8 (Bécsi út)**

Chairman:    *Szilveszter Kovács*  
University of Miskolc, Hungary

**10:30**      **Classification of Cerebral Blood Flow Oscillation**  
*Péter Somogyi\*, Balázs Benyó\*\*, Béla Paláncz\**  
\* Budapest University of Technology and Economics, Hungary  
\*\* Széchenyi István University, Hungary

**10:45**      **Dynamic System Using Conjunctive Operator**  
*József Dombi, József Dániel Dombi*  
University of Szeged, Hungary

**11:00**      **Speed Increasing by Structural Optimalization, at RISC Processors**  
*Péter Pálffy, Timót Hidvégi*  
Széchenyi István University

**11:15**      **Colour Memory Investigations on Computer**  
*Tünde Tarczali, Péter Bodrogi\**  
Budapest Tech, Hungary  
\* University of Veszprém, Hungary

**11:30**      **Designing Fuzzy Speed Controller for DC Drives and Tuning with Genetic Algorithms**  
*Ferenc Farkas, Sándor Halász, István Kádár*  
Budapest University of Technology and Economics, Hungary

**11:45**      **The Pseudooperators in Second Order Control Problems**  
*Márta Takács*  
Polytechnical Engineering College Subotica, Serbia and Montenegro

**12:00 – 13:00**      **LUNCH**

Chairman: *József Dombi*  
University of Szeged, Hungary

- 13:00**     **An Efficient Identification Protocol for Electronic Payment Systems**  
*Ottó Poszet, Stefan Vári-Kakas*  
University of Oradea, Romania
- 13:15**     **Cluster Validity Measurement Techniques**  
*Ferenc Kovács, Csaba Legány, Attila Babos*  
Budapest University of Technology and Economics, Hungary
- 13:30**     **Presentation Framework – an Environment for Editing Metamodels**  
*Gergely Mezei, Tihamér Levendovszky, Hassan Charaf*  
Budapest University of Technology and Economics, Hungary
- 13:45**     **VoIP Mobility Issues**  
*Gábor Bányász, Renáta Iváncsy*  
Budapest University of Technology and Economics, Hungary
- 14:00**     **A New Approach to the Design of Collective Behavior in Multi-Agent Systems**  
*Dániel László Kovács*  
Budapest University of Technology and Economics, Hungary
- 14:15**     **Reconfigurable Security Sensor by CCD Camera**  
*György Györök*  
Budapest Tech, Hungary

Chairman: *László Horváth*  
Budapest Tech, Hungary

- 13:00**     **Approximation with Diffusion-Neural-Network**  
*Zoltán Makó*  
Sapientia University, Romania
- 13:15**     **Contribution to Transfer Functions of Variable Structure Systems**  
*Zoltán Puklus\*, Károly Biró\*\*, István Szénásy\*, László Gyimesi\*, László Hodossy\**  
\* Széchenyi István University, Hungary  
\*\* Technical University of Cluj-Napoca, Romania
- 13:30**     **A General Fuzzy Logic Using Intervals**  
*Benedek Nagy*  
University of Debrecen, Hungary

- 13:45**      **When a Slow Device is Faster than a High Speed PC in the Intelligence Space**  
*Gyula Max*  
 Budapest University of Technology and Economics, Hungary
- 14:00**      **Hunpars: A Rule-based Sentence Parser for Hungarian**  
*Anna Babarczy\*, Bálint Gábor\*, Gábor Hamp\*, András Kárpáti\*\*, András Rung\*\*\*, István Szakadát\**  
 \* Budapest University of Technology and Economics, Hungary  
 \*\* T-Online Hungary  
 \*\*\* Linguistics Institute, Hungarian Academy of Sciences
- 14:15**      **Object Fuzzy Clustering**  
*Eva Ocelíková, Jana Výrostková*  
 Technical University of Kosice, Slovakia

**14:30-14:45 COFFEE BREAK**

**14:45 –15:45      AFTERNOON SESSION II A      Room F7 (Bécsi út)**

Chairman:    *Sándor Jenei*  
 University of Pécs, Hungary

- 14:45**      **Mathematical Model and Regulation of Non-Stationary Heat Condition**  
*Ladislav Főző, Vratislav Hladký*  
 Technical University of Košice, Slovakia
- 15:00**      **Universal Communication Component on Symbian Series60 Platform**  
*Róbert Kereskényi, Bertalan Forstner, Hassan Charaf*  
 Budapest University of Technology and Economics, Hungary
- 15:15**      **Advanced Methods of Digital Measurement and Situational Control of a Small Turbojet Engine**  
*Ladislav Madarász, Rudolf Andoga, Miloš Karas, Jozef Judičák*  
 Technical University of Kosice, Slovakia
- 15:30**      **On the Prediction Methods Using Neural Networks**  
*Sorin Vlad*  
 “Stefan cel Mare” University of Suceva, Romania

**14:45 –16:00      AFTERNOON SESSION II B      Room F8 (Bécsi út)**

Chairman:    *Domonkos Tikk*  
 Budapest University of Technology and Economics, Hungary

- 14:45**      **Flexible Platform for Neural Network Based on Data Flow Principles**  
*Liberios Vokorokos, Norbert Ádám, Anton Baláz*  
 Technical University of Košice, Slovakia

- 15:00**      **Text Categorization and Support Vector Machines**  
*István Pilászy*  
Budapest University of Technology and Economics, Hungary
- 15:15**      **Extending the Performance Models of Web Applications with Queueing Algorithm**  
*Ágnes Bogárdi-Mészöly, Tihamér Levendovszky, Hassan Charaf*  
Budapest University of Technology and Economics, Hungary
- 15:30**      **Approximation Trade-off by TP Model Transformation**  
*Zoltán Petres\*, Péter Baranyi\*, Fetah Kolonic\*\*, Alen Poljungan\*\**  
\* SZTAKI, Hungary  
\*\* University of Zagreb, Croatia
- 15:45**      **Hybrid Systems – Introduction**  
*Marek Duřa*  
Technical University of Kořice, Slovakia
- 16:00**      **CLOSING CEREMONY    Room F7 (Bécsi út)**