



Research Centre Data – Algorithms – Decision Making

**7<sup>th</sup> International Workshop on Data – Algorithms – Decision Making 2011**

November 27, 2011 – November 29, 2011

Mariánská, Krušné hory, Czech Republic

Programme chair: Martin Janžura

Organization chair: Jiří Ivánek

**PROGRAMME, 27-11-2011**

**SESSION 1** Knowledge Processing

**SESSION 2** Soft Computing and Fuzzy Modelling

**PROGRAMME, 28-11-2011**

**SESSION 3** Image Fusion

**SESSION 4** Multiple-Participant Decision-Making

**SESSION 5** Transportation Motivated Research

**SESSION 6** Decision-Making and Classification

**POSTER SESSION**

**PROGRAMME, 29-11-2011**

**SESSION 7** Multidimensional Signal Processing and Pattern Recognition

# PROGRAMME, 27-11-2011

12,30 – 14,00

Lunch

27-11-2011, Afternoon

Session 1, chairman: Radim Jiroušek

14,00 – 14,30

**Dreaming about Universal Nonmanipulative Fair Democracy**

Milan Vlach (Kyoto College of Graduate Studies for Informatics)

14,30 – 15,00

**Conditionals in Uncertain Reasoning**

Gernot D. Kleiter (University of Salzburg)

15,00 – 15,30

**Rank of Tensors of I-out-of-k Functions: an Application in Probabilistic Inference**

Jiří Vomlel (Institute of Information Theory and Automation)

15,30 – 16,00

Coffee Break

Session 2, chairman: Vilém Novák

16,00 – 16,40

**A Comparison of FT-smoothing Filter and Nadaraya-Watson Estimator**

Michal Holčapek (Institute for Research and Applications of Fuzzy Modeling, Ostrava)

Tomáš Tichý (Faculty of Economics VŠB-TU Ostrava)

16,40 – 17,10

**From Time Series Analysis to Redundancies in Linguistic Descriptions**

Antonín Dvořák (Institute for Research and Applications of Fuzzy Modeling, Ostrava)

Martin Štěpnička (Institute for Research and Applications of Fuzzy Modeling, Ostrava)

Lenka Vavříčková (Institute for Research and Applications of Fuzzy Modeling, Ostrava)

17,10 – 17,30

**Linguistic Associations and Dependencies among Them**

Jiří Kupka (Institute for Research and Applications of Fuzzy Modeling, Ostrava)

Iva Tomanová (Institute for Research and Applications of Fuzzy Modeling, Ostrava)

17,30 – 18,00

**Using Fuzzy Reasoning to Improve Engineering Processes**

Jaroslav Procházka (OASA COMPUTERS, s.r.o.)

Cyril Klimeš (OASA COMPUTERS, s.r.o.)

19,00 – 20,00

Dinner, Conference Opening

# PROGRAMME, 28-11-2011

28-11-2011, Morning

Session 3, chairman: Jan Flusser

- 9,00 – 9,45**      **Superresolution Imaging - from Equations to Mobile Applications**  
Filip Šroubek (Institute of Information Theory and Automation)  
Michal Šorel (Institute of Information Theory and Automation)  
Jan Kamenický (Institute of Information Theory and Automation)  
Jan Flusser (Institute of Information Theory and Automation)
- 9,45 – 10,05**      **Ophthalmological Image Processing and Analysis in DAR – a Survey**  
Jiří Jan (Brno University of Technology)
- 10,05 – 10,25**      **fMRI Image Data Analysis in DAR - a Survey**  
Martin Havlíček (Brno University of Technology)  
Martin Lamoš (Brno University of Technology)  
Jiří Jan (Brno University of Technology)

**10,25 – 10,55**      **Coffee Break**

Session 4, chairman: Miroslav Šimandl

- 10,55 – 11,35**      **Can We Learn What We Prefer?**  
Miroslav Kárný (Institute of Information Theory and Automation)  
Tatiana V. Guy (Institute of Information Theory and Automation)
- 11,35 – 12,00**      **Decentralized Distributed Bayesian Estimation**  
Kamil Dedecius (Institute of Information Theory and Automation)  
Vladimíra Sečkářová (Institute of Information Theory and Automation)
- 12,00 – 12,25**      **Probability Density Fusion in Particle Filtering Framework**  
Jiří Aigl (Fac. of Applied Sciences, University of West Bohemia)  
Miroslav Šimandl (Fac. of Applied Sciences, University of West Bohemia)

**12,30 – 14,00**      **Lunch**

28-11-2011, Afternoon

Session 5, chairman: Miroslav Kárný

- 14,00 – 14,40**      **Algorithms for Estimation of Vehicle Trajectory during GPS Signal Outages Based on Inertial Sensor Data**  
Jaroslav Machaň (ŠKODA AUTO a.s.)  
Zdeněk Herda (ŠKODA AUTO a.s.)  
Lenka Pavelková (Institute of Information Theory and Automation)
- 14,40 – 15,20**      **Recent Advances of Sigma Point Methods in Nonlinear Filtering**  
Ondřej Straka (Fac. of Applied Sciences, University of West Bohemia)  
Miroslav Šimandl (Fac. of Applied Sciences, University of West Bohemia)
- 15,20 – 15,45**      **Summary of Probabilistic Models with Uniformly Distributed Uncertainty**  
Lenka Pavelková (Institute of Information Theory and Automation)

**15,45 – 16,15**      **Coffee Break**

28-11-2011, Afternoon

Session 6, chairman: Martin Janžura

- 16,15 – 16,45**      **Robustness of Spacing-Based Power Divergence Statistics**  
Pavel Boček (Institute of Information Theory and Automation)
- 16,45 – 17,15**      **Divergence-Based Tests of Homogeneity for Spatial Data**  
Tomáš Hobza (Institute of Information Theory and Automation)  
Domingo Morales (University of Miguel Hernández, Operational Research Center)  
Leonardo Pardo (3Complutense University of Madrid)
- 17,15 – 17,45**      **A Survey of Matrix and Tensor Decomposition Methods**  
Petr Tichavský (Institute of Information Theory and Automation)

**18,00 – 19,00**      **Dinner, Zasedání spoluřešitelů a garantů Centra**

Poster Session, chairman: Jan Flusser

**19,00 – 20,30**      **Poster Session – Short Presentations, Poster Session**

# PROGRAMME, 29-11-2011

29-11-2011, Morning

Session 7, chairman: Michal Haindl

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|---------------|--|
| 9,00 – 9,20   | <b>Analysis of Human Gaze Interactions with Texture and Shape</b><br>Jiří Filip (Institute of Information Theory and Automation)<br>Pavel Vácha (Institute of Information Theory and Automation)<br>Michal Haindl (Institute of Information Theory and Automation) |
| 9,20 – 9,40   | <b>Dynamic Texture Segmentation</b><br>Stanislav Mikeš (Institute of Information Theory and Automation)<br>Michal Haindl (Institute of Information Theory and Automation)  |
| 9,40 – 10,00  | <b>BTF Rendering in Blender</b><br>Martin Hatka (Institute of Information Theory and Automation)<br>Michal Haindl (Institute of Information Theory and Automation)   |
| 10,00 – 10,30 | <b>Coffee Break</b>  |
| 10,30 – 10,50 | <b>Bidirectional Texture Function Simultaneous Autoregressive Model</b><br>Michal Havlíček (Institute of Information Theory and Automation)<br>Michal Haindl (Institute of Information Theory and Automation)  |
| 11,30 – 12,30 | <b>Lunch</b>   |
| 12,30         | <b>Departure</b>   |

## LIST OF POSTERS

### **Potts Model-Based Texture Synthesis**

Václav Remeš (Institute of Information Theory and Automation)  
Michal Haindl (Institute of Information Theory and Automation)

### **Texture Recognition using Robust Markovian Features**

Pavel Vácha (Institute of Information Theory and Automation)  
Michal Haindl (Institute of Information Theory and Automation)

### **Iris Recognition**

Mikuláš Krupička (Institute of Information Theory and Automation)  
Michal Haindl (Institute of Information Theory and Automation)

### **Dynamic Texture Modelling**

Radek Richtr (Institute of Information Theory and Automation)  
Michal Haindl (Institute of Information Theory and Automation)

### **Progress in Supra-Bayesian Merging of Information**

Vladimíra Sečkárová (Institute of Information Theory and Automation)

### **Decentralization Bayes in Fully Probabilistic Control Design using Variational Bayes Approximation**

Ondřej Tichý (Institute of Information Theory and Automation)  
Václav Šmídl (Institute of Information Theory and Automation)

### **James-Stein Estimator: Aspects and Comparison**

Václav Bouček (Fac. of Applied Sciences, University of West Bohemia)  
Miroslav Šimandl (Fac. of Applied Sciences, University of West Bohemia)

### **Superfast Superresolution**

Filip Šroubek (Institute of Information Theory and Automation)  
Jan Kamenický (Institute of Information Theory and Automation)  
Milanfar Peyman (University of California Santa Cruz, USA)

### **Removing the Artifacts from Artwork Cross-Section Images**

Miroslav Beneš (Institute of Information Theory and Automation)  
Barbara Zitová (Institute of Information Theory and Automation)  
Jan Blažek (Institute of Information Theory and Automation) s  
Janka Hradilová (Academic Laboratory of Materials Research of Paintings, Academy of Fine Arts,)  
David Hradil (Institute of Inorganic Chemistry of the AS CR)

### **Detection of Elliptical Particles in Atomic Force Microscopy Images**

Jiří Sedlář (Institute of Information Theory and Automation)  
Barbara Zitová (Institute of Information Theory and Automation)  
Jaromír Kopeček (Academy of Sciences of the Czech Republic, Institute of Physics)  
Tatiana Todorciuc (Academy of Sciences of the Czech Republic, Institute of Physics)  
Irena Kratochvílová (Academy of Sciences of the Czech Republic, Institute of Physics)

### **EEG/fMRI Aalysis Enhancement Uing EEG Ddata Processing**

Martin Lamoš (Brno University of Technology)  
René Labounek (Brno University of Technology)  
Jiří Jan (Brno University of Technology)

### **Retinal Image Processing and Possibilities of Automated Diagnosis**

Radim Kolář (Brno University of Technology)  
Jan Odstrčilík (Brno University of Technology)  
Jiří Jan (Brno University of Technology)  
Miloš Malinský (Brno University of Technology)  
Vratislav Harabis (Brno University of Technology)

### **Gold Standard Database to Support Evaluation of Fundus Image Segmentation Methods**

Jan Odstrčilík (Brno University of Technology)  
Radim Kolář (Brno University of Technology)  
Jiří Jan (Brno University of Technology)  
Attila Budai (2Graduate School in Advanced Optical Technologies (SAOT), Erlangen, Germany)  
Onřej Svoboda Brno University of Technology)  
Jan Gazárek (Brno University of Technology)

## LIST OF POSTERS

### **Fast 3D Simulation for Ultrasound Transmission Tomography**

Jan Fousek (Brno University of Technology)

Radovan Jiřík (Brno University of Technology)

Nicole Rüter (Karlsruhe Institute of Technology, Institute for Data Processing and Electronics, Germany)

Jiří Jan (Brno University of Technology)

### **Evaluation of Ultrasound-Speed Transmission Tomography**

Radovan Jiřík (Brno University of Technology)

Igor Peterlík (Brno University of Technology)

Jan Fousek (Brno University of Technology)

Nicole Rüter (Karlsruhe Institute of Technology, Institute for Data Processing and Electronics, Germany)

Jiří Jan (Brno University of Technology)

### **Blind Deconvolution and Superresolution for Mobile Phones**

Jan Kamenický (Institute of Information Theory and Automation)

Filip Šroubek (Institute of Information Theory and Automation)

Jan Flusser (Institute of Information Theory and Automation)

### **Numerical Analysis of the Rebellious Voter Model**

Jan M. Swart (Institute of Information Theory and Automation)

Karel Vrbenský (Institute of Information Theory and Automation)

### **Forward Simulation of Ultrasonic Fields: A Summary**

Dušan Hemzal (Brno University of Technology)

Jiří Jan (Brno University of Technology)

Radovan Jiřík (Brno University of Technology)

Igor Peterlík (Brno University of Technology)

Jiří Roleček (Brno University of Technology)

Jan Fousek (Brno University of Technology)

Jiří Začal (Brno University of Technology)