

33rd Annual Symposium of the German Association for Pattern Recognition (DAGM)  
in conjunction with the Symposium of the German Classification Society (GfKI)

# DAGM GfKI 2011



## Conference Program

August 30th – September 2nd, 2011  
Westend Campus, Goethe University Frankfurt

<http://www.dagm2011.org>  
<http://www.gfki2011.de>

Sponsored by:



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Visual Sensorics &  
Information Processing  
Frankfurt University



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# Contents

<b>1</b>	<b>Welcome to DAGM and GfKL Conference 2011</b>	<b>2</b>
1.1	DAGM Committee . . . . .	5
1.2	GfKL Committee . . . . .	6
<b>2</b>	<b>Conference and Local Information</b>	<b>7</b>
2.1	Registration Desk . . . . .	7
2.2	Conference Badge . . . . .	7
2.3	Welcome Reception . . . . .	7
2.4	Conference Dinner . . . . .	8
2.5	Internet Access . . . . .	8
2.6	Maps and Floor Plans . . . . .	8
2.7	Restaurants in Frankfurt . . . . .	14
<b>3</b>	<b>Program</b>	<b>16</b>
3.1	Tuesday – DAGM Tutorials . . . . .	18
3.2	Tuesday – NC <sup>2</sup> Workshop . . . . .	23
3.3	Tuesday – IFCS Symposium . . . . .	27
3.4	Wednesday – DAGM . . . . .	32
3.5	Wednesday – GfKL . . . . .	36
3.6	Thursday – DAGM . . . . .	44
3.7	Thursday – GfKL . . . . .	48
3.8	Friday – DAGM . . . . .	59
3.9	Friday – GfKL . . . . .	61

# 1 Welcome to DAGM and GfKI Conference 2011

Dear Participants,

Welcome to the 2011 annual conferences of DAGM and GfKI, which are for the first time held jointly this year. Frankfurt am Main, a city with a strong international vibe and a rich cultural and historical tradition hosts the convention of scientists from the pattern recognition and classification fields. This offers an extraordinary forum for scientific exchange and contact between researchers in the two fields. We hope the event will provide a stimulating experience for all participants from both conferences.

The technical program of DAGM 2011 was a joint endeavour between the VSI group of Goethe University and the Computer Vision Laboratory at Linköpings Universitet, Sweden. It covers all aspects of pattern recognition such as early vision to machine learning and robot vision. The DAGM 2011 call for papers resulted in 98 submissions from authors in more than 24 countries, from which a total of 42 papers were selected, corresponding to an acceptance rate of below 43%. The Program Chairs assigned 20 papers for oral and 22 papers for poster presentation, and grouped the papers into sessions. All accepted DAGM papers are compiled in the proceedings published in the Springer Lecture Notes in Computer Science series as volume 6835.

The program of the GfKI 2011, this year in partnership with the International Federation of Classification Societies (IFCS), covers theory, methods and applications of classification, clustering and data analysis. The scientific program committee peer-reviewed the contributed abstracts and arranged a program consisting of 188 oral presentations which are structured in plenary, semi-plenary, invited, special, contributed and workshop sessions of the IFCS 2011 symposium and the GfKI 2011 program. Full papers will be subject of a peer review process and accepted papers will be published as

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edited post conference proceedings in the Springer Series "Studies in Classification, Data Analysis, and Knowledge Organization".

We express our appreciation and thanks to all the members of the DAGM and GfKI/IFCS program committees for their valuable service to the community.

We would also like to express our thanks to the Deutsche Forschungsgemeinschaft (DFG) for supporting the IFCS Symposium.

We are proud to present 15 invited plenary and semi-plenary talks from internationally renowned scientists:

- Donald Geman: "Image interpretation by entropy pursuit"
- Yann LeCun: "Learning visual feature hierarchies"
- Richard Samworth: "Optimal weighted nearest neighbour classifiers"
- Arndt von Haeseler: "How well does a phylogenetic tree represent the underlying data"
- Gunnar Erik Carlsson: "Topology and classification"
- Gilles Celeux : "Statistical inference for the latent block model: a review"
- Andrea Cerioli: "Multivariate outlier detection and robust clustering"
- Sylvia Frühwirth-Schnatter: "Model-based clustering of time series"
- Willem J. Heiser: "Supervised and unsupervised classification of rankings – Using a Kemeny distance framework"
- Bruce G. Lindsay: "Revisiting projection pursuit"
- Carlos G. Matrán: "Trimming: An adaptive and flexible way for searching for a clustering pattern in presence of noise"
- Geoff McLachlan: "On the ever increasing role of mixture models in classification"
- Ilya Shabanov: "Non-linear curvature mapping – A novel approach on morphological classification of neolithic pottery"
- Douglas Steinley : "Finding clusters in high-dimensional data via multiple projections of variable subsets"
- Adilson Elias Xavier: "Solving clustering problems by the hyperbolic smoothing approach"

Finally, we would like to express our gratitude to all the kind people who contributed to making DAGM&GfKI 2011 in Frankfurt a success. This refers in particular to the members of the Visual Sensorics and Information Processing Laboratory at Goethe University, the members of the Computer Vision Laboratory of Linköpings Universitet, Sweden, and the members of the Databionik Group at Marburg University.

We wish all participants a pleasant, inspiring and stimulating stay in Frankfurt and look forward to DAGM 2012 in Graz and GfKI 2012 in Hildesheim!

Michael Felsberg, Linköpings Universitet, Sweden  
Eyke Huellermeier, University of Marburg, Germany  
Berthold Lausen, University of Essex, UK  
Rudolf Mester, Goethe University Frankfurt, Germany  
Alfred Ultsch, University of Marburg, Germany  
Dirk van den Poel, University of Gent, Belgium



from left to right: Rudolf Mester, Michael Felsberg, and Eyke Huellermeier



from left to right: Berthold Lausen, Alfred Ultsch, and Dirk van den Poel

## 1.1 DAGM Committee

### General Chairs

Rudolf Mester	Univ. Frankfurt, Germany & Linköpings Univ., Sweden	Wolfgang Förstner	Univ. Bonn, Germany
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		Stefan Roth	TU Darmstadt, Germany
		Volker Roth	Univ. Basel, Switzerland
		Carsten Rother	MS Research Cambridge, UK

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Thomas Brox	Univ. Freiburg, Germany	Bernt Schiele	MPI Informatik, Germany
Joachim Buhmann	ETH Zürich, Switzerland	Konrad Schindler	ETH Zürich, Switzerland
Daniel Cremers	TU München, Germany	Cristian Sminchisescu	Univ. Bonn, Germany
Andreas Dengel	DFKI, Germany	Klaus Tönnies	Univ. Magdeburg, Germany
Joachim Denzler	Univ. Jena, Germany	Thomas Vetter	Univ. Basel, Switzerland
Gernot Fink	TU Dortmund, Germany	Friedrich Wahl	TU Braunschweig, Germany
Boris Flach	Czech TU, Czech Republic	Joachim Weickert	Univ. des Saarlandes, Germany

## 1.2 GfKI Committee

### General Chairs

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Eyke Hueller- meier	Univ. of Marburg, Germany

### Local Organization

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Florian Meyer	Univ. Marburg, Germany

### Conftool Management

Florian Meyer	Univ. Marburg, Germany
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### Editors Conference Proceedings

Berthold Lausen	Univ. of Essex, UK
Alfred Ultsch	Univ. of Marburg, Germany
Dirk van den Peol	Univ. Gent, Belgium

### Program Committee

#### Chair

Berthold Lausen	Univ. of Essex, UK
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Boris Mirkin	London Univ., UK
Masahiro Mizuta	Hokkaido Univ., Japan
Angela Montanari	Univ. of Bologna, Italy

Rebecca Nugent	Carnegie Mellon Univ., USA
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Mark de Rooij	Leiden Univ., Netherlands

Alfred Ultsch	Univ. Marburg, Germany
Dirk van den Peol	Univ. Gent, Belgium
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Jeroen Vermunt	Tilburg Univ., Netherlands

Maurizio Vichi	Univ. Rome, Italy
Claus Weihs	TU Dortmund, Germany



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## 2 Conference and Local Information

The following pages contain general information about Frankfurt and the conference venue, including local transit information, area maps, and floor plans.

2

4

### 2.1 Registration Desk

If you have any questions do not hesitate to contact the registration desk at the entrance hall of the Hörsaalzentrum.

Opening hours are: Tue 08:00–19:00, Wed 08:00–19:00, Thu 08:30–18:30 and Fri 08:30–16:30.

### 2.2 Conference Badge

Your conference badge can be used as a local transit pass (including bus, tram, U-Bahn, S-Bahn, and local trains) within the whole *RMV* area (local transit carrier) from August 30 to September 2, 2011. Plans of the complete local area network are shown at every local train station or on [www.rmv.de](http://www.rmv.de). The local area network of Frankfurt is printed in this booklet as well.

### 2.3 Welcome Reception

Drinks and snacks will be served at the Foyer E3 of the Hörsaalzentrum on Tuesday evening (see page 11 and 22). The welcome reception is open to all attendees.

## 2.4 Conference Dinner

The conference dinner will be held at Campus Westend, Casino, Festsaal 2 on Thursday evening (see page 9 and 47).

The conference dinner is open to all attendees with full conference registration, holders of additional dinner tickets, and students invited to the Young Researcher's Forum. The dinner is not included in student registrations or tutorial/workshop only registrations.

A yellow point on your conference badge means that you are entitled to participate in the conference dinner. Please make sure that you carry your badge with you!

Additional dinner tickets are sold at the registration desk (limited availability).

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6

## 2.5 Internet Access

Free internet access is provided throughout Campus Westend. Please use one of the following options to set up an internet connection.

- If you have an **eduroam** account, you may **authenticate with your login credentials** (username@university, password).
  - SSID: eduroam
- Otherwise, we provide access based on **web authentication**. Please **contact the registration desk** to get your individual username and password as well as detailed instructions on how to set up an internet connection using web authentication.
  - SSID: FREIFLUG

## 2.6 Maps and Floor Plans

On the following pages you will find maps of the conference venue and a local transit network map.

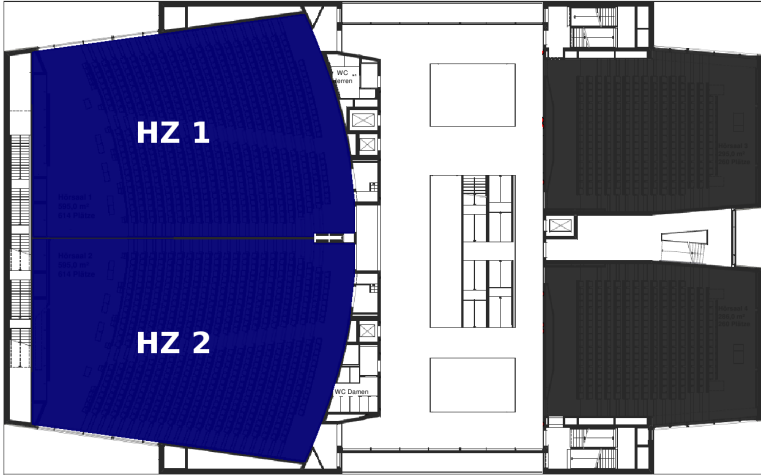
## 2.6 Maps and Floor Plans



Conference venue: Goethe University Campus Westend

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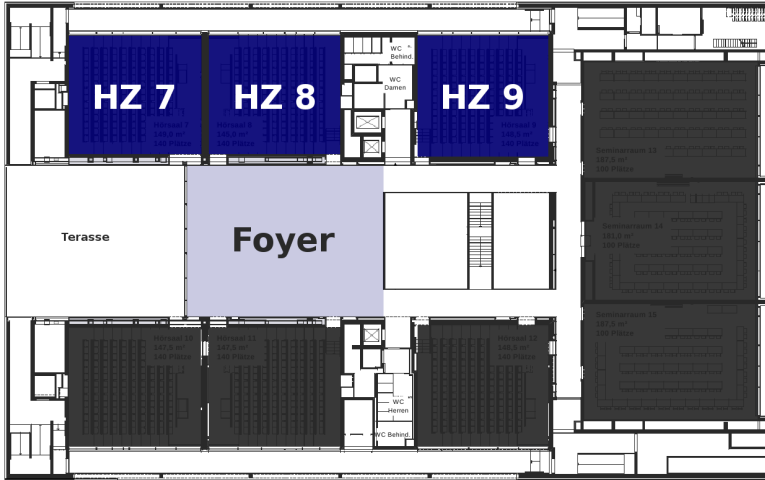
Hörsaalzentrum 1st floor

2

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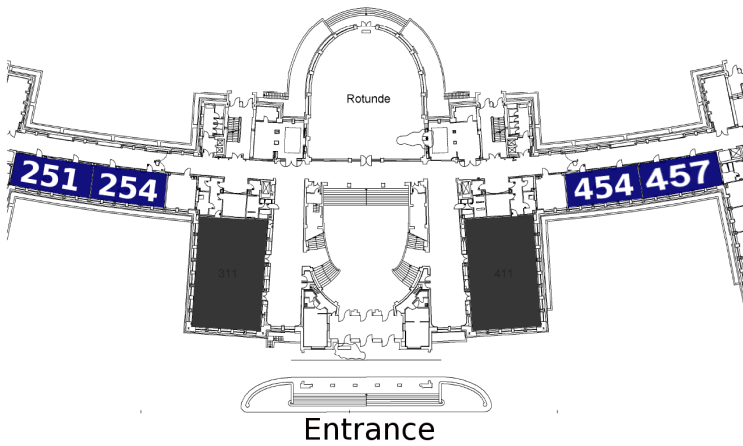
Hörsaalzentrum 2nd floor



Hörsaalzentrum 3rd floor

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Poelzig-Bau ('IG-Hochhaus')

## **RMV network map**

not included in the pdf version of the booklet, see

[http://www.rmv.de/en/Linien\\_und\\_Netze/Streckennetz\\_EN/Liniennetzplaene/49392/RMV-Liniennetzplaene\\_.html](http://www.rmv.de/en/Linien_und_Netze/Streckennetz_EN/Liniennetzplaene/49392/RMV-Liniennetzplaene_.html)

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## 2.7 Restaurants in Frankfurt

The Mensa at Campus Westend (Casino building, see page 9) serves a diversity of food at reasonable prices. Several alternatives to the Mensa outside Campus Westend are listed below. Note that lunch is not included in the conference fee.

1. Surf & Turf (American)  
Grüneburgweg 95
2. The Ivory Club (Indian, Steak House)  
Taunusanlage 15
3. Buzzano (American, Italian, Steak House, International)  
An der Welle 3
4. M-Steakhouse (American)  
Feuerbachstraße 11a
5. Bombay Palace (Indian, Asian)  
Darmstädter Landstr. 6
6. The Black Bulls (American, Steak House, Vegetarian)  
Bockenheimer Landstr. 92
7. KuBu am Opernplatz (German, International)  
Opernplatz 2
8. Zarges (French, Mediterranean, Vegetarian)  
Kalbaecher Gasse 10
9. Zenzakan (Chinese, Japanese, Thai, Vietnamese)  
Taunusanlage 15
10. Vapiano (Italian)  
Goetheplatz 1-3
11. Oscar's (French)  
Am Kaiserplatz
12. La Boveda (Spanish)  
Feldbergstr. 10
13. Tiger-Restaurant (French)  
Heiligkreuzgasse 16-20
14. Holbein's (International, Mediterranean)  
Holbeinstr. 1

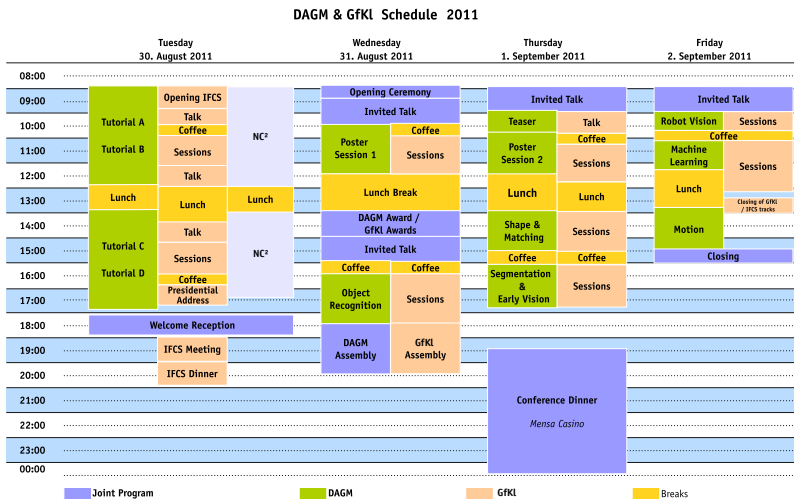




# 3 Program

The program of DAGM & Gfkl 2011 is composed of several sessions on different topics, open to all attendees of the conference. We will have a single DAGM track and multiple Gfkl tracks running at the same time, and joint sessions of both DAGM and Gfkl with talks of several invited speakers. The program is structured in the following way: For each day, the program of the DAGM track is followed by the program of the Gfkl of the same day. Blue and red markers on the page borders indicate the DAGM and Gfkl tracks, respectively. Additionally, within the Book of Abstracts (handed out with the registration material) you will find an abstract for every presented paper at DAGM & Gfkl 2011.

The coarse schedule of the conference is as follows:



## Tuesday, 30/Aug/2011

9:00am 9:35am	Opening IFCS: Opening, Chikio Hayashi Awards (CHA), short memorial event for past IFCS President J. Douglas Carroll Location: HZ 6				Tutorial A: Tensors in Computer Vision and Image Processing, Klaas Nordberg Location: HZ 7	Tutorial B: Random Field Models for Natural Image and Scene Statistics, Stefan Roth Location: HZ 8	<b>NC's Workshop:</b> Opening (09:00 – 09:10), Sparse Representation of Data (09:10 – 10:30) Location: HZ 9
9:35am 10:20am 10:50am	IFCSPlenary1: Gilles Celeux Location: HZ 6 Chair: Andrea Cerioli	Break 1: coffee break			(9:00am – 12:30pm)	(10:30 – 11:00)	
10:20am 10:50am 11:35am	IFCSPlenary2: Bruce G. Lindsay Location: HZ 6 Chair: Geoff McLachlan Chair: Carlos Matrán						Clustering, Grouping, and Visualization, (11:00 – 12:00) Location: HZ 9
11:45am 1:00pm	InvitedSession 1: A session in memory of Jean-Pierre Barthelemy Location: IG 251 Chair: Bernard Fichet	InvitedSession 2: Latent class models Location: IG 254 Chair: Michele Costa Chair: Isabella Morlini	SpecialSession1 Location: IG 454 Chair: Henk Kiers				Keynote Talk (12:00 – 13:00), Challenges of Exploration, Learning and Goal-Directed Behavior, Marc Toussaint Location: HZ 9
1:00pm 2:30pm	Break 2: lunch break						(13:00 – 14:00)
2:30pm 3:45pm	InvitedSession 3: Modern multidimensional unfolding Location: IG 255 Chair: Mark de Rooij	InvitedSession 4: Estimating and visualizing high-dimensional cluster structure Location: IG 254 Chair: Rebecca Ann Nugent	SpecialSession2 Location: IG 452 Chair: Gilles Celeux		Tutorial C: Higher-Order Feature Learning: Building A Computer Vision *Swiss Army Knife*, Roland Memisevic Location: HZ 7	Tutorial D: Convex Optimization for Computer Vision, Thomas Pock & Daniel Cremers Location: HZ 8	Keynote Talk (14:00 – 15:00), Neurons Driving Cognitive Robots, Jochen J. Stell, Location: HZ 9
3:55pm 4:40pm 4:40pm 5:10pm	IFCSPlenary3: Douglas Steinley Location: HZ 6 Chair: Gunnar Erik Carlsson	Break 3: coffee break			(14:00 – 17:30 )	(14:00 – 17:30 )	Recognition of Dynamic Patterns, (15:00 – 15:40), Location: HZ 9
5:10pm 6:00pm	IFCSPlenary4: Geoff McLachlan Location: HZ 6 Chair: Adilson Elias Xavier						(15:40 – 16:00)
06:15pm 7:00pm 7:00pm 8:00pm 8:15pm 10:15pm	Welcome Reception						Vision and Robotics, (16:10 – 17:30), Nomination of the Best Presentation (17:30 – 17:40) Meeting of the German Neural Network Society and the GI Arbeitskreis Neuronale Netze, (18:00)
7:00pm 8:00pm 8:15pm 10:15pm	IFCSMeeting: IFCS Council meeting						
	IFCSDinner: IFCS Council dinner						

## 3.1 Tuesday – DAGM Tutorials

**DAGM Tutorial A**

09:00 – 12:30

Location: HZ 7

### Tensors in Computer Vision and Image Processing

**Klas Nordberg**, Linköping University, Sweden

The concept of tensors has been around in image processing and computer vision a few decades, with two main applications areas: as descriptors of local features in image data, mainly in the context of local orientation, and in geometry where they are used for representing various types of matching constraints or mappings between geometric objects. The tutorial consists of three parts.

(1) A mathematical background to what tensors are and why it is reasonable that such a rather abstract mathematical construction should be useful in different fields of physics as well as in image processing and computer vision. Notation issues are also discussed.

(2) An overview of tensors for orientation representation, with applications to motion estimation, interest point detection, and image de-noising. Recent developments in this field are extensions of the basic orientation tensors to more complex descriptors, e.g., of multiple orientations or multiple line segments, as well as novel methods for estimating orientation tensors.

(3) An overview of tensors in multiple-view geometry and multiple-point geometry. Some recent developments in this field are presented, such as a general framework for constructing both constraint tensors for multiple views/points and mappings for the reconstructing of point/views based on multiple views/points, and minimal parameterizations of such tensors.

#### Contents:

1. *Introduction to tensors:*  
What are tensors? Why do we need them? Indices or no indices? Operations on tensors.
2. *Tensors in image processing:*  
Orientation tensors. Orientation tensor processing. Extensions of orientation tensors. Applications.
3. *Tensors in geometry:*

Matching constraints, is there a general principle? Reconstruction, not only of points. Minimal representations.

### DAGM Tutorial B

09:00 – 12:30

Location: **HZ 8**

### Random Field Models for Natural Image & Scene Statistics

**Stefan Roth**, Technical University Darmstadt

Images, the basic input to any computer vision or biological vision system, span a vast space. As a simple example, there are about 101,000 different 8-bit gray-scale images of a size as small as 20 by 20 pixels. However, most of these images lack any “interesting” structure and are very unlikely to be encountered by an eye or a camera in the real world. Those that do, on the other hand, are loosely tagged as natural images. Though occupying only a tiny fraction of the image space, natural images stand out with particular statistical properties. Other dense scene representations, such as depth or motion, share similar characteristics.

Recently, we have witnessed a surge of interest in modeling the statistics of natural images and scenes with applications ranging from low-level (e.g., denoising, deblurring, stereo, optical flow), over mid-level (e.g., segmentation, color constancy) to high-level vision (e.g., recognition). Random field models have emerged as a powerful tool in this context. The goal of this tutorial is to introduce random fields and their applications to modeling natural image and scene statistics. After reviewing basic statistical properties of images, scene depth and motion, I will discuss a variety random field models, covering the range from early works to the current state of the art, from pairwise to high-order models, and from generative (MRF) to discriminative (CRF) approaches. Finally, inference and applications in various domains will be discussed as well.

#### Contents:

1. *Introduction:*

Motivation and application examples. Image and dense scene representations. Basic statistical properties. Local statistical models.

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2. *Random field models of image and scene statistics:*  
Markov random fields (MRFs). Early random field models. Learning and Inference. Conditional random fields (CRFs). Survey of recent MRF and CRF models.
3. *Applications:*  
Image restoration. Image-based rendering. Flow estimation. Stereo. Feature learning.

**Coffee Break**

10:20 – 10:50

Location: **HZ Foyer E3 & IG 457****Lunch Break**

12:30 – 14:00

**DAGM Tutorial C**

14:00 – 17:30

Location: **HZ 7**

3

1

**Higher-Order Feature Learning:  
Building a Computer Vision ‘Swiss Army Knife’****Roland Memisevic**, Goethe University Frankfurt

In many vision tasks, good performance is all about the right representation. Learning of image features (AKA Sparse Coding or Dictionary Learning) has therefore become a standard approach to many recognition, denoising and other vision tasks.

While standard feature learning works well on static images, most interesting tasks go beyond these: Problems like video and motion understanding, stereo vision, invariant recognition, etc. do not come in the form of unordered, static images. Instead, it is the relationship between images that carries the relevant information.

Recently, Higher-order Sparse Coding models have emerged to address this issue, and many of these models are currently the best performing methods in tasks involving videos, stereo data, or image pairs. Many of the models

were introduced independently and for various different tasks, but they are all based on the same core idea: Sparse codes can act like “gates”, that modulate the connections between the other variables in a model. This allows them to represent changes in images and it turns model parameters into “stereo”, “mapping” or “spatio-temporal” features.

The tutorial will show how Higher Order Features allow us to learn to “relate” images. It will discuss efficient learning and inference methods and it will present a tour of recent applications. The tutorial will also discuss some connections of these models to biological models of simple and complex cells and to multi-layer and recent deep learning methods.

### Contents:

1. *Introduction:*  
Sparse Coding, Feature Learning and Natural Images. Learning how Images Change. Examples From Stereo, Video and Motion Modeling.
2. *Models and Methods:*  
Multiplicative Gating. Multiplication and Phase Information. Relation to Biological Models. Relation to Feature Pooling and Deep Learning.
3. *Inference And Learning:*  
Gated Inference. Learning Higher Order Features. Efficient Spatio-Temporal Learning. Historical Perspective.
4. *A Tour of Higher order Features in Practice:*  
Video and Action Understanding. Image Matching. Learning Within-Image Correlations. Learning for Invariant Classification. Learning Stereo Vision.

### Tutorial D

14:00 – 17:30

Location: HZ 8

## Convex Optimization for Computer Vision

**Thomas Pock and Daniel Cremers,**

Graz University of Technology / Technical University of Munich

Variational methods have had great success to solve many problems in computer vision and image processing. They can be divided into two funda-

mentally different classes: convex and non-convex problems. The obvious advantage of convex problems is that they allow to compute a global minimum. This means that the quality of the solution solely depends on the accuracy of the variational model. On the other hand, for non-convex problems, the quality of the solution is subject to both the model and the optimization algorithm, since in general only a local minimizer can be computed. The goal of this tutorial is therefore firstly to give a gentle introduction into convex optimization. Secondly, we discuss recent applications of convex optimization to computer vision and image processing problems. We will cover modern techniques such as convex relaxation techniques, primal-dual optimization schemes and real-time capable implementations on the GPU.

### Contents:

1. *Introduction into convex optimization:*  
convex sets. convex functions. least squares problems. linear programming problems.
2. *Optimization algorithms:*  
generic methods (gradient descend, Newton, ...). constrained optimization. accelerated gradient methods. primal-dual algorithms. parallelization on the GPU.
3. *Applications:*  
image restoration. optical flow. the Mumford-Shah model. minimal partitions and minimal surfaces. 3D reconstruction.

### Coffee Break

16:00 – 16:30

Location: **HZ Foyer E3 & IG 457**

### Welcome Reception

18:15 – 19:00

Location: **HZ Foyer E3**



## 3.2 Tuesday – NC<sup>2</sup> Workshop

### Opening

09:00 – 09:10

Location: **HZ 9**

### Sparse Representation of Data

09:10 – 10:30

Location: **HZ 9**

- Learning Motion Primitives using Spatio-Temporal NMF  
*Sven Hellbach, Christian Vollmer, Julian P. Eggert, Horst-Michael Groß*
- Image Deconvolution with Sparse Priors  
*Jens Hocke, Thomas Martinetz, Erhardt Barth*
- Relational Extensions of Learning Vector Quantization  
*Xibin Zhu, Frank-Michael Schleich, Barbara Hammer*
- Fuzzy Supervised Neural Gas with Sparsity Constraint  
*Marika Kästner, Thomas Villmann*

### Coffee Break

10:30 – 11:00

Location: **HZ Foyer E3 & IG 457**

### Clustering, Grouping, and Visualization

11:00 – 12:00

Location: **HZ 9**

- Online Semi-Supervised Growing Neural Gas  
*Oliver Beyer, Philipp Cimiano*
- Hallucinating Image Features to Supplement Perceptual Groups  
*Martin Meier, Robert Haschke, Helge Ritter*
- How to evaluate Dimensionality Reduction?  
*Wouter Lueks, Bassam Mokbel, Michael Biehl, Barbara Hammer*

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2

**Keynote Talk**

12:00 – 13:00

Location: **HZ 9****Challenges of Exploration, Learning and Goal-Directed Behavior****Marc Toussaint**, FU Berlin, Germany

Natural environments composed of many manipulable objects can be described in terms of probabilistic relational models. Autonomous learning, exploration and planning in such environments is generally hard, but can be tackled when exploiting the inherent relational structure. I will first cover some basic research of our lab in the area of planning by inference before I address in more detail our recent advances in relational exploration, learning and planning, with emphasis on robotics applications. The question of how neurons could do such kind of “inference in relational representations” is rather puzzling to me – but I conjecture that animals and humans in some way or another have to do such kinds of computations.

**Lunch Break**

13:00 – 14:00

3

2

**Keynote Talk**

14:00 – 15:00

Location: **HZ 9****Neurons Driving Cognitive Robots****Jochen J. Steil**, Bielefeld University, Germany

Cognitive Robotics is one major application domain for neural learning methods, whereas robustness to environmental conditions, learning in interaction with human partners, and developmental learning are ideal and challenging playgrounds. We will discuss recent progress using brain-inspired learning and architecture with focus on three important questions: how to get from simple movement to rich motor skills? What do human inspired computational architectures contribute? How shall interaction with human users be shaped? Application examples will include the child-like

iCub, the commercial humanoid Nao and the Honda humanoid robot. Finally, we will illustrate that the developed methods are also highly relevant for tomorrow's much more flexible automation technology.

### Recognition of Dynamic Patterns

15:00 – 15:40

Location: **HZ 9**

- Recognizing Human Activities using a Layered HMM Architecture  
*Michael Glodek, Lutz Bigalke, Günther Palm, Friedhelm Schwenker*
- Unsupervised Identification of Object Manipulation Operations from Multimodal Input  
*Alexandra Barchunova, Jan Moringen, Ulf Grossekatheofer, Robert Haschke, Sven Wachsmuth, Herbert Janssen, Helge Ritter*

### Coffee Break

15:40 – 16:00

Location: **HZ Foyer E3 & IG 457**

### Vision and Robotics

16:10 – 17:30

Location: **HZ 9**

- Online Learning in the Loop: Fast Explorative Learning of Inverse Models in High Dimensions  
*Matthias Rolf, Jochen Steil*
- Learning a Neural Multimodal Body Schema: Linking Vision with Proprioception  
*Johannes Lohmann, Martin V. Butz*
- Object-Class Segmentation using Deep Convolutional Neural Networks  
*Hannes Schulz, Sven Behnke*
- A Spiking Neural Network for Situation-independent Face Recognition  
*Marco K. Müller, Michael Tremmer, Christian Bodenstein, Rolf P. Würtz*

### Nomination of the Best Presentation Award and Closing

17:30 – 17:40

Location: **HZ 9**

3

2

**Meeting of the German Neural Network Society and the GI Arbeitskreis Neuronale Netze** 18:00 – open end

Location: **HZ 9**

**Welcome Reception**

18:15 – 19:00

Location: **HZ Foyer E3**

3

2

## 3.3 Tuesday – IFCS Symposium

### Opening Ceremony

09:00 – 09:35

Location: **HZ 6**

- Chikio Hayashi Awards (CHA)
- Short memorial event for past IFCS president J. Douglas Carroll

### IFCS Plenary

09:35 – 10:20

Chair: **Andrea Cerioli**

Location: **HZ 6**

### Statistical Inference for the Latent Block Model: A Review

**Gilles Celeux**, INRIA, France

### Coffee Break

10:20 – 10:50

Location: **HZ Foyer E3 & IG 457**

### IFCS Plenary

10:50 – 11:35

Chair: **Geoff McLachlan, Carlos Matrán**

Location: **HZ 6**

### Revisiting Projection Pursuit and Principal Component Analysis (Presidents invited talk)

**Bruce George Lindsay**, Penn State University, United States of America

### A Session in Memory of Jean-Pierre Barthelemy

11:45 – 13:00

Chair: **Bernard Fichet**

Location: **IG 251**

- Some of my Work with Jean-Pierre Barthelemy – and Beyond  
*Fred McMorris*
- From Individual Categorisations to Consensus ones  
*Alain Guénoche*

3

3

- Multilevel Clustering Systems, with or without Overlapping Clusters, and Dissimilarities *Patrice Bertrand*

### Latent Class Models

11:45 – 13:00

Chair: **Michele Costa, Isabella Morlini**Location: **IG 254**

- Latent Class Modeling of Time Series Data *José G. Dias*
- On Dynamic Hurdle Models for Longitudinal Zero-Inflated Count Data *Jan Bulla, Mruotti Antonello*
- A Dynamic Analysis of Stock Markets using a Hidden Markov Model *Luca De Angelis, Leonard J. Paas*

### Special Session 1

11:45 – 13:00

Chair: **Henk Kiers**Location: **IG 454**

- Regularization and Model Selection with Categorical Covariates (CHA winner) *Jan Gertheiss, Veronika Stelz, Gerhard Tutz*
- Model-based Clustering of Time Series in Group-specific Functional Subspaces (CHA winner) *Charles Bouveyron*
- Ranking and Clustering Large Number of Cereal Selection Lines from Experiments without Randomization and Replications of the Lines *George Menexes*

3

3

### Lunch Break

13:00 – 14:30

### Modern Multidimensional Unfolding

14:30 – 15:45

Chair: **Mark de Rooij**Location: **IG 251**

- Restricted Unfolding: Preference Analysis with Optimal Transformations of Preferences and Attributes *Frank M.T.A. Busing*

▪ Sparse Multidimensional Unfolding *Katrijn Van Deun*

▪ Trend Vector Models *Mark de Rooij*

**Estimating and Visualizing High-Dimensional Cluster Structure** 14:30 – 15:45

Chair: **Rebecca Ann Nugent** Location: **IG 254**

▪ Bias Correction in Sentiment Analysis *Brendan Murphy*

▪ Clustering using Latent Variable Models (CHA winner)  
*Claire Gormley*

▪ Estimating and Visualizing Cluster Structure in a Constrained Hypercube as a Proxy for Cognitive Diagnosis Models  
*Rebecca Ann Nugent, Nema Dean*

**Special Session 2** 14:30 – 15:45

Chair: **Gilles Celeux** Location: **IG 454**

▪ Embedded Variable Selection in Classification Trees (CHA winner)  
*Servane Gey, Tristan Mary-Huard*

▪ Solving Complex Optimization Problems with many Parameters by Means of Optimally Designed Block-Relaxation Algorithms (CHA winner)  
*Tom Wilderjans, Iven Van Mechelen, Dirk Depril*

▪ Hierarchical Clustering for Distribution Valued Dissimilarity Data  
*Masahiro Mizuta*

**IFCS Plenary** 15:55 – 16:40

Chair: **Gunnar Erik Carlsson** Location: **HZ 6**

**Finding Clusters in High-Dimensional Data via Multiple Projections of Variable Subsets**

**Douglas Steinley**, University of Missouri, United States of America



**Coffee Break**

16:40 – 17:10

Location: **HZ Foyer E3 & IG 457****IFCS Plenary**

17:10 – 18:00

Chair: **Adilson Elias Xavier**Location: **HZ 6****The Ever-Increasing Role of Mixture Models in Classification****Geoff McLachlan**, University of Queensland, Australia**Welcome Reception**

18:15 – 19:00

Location: **HZ Foyer E3****IFCS Council Meeting**

19:00 – 20:00

Location: **IG 251**

For IFCS executive committee and IFCS member societies representatives only.

**IFCS Council Dinner**

20:15 – 22:15

Location: **TBA**

For IFCS executive committee and IFCS member societies representatives only.

3

3



## Wednesday, 31/Aug/2011

9:00am	Opening Ceremony DAGM and GRIWIFCS Location: HZ 1	
9:30am	Plenary 1: Donald Geman Location: HZ 1	
10:25am	Session	
10:30am	DAGM 1: Poster Spotlights 1 (10:25- 10:45) Location: HZ1; Poster session 1 (10:45 - 12:25)	SemPlenary 2: Sylvia Fuehrwirth-Schnatter Location: HZ 8 Chair: Hans-Hermann Bock
11:10am	Location: Foyer Poster session	SemPlenary 1: Gunnar Carlsson Location: HZ 7 Chair: Iven Van Mechelen
11:10am	Break 4: coffee break	
11:40am	DAGM 2: Poster Session 1 (10:45 - 12:25) Location: E3 Poster session	Contributed 1: Marketing and Management 1 Location: HZ 9 Chair: Daniel Baier
11:40am	InvitedSession 5: Current Issues in Cluster Analysis Location: HZ 7 Chair: Gunter Ritter	InvitedSession 6: Analysis of Qualitative Variables Location: HZ 8 Chair: Henrik Kleris
12:55pm	Break 5: lunch break	
12:55pm	Break 6: coffee break	
2:00pm	Working group 1: AGM AG-DANK (Datenanalyse und Numerische Klassifikation)	
1:30pm	Location: HZ 7	
1:50pm	Chair: Christian Hennig Chair: Alfred Ultsch	
2:00pm	Award 1: DAGM Award / GRI Awards Location: HZ 1	
3:15pm	Chair: Joachim Buhmann Chair: Reinhold Decker	
3:15pm	Plenary 2: Arndt von Haeseler Location: HZ 1	
4:10pm	Chair: Berthold Lausen	
4:10pm	Break 6: coffee break	
4:35pm	DAGM 3: Object recognition (4:35 - 5:50) Location: HZ 1 Session	Contributed 7: Marketing and Management 2 Location: HZ 9 Chair: Reinhold Decker
4:35pm	Contributed 5: Clustering and Unsupervised Learning Location: HZ 7 Chair: Krzysztof Jajuga	Contributed 6: Discriminant Analysis and Supervised Learning 2 Location: HZ 8 Chair: Mark de Rooij
4:35pm	Contributed 8: Medical and Health Sciences 2 Location: IG 251 Chair: Berthold Lausen	Contributed 9: Multivariate Statistical Methods 1 Location: IG 254 Chair: Nema Dean
6:30pm	AGM GKI: General Assembly of the DAGM (17:50- 19:00); Location HZ 1	
7:45pm	General Assembly of the DAGM (17:50- 19:00); Location HZ 1	

### 3.4 Wednesday – DAGM

#### Opening Ceremony DAGM and GfKL

09:00 – 09:30

Location: **HZ 1**

- Alfred Ultsch, University of Marburg, Germany
- Roser Valenti, Vice president University of Frankfurt
- Representative of the City of Frankfurt
- Representative of the Bernstein Focus Neurotechnology Frankfurt
- Rudolf Mester, Goethe University Frankfurt

#### Invited Talk

09:30 – 10:25

Chair: **Rudolf Mester**Location: **HZ 1**

#### Image Interpretation by Entropy Pursuit

**Donald Geman**, Johns Hopkins University, Baltimore

Image interpretation, which is effortless and instantaneous for people, is one of the grand challenges of artificial intelligence. The dream is to build a “description machine” which produces a rich semantic annotation of the underlying scene, including the names and poses of the objects that are present, as well as recognizing actions and context. Mathematical frameworks are advanced from time to time, but none is yet widely accepted, and none clearly points the way to closing the gap with natural vision. After reviewing the general situation, I will outline an approach inspired by the efficiency of the divide-and-conquer strategy in games like “twenty questions” and by selective attention in natural vision. This leads to an information-theoretic, model-based framework for determining what evidence to acquire from multiple scales, locations and semantic resolutions, and for coherently integrating the evidence by updating likelihoods.

#### Poster Spotlights 1

10:25 – 10:45

Chair: **Rudolf Mester**Location: **HZ 1**

3

4

**Poster Session 1**

10:45 – 12:25

Location: **HZ Foyer**

- A Bayesian Approach for Scene Interpretation with Integrated Hierarchical Structure  
*Martin Drauschke, Wolfgang Foerstner*
- Multi-view Active Appearance Models for the X-ray Based Analysis of Avian Bipedal Locomotion  
*Daniel Haase, John Nyakatura, Joachim Denzler*
- A Fully Implicit Framework for Sobolev Active Contours and Surfaces  
*Maximilian Baust, Nassir Navab*
- Implicit Scene Context for Object Segmentation and Classification  
*Jan Wegner, Bodo Rosenhahn, Uwe Soergel*
- An Estimation Theoretical Approach to Ambrosio-Tortorelli Image Segmentation  
*Kai Krajssek, Ines Dedovic, Hanno Scharf*
- Combined Head Localization and Head Pose Estimation for Video-based Advanced Driver Assistance Systems  
*Andreas Schulz, Naser Damer, Mika Fischer, Rainer Stiefelhagen*
- Towards Cross-modal Comparison of Human Motion Data  
*Thomas Helten, Meinard Mueller, Jochen Tautges, Andreas Weber*
- Indoor Calibration using Segments Chains  
*Jamil Draréni, Renaud Marlet, Renaud Keriven*
- Multilinear Model Estimation with  $L^2$ -Regularization  
*Frank Schmidt, Hanno Ackermann, Bodo Rosenhahn*
- Optimization of Quadrature Filters based on the Numerical Integration of Improper Integrals  
*Andreas Krebs, Johan Wiklund, Michael Felsberg*
- Real Time Head Pose Estimation from Consumer Depth Cameras  
*Gabriele Fanelli, Thibaut Weise, Juergen Gall, Luc Van Gool*
- Putting MAP back on the Map  
*Patrick Pletscher, Sebastian Nowozin, Pushmeet Kohli, Carsten Rother*

3

4

- Pose-Consistent 3D Shape Segmentation Based on a Quantum Mechanical Feature Descriptor

*Mathieu Aubry, Daniel Cremers, Ulrich Schlickewei*

### Coffee Break

11:10 – 11:40

Location: **HZ Foyer E3 & IG 457**

### Lunch Break

12:25 – 14:00

DAGM program committee meeting in HZ 12 (for DAGM PC members only)

### DAGM Award and GfKI Awards

14:00 – 15:15

Chair: **Joachim M. Buhmann, Reinhold Decker**

Location: **HZ 1**

- Laudatio Best Paper Award GfKI 2010 – Methods

*Hans-Hermann Bock*

- Bias-Variance Analysis of Local Classification Methods (Best Paper Award GfKI 2010 – Methods)

*Julia Schiffner*

- Laudatio Best Paper Award GfKI 2010 – Applications

*Andreas Geyer-Schulz*

- Teacher's Typology of Student Categories. A Cluster Analytic Study (Best Paper Award GfKI 2010 – Applications)

*Thomas Hörstermann*

- Laudatio *Deutscher Mustererkennungspreis 2011*

*Joachim M. Buhmann*

- *Deutscher Mustererkennungspreis 2011* – Awardee Talk

### Invited Talk

15:15 – 16:10

Chair: **Berthold Lausen**

Location: **HZ 1**

3

4

## How Well Does a Phylogenetic Tree Represent the Underlying Data?

**Arndt von Haeseler**, Center for Integrative Bioinformatics Vienna (CIBIV),  
Wien, Austria

*see page 39*

### Coffee Break

16:10 – 16:35

Location: **HZ Foyer E3 & IG 457**

### Object Recognition

16:35 – 17:50

Chair: **Christoph Lampert**

Location: **HZ 1**

- Multiple Instance Boosting for Face Recognition in Videos  
*Paul Wohlhart, Martin Köstinger, Peter Roth, Horst Bischof* 16:35
- SHOG – Spherical HOG Descriptors for Rotation Invariant 3D Object Detection  
*Henrik Skibbe, Marco Reisert, Hans Burkhardt* 17:00
- Pick your Neighborhood – Improving Labels and Neighborhood Structure for Label Propagation  
*Sandra Ebert, Mario Fritz, Bernt Schiele* 17:25

### General Assembly of the DAGM

18:30 – 19:45

Location: **HZ 1**

3

4

## 3.5 Wednesday – GfKL

### Opening Ceremony DAGM and GfKL

09:00 – 09:30

Location: **HZ 1**

- Alfred Ultsch, University of Marburg, Germany
- Roser Valenti, Vice president University of Frankfurt
- Representative of the City of Frankfurt
- Representative of the Bernstein Focus Neurotechnology Frankfurt
- Rudolf Mester, Goethe University Frankfurt

### Invited Talk

09:30 – 10:25

Chair: **Rudolf Mester**Location: **HZ 1**

### Image Interpretation by Entropy Pursuit

**Donald Geman**, Johns Hopkins University, Baltimore

*see page 32*

### Semi-Plenary

10:30 – 11:10

Chair: **Iven Van Mechelen**Location: **HZ 7**

### Topology and Classification

**Gunnar Erik Carlsson**, Stanford University, United States of America

3

### Semi-Plenary

10:30 – 11:10

Chair: **Hans-Hermann Bock**Location: **HZ 8**

5

### Model-based Clustering of Time Series

**Sylvia Frühwirth-Schnatter**, Wirtschaftsuniversität Wien, Austria

### Coffee Break

11:10 – 11:40

Location: **HZ Foyer E3 & IG 457**

### Current Issues in Cluster Analysis

11:40 – 12:55

Chair: **Gunter Ritter**

Location: **HZ 7**

- New Advances in Robust Clustering Based on Trimming: The TCLUS Approach  
*Agustin Mayo-Iscar*
- Some Tricky Issues in Comparative Simulations of Clustering Methods, Including the Robust Improper ML Estimator  
*Christian Hennig, Pietro Corretto*
- Testing for the Number of Regimes in Markov Dependent Mixtures (HMMs)  
*Florian Schwaiger*

### Analysis of Qualitative Variables

11:40 – 12:55

Chair: **Henk Kiers**

Location: **HZ 8**

- Multiple Correspondence Analysis with Missing  
*Julie Josse*
- Clustering of Variables via the PCAMIX  
*Vanessa Kuentz*
- Chance Corrected Correlation Measures for Qualitative Variables  
*Henk Kiers*

### Marketing and Management 1

11:40 – 12:55

Chair: **Daniel Baier**

Location: **HZ 9**

- Antecedents and Outcomes of Participation in Social Networking Sites  
*Sandra Maria Correia Loureiro*
- Nonsymmetric Correspondence Analysis of Abbreviated Hard Laddering Interviews  
*Adam Sagan, Eugène Kaciak*
- Feature Selection and Clustering of Digital Images Versus Questionnaire Based Grouping of Consumers: A Comparison  
*Ines Daniel, Daniel Baier*

3

5

**Medical and Health Sciences 1**

11:40 – 12:55

Chair: **Vladimir Makarencov**Location: **IG 251**

- Association of Complex Human Pain Phenotypes with Complex Pain Genotypes using a Self-organizing Maps Approach  
*Jörn Lötsch, Alfred Ultsch*
- Bivariate Binary Classification using the Ideal Point Classification Model  
*Hailemichael Metiku Worku*
- Under what circumstances do regular Computerized Adaptive Tests allow for sound clinical classifications?  
*Niels Smits*

**Text Mining, Web Mining and Ontology Learning**

11:40 – 12:55

Chair: **Andreas Geyer-Schulz**Location: **IG 254**

- An Approach for Topic Trend Detection  
*Wolfgang Gaul, Dominique Vincent*
- An approach to using Ontologies for Interpreting Text Documents  
*Boris Mirkin, Ekaterina Chernyak, Olga Chugunova, Julia Askarova, Susana Nascimento*
- Recommender Systems for Biosurveillance 2.0  
*Ernesto Diaz-Aviles, Avaré Stewart, Wolfgang Nejdl*

3

5

**Classification, Discriminant Analysis and Supervised Learning 1**

11:40 – 12:55

Chair: **Eyke Huellermeier**Location: **IG 454**

- Temporally locally adaptive Linear Discriminant Analysis  
*Karsten Lübke, Julia Schiffner, Stefanie Hillebrand, Claus Weihs*
- A Statistical Survey on Bulk Emails with Symbolic Data Analysis  
*Hiroyuki Minami*



- Determining the Similarity Between US Cities using a Gravity Model for Search Engine Query Data  
*Paul Hofmarcher, Bettina Grün, Kurt Hornik, Patrick Mair*

**Lunch Break**

12:55 – 14:00

**AGM AG – DANK (Datenanalyse und Numerische Klassifikation)**

13:30 – 13:50

Chair: **Christian Hennig, Alfred Ultsch**

Location: **HZ 7**

**DAGM Award and GfKl Awards**

14:00 – 15:15

Chair: **Joachim M. Buhmann, Reinhold Decker**

Location: **HZ 1**

- Laudatio Best Paper Award GfKl 2010 – Methods  
*Hans-Hermann Bock*
- Bias-Variance Analysis of Local Classification Methods (Best Paper Award GfKl 2010 – Methods)  
*Julia Schiffner*
- Laudatio Best Paper Award GfKl 2010 – Applications  
*Andreas Geyer-Schulz*
- Teacher's Typology of Student Categories. A Cluster Analytic Study (Best Paper Award GfKl 2010 – Applications)  
*Thomas Hörstermann*
- Laudatio *Deutscher Mustererkennungspreis 2011*  
*Joachim M. Buhmann*
- *Deutscher Mustererkennungspreis 2011* – Awardee Talk

**Invited Talk**

15:15 – 16:10

Chair: **Berthold Lausen**

Location: **HZ 1**

3

5

## How Well Does a Phylogenetic Tree Represent the Underlying Data?

**Arndt von Haeseler**, Center for Integrative Bioinformatics Vienna (CIBIV), Wien, Austria

As models of sequence evolution become more and more complicated, many criteria for model selection have been proposed, and tools are available to select the best model for an alignment under a particular criterion. However, in many instances the selected model fails to explain the data adequately as reflected by large deviations between observed pattern frequencies and the corresponding expectation. We present an approach to evaluate the goodness of fit. We introduce a minimum number of "extra substitutions" on the inferred tree to provide a biologically motivated explanation why the alignment may deviate from expectation. These extra substitutions plus the evolutionary model then fully explain the alignment. We illustrate the method on several examples.

### Coffee Break

16:10 – 16:35

Location: **HZ Foyer E3 & IG 457**

### Clustering and Unsupervised Learning 1

16:35 – 18:15

Chair: **Krzysztof Jajuga**

Location: **HZ 7**

- Cluster Analysis Based on Multi-layer Structure  
*Akinori Okada, Satoru Yokoyama*
- Clustering Considering Local Density of Units  
*Vladimir Batagelj*
- Factorial PD-Clustering  
*Cristina Tortora, Mireille Gettler Summa, Francesco Palumbo*
- Random Projections for Stopping the Process of Divisions in k-means Bisection Clustering  
*Boris Mirkin*

**Classification, Discriminant Analysis and Supervised Learning 2** 16:35 – 18:15

Chair: **Mark de Rooij**

Location: **HZ 8**

- Machine Learning based Approach for Hyper-parameter Optimization  
*Lars Schmidt-Thieme*
- Efficient Sampling and Handling of Variance in Tuning Model Chains with Kriging *Bernd Bischl, Patrick Koch, Wolfgang Konen, Claus Weihs*
- Parametric Analysis of Interval Data *Paula Brito, Pedro Duarte Silva*
- Local Clique Merging: An Extension of the Maximum Common Subgraph Measure for the Classification of Graph Structures  
*Thomas Fober, Eyke Huellermeier*

**Marketing and Management 2** 16:35 – 18:15

Chair: **Reinhold Decker**

Location: **HZ 9**

- Multi-Group Confirmatory Factor Analysis Model in mixed-culturally populations  
*Piotr Tarka*
- Feature-based joint analysis of product perception and preference  
*Michel Meulders*
- Statistical Software for Clustering Images  
*Robert Naundorf, Daniel Baier*

**Medical and Health Sciences 2** 16:35 – 18:15

Chair: **Berthold Lausen**

Location: **IG 251**

- Dimensions of Job Characteristics as Predictors of Job Satisfaction and Professional Satisfaction  
*Silvina Santana, Sandra Loureiro, José Cerdeira*
- Mortality in EU countries – Dependence Analysis With the Use of Log-linear Models  
*Justyna Julia Brzezińska*

3

5

- Rapid Adaptation of Brain Reading Interfaces based on Threshold Adjustment  
*Jan Hendrik Metzen, Elsa Andrea Kirchner*
- Identification of Risk Factors in Coronary Bypass Surgery  
*Julia Schiffner, Erhard Godehardt, Stefanie Hillebrand, Alexander Albert, Artur Lichtenberg, Claus Weihs*

### Multivariate Statistical Methods 1

16:35 – 18:15

Chair: **Nema Dean**Location: **IG 254**

- Bayesian Binary Quantile Regression with the bayesQR R-package  
*Dries F. Benoit, Dirk Van den Poel*
- Factor Preselection and Multiple Measures of Dependence  
*Nina Büchel, Kay F. Hildebrand, Ulrich Müller-Funk*
- ECO-power: A Novel Method to Reveal Common Mechanisms Underlying Coupled Data  
*Martijn Schouteden, Katrijn Van Deun, Iven Van Mechelen*
- Intrablocks Correspondence Analysis  
*Campo Elías Pardo, Jorge Eduardo Ortiz*

### General Assembly of the Gesellschaft für Klassifikation

18:30 – 19:45

Location: **HZ 7**

3

5

## Thursday, 01/Sep/2011

9:00am - 9:55am	Plenary 3: Yann LeCun Location: HZ 6 Session			
10:00am - 10:40am	DA GM 4: Teaser 2 (09:55- 10:45), Poster session 2 (10:45 - 12:25) Location: HZ 6 Poster session	SemPlenary 3: Willem Heiser Location: HZ 7 Chair: Akinori Okada	SemPlenary 4: Carlos Gabriel Matrán Location: HZ 8 Chair: Gunter Ritter	SemPlenary 5: Ilya Shabanov Location: HZ 9 Chair: Imela Herzog
10:40am - 11:10am	Break 7: coffee break			
11:10am - 12:50pm	DA GM 5: Poster session 2 (10:45 - 12:25) Location: E3 Poster session	Contributed 11: Clustering and Unsupervised Learning 2 Location: HZ 7 Chair: Hans-Hermann Bock	Contributed 12: Multivariate Statistical Methods 2 Location: HZ 8 Chair: Geoff McLachlan	Contributed 13: Data Analysis in Archaeology and Geography Location: HZ 9 Chair: Alfred Ultsch
12:50pm - 2:00pm	Break 8: lunch break			
1:00pm - 1:50pm	Working group 2: AGM AG-BT (Biostatistik) Location: HZ 8 Chair: Hans Kestler Chair: Anne-Laure Boulesteix	Working group 3: SIGMA (Special Interest Group Music Analysis) Location: IG 454 Chair: Claus Weihs		
2:00pm - 3:40pm	DA GM 6: Shape and applications Location: HZ 6 Session	InvitedSession 7: Dissimilarities and disparity based methods Location: HZ 7 Chair: Christian Hennig	InvitedSession 8: Systems biology Location: HZ 8 Chair: Hans Kestler	InvitedSession 9: Item response theory in psychology and education Location: HZ 9 Chair: Christine Hohensinn
3:40pm - 4:10pm	Break 9: coffee break			
4:10pm - 6:15pm	DA GM 7: Segmentation and Early Vision Location: HZ 6 Session	Contributed 20: Clustering and Unsupervised Learning 4 Location: HZ 7 Chair: Christian Hennig	Contributed 21: Bioinformatics and Biostatistics 1 Location: HZ 8 Chair: Anne-Laure Boulesteix	Contributed 22: Visualization and Scaling Location: HZ 9 Chair: Wolfgang Gaul
7:30pm - 10:30pm	Dinner: Conference Dinner			
			Contributed 15: Banking and Finance 1 Location: IG 254 Chair: Ulrich Müller-Funk	Contributed 16: Psychology and Educational Sciences Location: IG 454 Chair: Sabine Krolak- Schwerdt
		Contributed 17: Marketing and Management 4 Location: IG 251 Chair: Andrzej Sokobowski	Contributed 18: Clustering and Unsupervised Learning 3 Location: IG 254 Chair: Ulrich Müller-Funk	Contributed 19: Music Classification Workshop 1 Location: IG 454 Chair: Claus Weihs
		Contributed 23: Classification, Discriminant Analysis and Supervised Learning 3 Location: IG 251 Chair: Jan W. Owsinski	Contributed 24: Banking and Finance 2 Location: IG 254 Chair: Hermann Locarek-Junge	Contributed 25: Music Classification Workshop 2 Location: IG 454 Chair: Claus Weihs

## 3.6 Thursday – DAGM

### Invited Talk

09:00 – 09:55

Chair: **Michael Felsberg**Location: **HZ 6**

### Learning Visual Feature Hierarchies

Yann LeCun, New York University, New York

Intelligent perceptual tasks such as vision and audition require the construction of good internal representations. Theoretical and empirical evidence suggest that the perceptual world is best represented by a multi-stage hierarchy in which features in successive stages are increasingly global, invariant, and abstract. An important challenge for Machine Learning and Pattern Recognition is to devise “deep learning” methods for multi-stage architecture than can automatically learn good feature hierarchies from labeled and unlabeled data.

We will demonstrate the use of deep learning methods, based on unsupervised sparse coding, to train convolutional network (ConvNets). ConvNets are biologically-inspired architectures consisting of multiple stages of filter banks, interspersed with non-linear operations, and spatial pooling operations.

A number of applications will be shown through videos and live demos, including a category-level object recognition system that can be trained on the fly, a pedestrian detector, a system that recognizes human activities in videos, and a trainable vision system for off-road mobile robot navigation. Specialized hardware architecture that implement these algorithms will also be described.

### Poster Spotlights 2, Young Researcher's Forum and Adverse Vision Conditions Challenge

09:55 – 10:45

Chair: **Michael Felsberg**Location: **HZ 6**

### Coffee Break

10:40 – 11:10

Location: **HZ Foyer E3 & IG 457**

**Poster Session 2, Young Researcher's Forum and Adverse Vision Conditions Challenge**

10:45 – 12:25

Location: **HZ Foyer**

- People Tracking Algorithm for Human Height Mounted Cameras  
*Vladimir Kononov, Vadim Konushin, Anton Konushin*
- Multi-Person Localization and Track Assignment in Overlapping Camera Views  
*Martijn Liem, Dariu Gavrila*
- Relaxed Exponential Kernels for Unsupervised Learning  
*Karim Abou-Moustafa, Mohak Shah, Fernando De La Torre, Frank Ferrie*
- Using Landmarks as a Deformation Prior for Hybrid Image Registration  
*Marcel Lüthi, Christoph Jud, Thomas Vetter*
- Improving Denoising Algorithms via a Multi-Scale Meta-Procedure  
*Harold Christopher Burger, Stefan Harmeling*

**Young Researcher's Forum**

- Image Comparison on the Base of a Combinatorial Matching Algorithm  
*Benjamin Drayer*
- Large Displacement Optical Flow for Volumetric Image Sequences  
*Benjamin Ummenhofer*
- Visual Motion Capturing for Kinematic Model Estimation of a Humanoid Robot  
*Andre Gaschler*
- Object Recognition System Guided by Gaze of the User with a Wearable Eye Tracker  
*Takumi Toyama*
- Spectral Clustering of ROIs for Object Discovery  
*Paul Bodesheim*
- Robust Classification and Semi-Supervised Object Localization with Gaussian Processes  
*Alexander Lütz*
- Color Image Segmentation Based on an Iterative Graph Cut Algorithm using Time-of-Flight Cameras  
*Markus Franke*

- Application of Multi-Modal Features for Terrain Classification on a Mobile System *Marc Arends*

## Adverse Vision Conditions Challenge

- Robust Point Matching in HDRI Through Estimation of Illumination Distribution *Yan Cui, Alain Pagani, Didier Stricker*
- Illumination-Robust Dense Optical Flow Using Census Signatures *Thomas Müller, Clemens Rabe, Jens Rannacher, Uwe Franke, Rudolf Mester*
- Efficient Stereo and Optical Flow with Robust Similarity Measures *Christian Unger, Eric Wahl, Slobodan Ilic*

### Lunch Break

12:25 – 14:00

DAGM Program committee meeting in HZ 12 (for DAGM PC members only)

### Shape and Matching

14:00 – 15:40

Chair: **Helmut Mayer**Location: **HZ 6**

- Shape- and Pose-Invariant Correspondences using Probabilistic Geodesic Surface Embedding *Aggeliki Tsoli, Michael Black* 14:00
- Dense 3D Reconstruction of Symmetric Scenes from a Single Image *Kevin Kooser, Christopher Zach, Marc Pollefeys* 14:25
- Fingerprints for Machines – Optical Identification of Grinding Imprints *Ralf Dragon, Tobias Mörke, Bodo Rosenhahn, Jörn Ostermann* 14:50
- Efficient and Robust Alignment of Unsynchronized Video Sequences *Georgios Evangelidis, Christian Bauckhage* 15:15

### Coffee Break

15:40 – 16:10

Location: **HZ Foyer E3 & IG 457**



### Segmentation

16:10 – 17:00

Chair: **Stefan Roth**

Location: **HZ 6**

- Time-consistent Foreground Segmentation of dynamic Content from Color and Depth Video  
*Anatol Frick, Markus Franke, Reinhard Koch* 16:10
- Channel Coding for Joint Colour and Depth Segmentation  
*Marcus Wallenberg, Michael Felsberg, Per-Erik Forssén, Babette Dellen* 16:35

### Early Vision

17:00 – 17:50

Chair: **Stefan Roth**

Location: **HZ 6**

- Simultaneous Interpolation and Deconvolution Model for the 3-D Reconstruction of Cell Images  
*Ahmed Elhayek, Martin Welk, Joachim Weickert* 17:00
- Steerable Deconvolution – Feature Detection as an Inverse Problem  
*Marco Reisert, Henrik Skibbe* 17:25

### Conference Dinner

19:30 – open end

Location: **Casino, Festsaal 2**

*see page 8*

## 3.7 Thursday – GfKI

### Invited Talk

09:00 – 09:55

Chair: **Michael Felsberg**Location: **HZ 6**

### Learning Visual Feature Hierarchies

**Yann LeCun**, New York University, New York

*see page 44*

### Semi-Plenary

10:00 – 10:40

Chair: **Akinori Okada**Location: **HZ 7**

### Supervised and Unsupervised Classification of Rankings using a Kemeny Distance Framework

**Willem Jan Heiser**, Leiden University, Netherlands, The

### Semi-Plenary

10:00 – 10:40

Chair: **Gunter Ritter**Location: **HZ 8**

### An adaptive and flexible way for Searching for a Clustering Pattern in presence of noise

**Carlos Matrán**, Universidad de Valladolid, Spain

### Semi-Plenary

10:00 – 10:40

Chair: **Irmela Herzog**Location: **HZ 9**

### Non-Linear Curvature Mapping – A novel approach on morphological classification of neolithic pottery

**Ilya Shabanov**, **Klaus-Robert Müller**, **Wolfram Schier**, 1: Technical University of Berlin (TUB), Germany: 2: Free University of Berlin (FUB), Germany

3

7

### Coffee Break

10:40 – 11:10

Location: **HZ Foyer E3 & IG 457**

### Clustering and Unsupervised Learning 2

11:10 – 12:50

Chair: **Hans-Hermann Bock**

Location: **HZ 7**

- Multiple Nested Reductions of Single Data Modes As a Tool to Deal with Large Data Sets *Iven Van Mechelen, Katrijn Van Deun*
- Data Transformations in Data Mining *Andreas Baumgart, Ulrich Müller-Funk*
- A New Approach for Graph Clustering *Wolfgang Gaul, Rebecca Klages*
- Measures for Comparing Partitions – Evaluation, Selection, Distributions *Andrzej Sokółowski, Sabina Denkowski, Kamil Fijorek, Marcin Salamaga*

### Multivariate Statistical Methods 2

11:10 – 12:50

Chair: **Geoff McLachlan**

Location: **HZ 8**

- Individual Differences Scaling (INDSCAL) Revisited *Steffen Unkel, John C. Gower, Nikolay T. Trendafilov*
- The Comparison of Some Feature Selection Methods in Regression *Mariusz Kubus*
- Switching PCA for Modeling Shanges in the Underlying Structure of Multivariate Time Series Data *Kim De Roover, Eva Ceulemans, Marieke Timmerman, Patrick Onghena*
- Some thoughts on the aggregation of variables in dissimilarity design *Christian Hennig*

### Data Analysis in Archaeology and Geography

11:10 – 12:50

Chair: **Alfred Ultsch**

Location: **HZ 9**

3

7

- Classification of Roman Tiles With Stamp PARDALIUS  
*Hans-Joachim Mucha, Jens Dolata, Hans-Georg Bartel*
- Geochemical and Statistical Investigation of Clay Deposits in the Troad and its Implication for Provenance of Bronze Age Fine Pottery from Troia  
*Carlos Morales-Merino, Cornelia Schubert, Hans-Joachim Mucha, Hans-Georg Bartel*
- Parallel Coordinate Plots in Archaeology  
*Irmela Herzog, Frank Siegmund*
- On the Efficiency of German Regions  
*Nguyen Xuan Thinh, Martin Behnisch, Alfred Ultsch*

### Marketing and Management 3

11:10 – 12:50

Chair: **Dirk van den Poel**Location: **IG 251**

- Targeting Voters with Logistic Regression Trees  
*Thomas Rusch, Kurt Hornik, Wolfgang Jank, Ilro Lee, Achim Zeileis*
- Product Design Optimization using Ant Colony and Bee Algorithms: A Comparison  
*Sascha Voekler, Daniel Baier*
- Using User Generated Content for Image Clustering and Market Segmentation  
*Diana Schindler*
- Logic Based Conjoint Analysis using the Commuting Quantum Query Language  
*Ingo Schmitt, Daniel Baier*

### Banking and Finance 1

11:10 – 12:50

Location: **IG 254**

- Multivariate Analysis of Dividend Payout of German Prime Standard Issuers  
*Joachim Rojahn, Karsten Lübke*
- Empirical tests of the CAPM and D-CAPM model on the Warsaw Stock Exchange  
*Lesław Markowski*

- Multivariate Modelling of Cross-Commodity Price Relations Along the Petrochemical Value Chain *Myriam Thömmes, Peter Winker*
- Fundamental Portfolio Construction Based on Mahalanobis Distance *Anna Rutkowska-Ziarko*

**Psychology and Educational Sciences**

11:10 – 12:50

Chair: **Sabine Krolak-Schwerdt**

Location: **IG 454**

- Applying Location Planning Algorithms to Schools: The Case of Special Education in Hessen (Germany) *Alexandra Schwarz*
- Predictive Validity of Tracking Decisions: The development of a new validation criterion *Florian Klapproth, Thomas Hörstermann, Sabine Krolak-Schwerdt*
- Spurious Dimensions in the Application of Principal Components Analysis with the Oblique Rotation to Binary Data *Takashi Murakami, Yuri Irie*
- The R Package CDM for Cognitive Diagnosis Modeling *Thomas Kiefer, Ann Cathrice George, Ali Ünli, Alexander Robitzsch*

**Lunch Break**

12:50 – 14:00

**AGM AG – BT (Biostatistik)**

13:00 – 13:50

Chair: **Hans Kestler, Anne-Laure Boulesteix**

Location: **HZ 8**

**SIGMA (Special Interest Group Music Analysis)**

13:00 – 13:50

Chair: **Claus Weihs**

Location: **IG 454**

3

7

### Dissimilarities and Dissimilarity Based Methods

14:00 – 15:40

Chair: **Christian Hennig**Location: **HZ 7**

- Similarity Measures for Learning Ontological Knowledge  
*Floriana Esposito*
- On Correction of Similarity Indices for Chance Agreement in Cluster Analysis  
*Ahmed N. Albatineh*
- A Psychological Perspective on Similarity and Distance Measures  
*Daniel Mullensiefen*
- Learning Time Series Dissimilarities  
*Ahlame Douzal-Chouakria, Cedric Frambourg, Eric Gaussier, Jacques Demongeot*

### Systems Biology

14:00 – 15:40

Chair: **Hans Kestler**Location: **HZ 8**

- Dynamic Nested Effect Models for Reverse Engineering Transcriptional and Non-Transcriptional Networks from High-Dimensional Time Course Perturbation Effects  
*Holger Fröhlich*
- Reconstructing Boolean Functions from Time Series Data  
*Markus Maucher*
- Identification of Prognostic Gene Signatures in Cancer Patients from High-dimensional Data  
*Tim Beissbarth*
- Differential Analysis of High-throughput Data in a Network Context, Towards a Mechanistic Understanding of Cell Transitions, and Chemotherapy Response  
*Georg Fuellen*

### Item Response Theory in Psychology and Education

14:00 – 15:40

Chair: **Christine Hohensinn**Location: **HZ 9**

3

7

- Non-parametric Item Response Models for Scale Construction and Adaptive Testing *Otto B. Walter*
- Linear Logistic Models with Relaxed Assumptions in R: Implementation and Application  
*Thomas Rusch, Marco Maier, Reinhold Hatzinger*
- Reporting Differentiated Literacy Results in PISA by using Multidimensional Adaptive Testing  
*Andreas Frey, Ulf Kröhne, Nicki-Nils Seitz*
- Detecting Person Heterogeneity in a Large-scale Orthographic Test by Item Response Models  
*Christine Hohensinn, Klaus D. Kubinger, Reif Manuel*

#### **Marketing and Management 4**

14:00 – 15:40

Chair: **Andrzej Sokółowski**

Location: **IG 251**

- Correspondence Mining for the Identification of Relationships in Product Reviews *Mayra Ruano*
- Exploratory Analysis of Innovation *Dominik Antoni Rozkrut*
- Optimal Network Revenue Management Decisions Including Flexible Demand Data and Overbooking *Wolfgang Gaul, Christoph Winkler*
- Swarm Intelligent Recommender Systems  
*Ernesto Diaz-Aviles, Avaré Stewart, Mihai Georgescu, Wolfgang Nejdl*

#### **Clustering and Unsupervised Learning 3**

14:00 – 15:40

Chair: **Ulrich Müller-Funk**

Location: **IG 254**

- Preserving Asymmetry of Distance Data in the Clustering Setting  
*Jan W. Owsinski*
- Algorithms for Incorporating Spatial Information into Clustering of High-spectral Data  
*Jan Hendrik Kobarg, Theodore Alexandrov*

3

7

- Clustering Images using Earth Mover's Distance: A Comparison of Traditional and New Varieties *Sarah Frost, Daniel Baier*
- K-Means Clustering of Incomplete Data *Stephan Dlugosz*

### Music Classification Workshop 1

14:00 – 15:40

Chair: **Claus Weihs**Location: **IG 454**

- Cepstral Modulation Features for Versatile Audio Classification Tasks  
*Anil Nagathil, Rainer Martin*
- A Case Study about the Effort to Classify Music Intervals by Chroma and Spectrum Analysis *Verena Mattern, Igor Vatolkin, Günter Rudolph*
- Recognition of Harmonic Characteristics for Audio Intervals and Chords  
*Igor Vatolkin, Markus Eichhoff, Claus Weihs*
- High Performance Hardware Architectures for Automated Music Classification  
*Ingo Schmädecke, Christian Banz, Holger Blume*

### Coffee Break

15:40 – 16:10

Location: **HZ Foyer E3 & IG 457**

### Clustering and Unsupervised Learning 4

16:10 – 18:15

Chair: **Christian Hennig**Location: **HZ 7**

- Mixture Model Clustering with Explanatory Variables: One Step and Three Step Approaches *Dereje W. Gudicha, Jeroen K. Vermunt*
- Analysis of One-mode Three-way Asymmetric Data by Multidimensional Scaling and Cluster Analysis  
*Atsuhiko Nakayama, Hiroyuki Tsurumi, Akinori Okada*
- Bayesian Mixture Modeling with Variable Selection  
*Tomoki Tokuda, Iven Van Mechelen, Francis Tuerlinckx*

3

7



- Fuzzy Clustering by the Hyperbolic Smoothing Approach  
*Javier Trejos, Eduardo Piza, Luiz Carlos F. Souza, Alex Murillo, Vinicius L. Xavier, Adilson E. Xavier*
- Implications of Axiomatic Consensus Properties  
*Florent Domenach, Ali Tayari*

### **Bioinformatics and Biostatistics 1**

16:10 – 18:15

Chair: **Anne-Laure Boulesteix**

Location: **HZ 8**

- Spatial Classification of Loss of Heterozygosity on Tumor Chromosomes  
*Paul H. C. Eilers*
- A New Method for the Elimination of Systematic Error from Experimental High-throughput Screening Data  
*Vladimir Makarenkov, Plamen Dragiev, Robert Nadon*
- The Effect of Microarray Normalization in Resampling Approaches  
*Christoph Bernau, Ferdinand Jamitzky, Anne-Laure Boulesteix*
- Protein Classification using Amphipathy Maps  
*Anne-Sophie Knoeller, Hyung-Won Koh, Eyke Huellermeier*
- An Efficient Algorithm for the Detection and Classification of Horizontal Gene Transfer Events and Identification of Mosaic Genes  
*Alix Boc, Dunarel Badescu, Abdoulaye Baniré Diallo, Vladimir Makarenkov*

### **Visualization and Scaling**

16:10 – 18:15

Chair: **Wolfgang Gaul**

Location: **HZ 9**

- A Quantification Method for Data Matrix with Many Missing Values  
*Tadashi Imaizumi*
- Visualizing Data in Social and Behavioral Sciences: An Application of PARAMAP on Judicial Statistics  
*Ulas Akkucuk, J. Douglas Carroll, Stephen L. France*
- Convex Optimization as a Tool for Correcting Dissimilarity Matrices for Regular Minimality  
*Matthias Trendtel, Ali Ünlü*

3

7

- On The Stress Function of Asymmetric Triangulation Scaling  
*Kojiro Shojima*
- Properties of a General Measure of Configuration Agreement  
*Stephen Lee France*

### Classification, Discriminant Analysis and Supervised Learning 3

16:10 – 18:15

Chair: **Jan W. Owsinski**Location: **IG 251**

- Semiparametric Identification and Estimation in Hidden Markov Models  
*Daniel Hohmann, Hajo Holzmann*
- Regularized Ideal Point Classification  
*Cor Ninaber*
- A Comparison of Latent Class Analysis With and Without the Concept of Feature Saliency  
*Susanne Rumstadt, Baier Daniel*
- Classification and Regression Trees with Covariates Missing at Random  
*Stephan Dlugosz*
- Modeling Mortality in the WikiLeaks Afghanistan War Logs: Combining topicmodels and negative binomial recursive partitioning  
*Paul Hofmarcher, Reinhold Hatzinger, Kurt Hornik, Thomas Rusch*

### Banking and Finance 2

16:10 – 18:15

Chair: **Hermann Locarek-Junge**Location: **IG 254**

- A Theoretical and Empirical Analysis of the Black-Litterman Model  
*Wolfgang Bessler, Dominik Wolff*
- Vulnerability of Copula-VaR to Misspecification of Margins and Dependence Structure  
*Katarzyna Kuziak*
- Probabilistic Neural Networks for the Decision Support of Investment Processes  
*Jan Andreas Indorf, Thorsten Poddig*

3

7

- Testing the Value-Added of Rebalancing Strategies for Stock-Bond-Portfolios  
*Hubert Dicht, Wolfgang Drobetz, Martin Wambach*
- Using Some Chosen Methods of Systemic Risk Analysis in Stock Portfolio Stress Testing  
*Pawel Rokita*

### Music Classification Workshop 2

16:10 – 18:15

Chair: **Claus Weihs**

Location: **IG 454**

- Finding Two-level Structure in Field Recordings of Folk Music  
*Ciril Bohak, Matija Marolt*
- Design of Experiments in Signal Analysis  
*Nadja Bauer, Julia Schiffner, Claus Weihs*
- Applying Multiple Instance Learning to Automatic Music Classification  
*Hanna Lukashevich, Bernd Bischl, Claus Weihs*
- Recognising Cello Performers Using Timbre Models  
*Magdalena Chudy, Simon Dixon*
- Computational Prediction of High-Level Descriptors of Music Personal Categories  
*Günther Rötter, Igor Vatolkin, Claus Weihs*

### Conference Dinner

19:30 – open end

Location: **Casino, Festsaal 2**

*see page 8*

**Friday, 02/Sep/2011**

9:00am	Plenary 4: Richard Samworth Location: HZ 6					
9:55am	Chair: Alfred Ultsch					
10:00am	DAGM 8: Robot vision (09:55-10:45)	SemPlenary 6: Andrea Cerfoll Location: HZ 7			SemPlenary 7: Adilson Elias Xavier Location: HZ 8	
10:40am	Session	Chair: Anuska Ferligoj			Chair: Claus Weihs	
10:40am	Break 10: coffee break					
11:10am	DAGM 9: Machine learning (11:05-12:20)	Contributed 26: Clustering and Unsupervised Learning 5 Location: HZ 7 Chair: Angela Montanari	Contributed 27: Bioinformatics and Biostatistics 2 Location: HZ 8 Chair: Hans Kestler	Contributed 28: Social Networks and Clustering Location: HZ 9 Chair: Hans-Joachim Mucha	Contributed 29: Statistical Data Analysis, Models and Applications Location: IG 251 Chair: Patrice Bertrand	Contributed 30: Banking and Finance Location: IG 254 Chair: Anna Rutkowska-Ziakko
1:15pm	Session	Contributed 31: Multivariate Statistical Methods 3 Location: IG 454 Chair: Paul H. C. Eilers				
1:15pm	Break 11: lunch break					
1:30pm	GfK/IFCS: Closing of GfK/IFCS tracks 2011 and presentation GfK 2012					
1:50pm	Location: HZ 7 Chair: Claus Weihs					
1:50pm	Chair: Lars Schmidt-Thieme					
1:50pm	DAGM 10: Motion Location: HZ 6					
3:30pm	Session					
3:45pm	Closing: DAGM Best Paper Award & Closing					
4:00pm	Location: HZ 6					

## 3.8 Friday – DAGM

### Invited Talk

09:00 – 09:55

Chair: **Alfred Ultsch**

Location: **HZ 6**

### Optimal Weighted Nearest Neighbour Classifiers

**Richard Samworth**, University of Cambridge, UK

*see page 61*

### Robot Vision

09:55 – 10:45

Chair: **Joachim Denzler**

Location: **HZ 6**

- Probabilistic Object Models for Pose Estimation in 2D Images  
*Damien Teney, Justus Piater* 09:55
- Fusion of Audio- and Visual Cues for Real-Life Emotional Human Robot Interaction  
*Ahmad Rabie, Uwe Handmann* 10:20

### Coffee Break

10:45 – 11:05

Location: **HZ Foyer E3 & IG 457**

### Machine Learning

11:05 – 12:20

Chair: **Volker Roth**

Location: **HZ 6**

- Training of Sparsely Connected MLPs  
*Markus Thom, Roland Schweiger, Günther Palm* 11:05
- Minimizing Calibration Time for Brain Reading  
*Jan Hendrik Metzen, Su Kyoung Kim, Elsa Andrea Kirchner* 11:30
- Agnostic Domain Adaptation  
*Alexander Vezhnevets, Joachim Buhmann* 11:55

### Lunch Break

12:20 – 13:50

3

8

Program committee meeting in HZ 12 (for DAGM PC members only)

## Motion

13:50 – 15:30

Chair: **Michael Black**

Location: **HZ 6**

- Will the pedestrian cross? Probabilistic Path Prediction based on Learned Motion Features  
*Christoph Keller, Christoph Hermes, Dariu Gavrila* 13:50
- Simultaneous Reconstruction and Tracking of non-planar Templates  
*Sebastian Lieberknecht, Selim Benhimane, Slobodan Ilic* 14:15
- Multi-target Tracking in Crowded Scenes  
*Jie Yu, Dirk Farin, Bernt Schiele* 14:40
- Efficient and Robust Shape Matching for Model Based Human Motion Capture  
*Gerard Pons-Moll, Laura Leal-Taixé, Tri Truong, Bodo Rosenhahn* 15:05

## DAGM Best Paper Awards & Closing

15:45 – 16:00

## 3.9 Friday – GfKL

### Invited Talk

09:00 – 09:55

Chair: **Alfred Ultsch**Location: **HZ 6**

### Optimal Weighted Nearest Neighbour Classifiers

**Richard Samworth**, University of Cambridge, UK

Classifiers based on nearest neighbours are perhaps the simplest and most intuitively appealing of all nonparametric classifiers. Arguably the most obvious defect with the k-nearest neighbour classifier is that it places equal weight on the class labels of each of the k nearest neighbours to the point being classified. Intuitively, one would expect improvements in terms of the misclassification rate to be possible by putting decreasing weights on the class labels of the successively more distant neighbours. In this talk, we determine the optimal weighting scheme, and quantify the benefits attainable. Notably, the improvements depend only on the dimension of the data, not on the underlying population densities. We also show how the bagged nearest neighbour classifier can be regarded as a weighted nearest neighbour classifier, and compare its performance with both the unweighted and optimally weighted nearest neighbour classifiers.

### Semi-Plenary

10:00 – 10:40

Chair: **Anuska Ferligoj**Location: **HZ 7**

### Multivariate Outlier Detection and robust clustering

**Andrea Cerioli**, University of Parma, Italy

### Semi-Plenary

10:00 – 10:40

Chair: **Claus Weihs**Location: **HZ 8**

### Solving Clustering Problems by the Hyperbolic Smoothing Approach

**Adilson Elias Xavier**, Centro de Tecnologia, Rio de Janeiro

3

9

**Coffee Break**

10:40 – 11:10

Location: **HZ Foyer E3 & IG 457****Clustering and Unsupervised Learning 5**

11:10 – 13:15

Chair: **Angela Montanari**Location: **HZ 7**

- Clustering by Moving Centroids using Simulated Annealing  
*Mario Villalobos-Arias, Eduardo Piza-Volio, Javier Trejos*
- Comparison of Spectral Clustering and Cluster Ensembles Stability  
*Dorota Rozmus*
- Model Based Clustering for Three-way Data  
*Cinzia Viroli*
- Some Novel Upper Bounds for the Number of Modes of Mixture Densities  
*Grigory Alexandrovich*

**Bioinformatics and Biostatistics 2**

11:10 – 13:15

Chair: **Hans Kestler**Location: **HZ 8**

- Complexity Selection and Cross-validation in Lasso and Sparse PLS with High-dimensional Data  
*Anne-Laure Boulesteix, Adrian Richter, Christoph Bernau*
- Active Learning for Automated Identification of Components in 3D Ultramicroscopy Images  
*Bernd Bischl, Laura Schlieker, Ulrich Leischner, Hans-Ulrich Dodt, Claus Weihs*
- Classifier Ensemble Diversity in a Repeated Measurements Setup  
*Werner Adler, Sergej Potapov*
- Prediction of Sub-cellular Protein Localization for Specialized Compartments using Time Series Kernels  
*Marco Mernberger, Eyke Huellermeier*
- Using Regression Trees for Raw Effluents Quality Prediction  
*Orlando Belo, Antonio Sanfins*



### Social Networks and Clustering

11:10 – 13:15

Chair: **Hans-Joachim Mucha**

Location: **HZ 9**

- Blockmodeling of Co-authorship Networks  
*Luka Kronneger, Anuška Ferligoj, Patrick Doreian*
- Modified Randomized Modularity Clustering: Adapting the Resolution Limit  
*Andreas Geyer-Schulz, Michael Ovelgönne*
- Similarity Learning with a Collection of Matrices and Tensors  
*Clément Grimal, Gilles Bisson*
- Cluster it! Semiautomatic splitting and naming of classification concepts.  
*Dominik Stork, Kai Eckert, Heiner Stuckenschmidt*

### Statistical Data Analysis, Models and Applications

11:10 – 13:15

Chair: **Patrice Bertrand**

Location: **IG 251**

- One-mode Three-way Analysis Based on Result of One-mode Two-way Analysis  
*Satoru Yokoyama, Akinori Okada*
- Interactive Principal Components Analysis: a new technological resource in the classroom  
*Carmen Villar-Patiño, Miguel Angel Mendez-Mendez, Carlos Cuevas-Covarrubias*
- Knowledge Creation in Research and Development Entities in Poland and the Other European Union Member States  
*Krystyna Romaniuk*
- On Dynamic Weighted Majority algorithm based on Genetic Algorithm  
*Dhouha Mejri, Mohamed Limam, Claus Weihs*
- Principal Components for Gaussian Mixtures  
*Carlos Cuevas-Covarrubias*

### Banking and Finance 3

11:10 – 13:15

Chair: **Anna Rutkowska-Ziarko**

Location: **IG 254**

3

9

- Comparison of Some Chosen Tests of Independence of Value-at-Risk Violations  
*Krzysztof Piontek*
- Dynamic Principal Component Analysis: a banking Customer Satisfaction evaluation  
*Paolo Mariani, Caterina Liberati*
- Integrated Risk Management in Practice: How reliable is it?  
*Peter Grundke*
- The Classification of Mutual Funds Based on the Management Style – Quantile Regression Approach  
*Agnieszka Orwat-Acedanska, Grazyna Trzpiot*

### Multivariate Statistical Methods 3

11:10 – 13:15

Chair: **Paul H. C. Eilers**Location: **IG 454**

- Clustering Covariates Regression  
*Eva Vande Gaer, Eva Ceulemans, Iven Van Mechelen*
- Model Estimation and Clustering through Schoenberg Transformations  
*François Bavaud, Aris Xanthos*
- Principal Covariates Regression: How to Weight and Rotate?  
*Marlies Vervloet, Eva Ceulemans, Katrijn Van Deun, Wim Van den Noortgate*
- The Influence of the Size of the Scale in a Statistical Model  
*Daniela Nappo*
- Sensitivity of Divergence Measures as Structure Similarity Measurements  
*Ewa Wędrowska*

### Lunch Break

13:15 – 13:50

3

### Closing of GfKI/IFCS Tracks 2011 and Presentation GfKI 2012

13:30 – 13:50

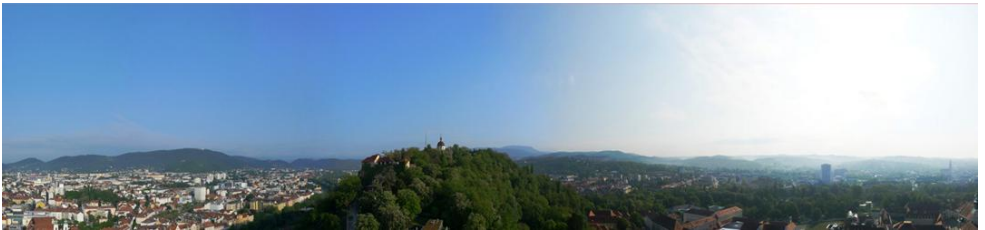
Chair: **Claus Weihs, Lars Schmidt-Thieme**Location: **HZ 7**

9

# DAGM-ÖAGM 2012, Graz, Austria

28.-31. August 2012

<http://www.dagm2012.org/>



**General Chair:** Horst Bischof

**Program Co-Chairs:** Axel Pinz  
Thomas Pock

**Honorary Chair:** Franz Leberl

## Important Dates:

15.04.2012: Paper submission

18.06.2012: Notification

28.06.2012: Camera ready paper

## Invited Speakers:

Francis Bach, INRIA

Jiri Matas, Czech Technical University, Prague

Antonio Torralba, Massachusetts Institute of Technology

# DAGM Gfkl 2011

# Conference Schedule

Tuesday

30. August 2011

Wednesday

31. August 2011

Thursday

1. September 2011

Friday

2. September 2011

08:00

09:00

10:00

11:00

12:00

13:00

14:00

15:00

16:00

17:00

18:00

19:00

20:00

21:00

22:00

23:00

00:00

Opening IFCS

Talk

Coffee

Sessions

Talk

Lunch

Talk

Sessions

Coffee

Presidential Address

NC<sup>2</sup>

Lunch

Lunch

NC<sup>2</sup>

Sessions

Coffee

Presidential Address

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Opening Ceremony

Invited Talk

Coffee

Poster Session 1

Sessions

Lunch Break

DAGM Award / Gfkl Awards

Invited Talk

Coffee

Object Recognition

DAGM Assembly

Gfkl Assembly

Sessions

Coffee

Coffee

Coffee

Invited Talk

Teaser

Poster Session 2

Lunch

Shape & Matching

Coffee

Segmentation & Early Vision

Talk

Coffee

Sessions

Lunch

Sessions

Coffee

Coffee

Coffee

Coffee

Invited Talk

Robot Vision

Coffee

Machine Learning

Lunch

Motion

Sessions

Closing of Gfkl / IFCS tracks

Closing

Closing

Closing

Closing

Closing

Closing

Closing

Closing

Welcome Reception

IFCS Meeting

IFCS Dinner

DAGM Assembly

Gfkl Assembly

Conference Dinner

Mensa Casino

Joint Program

DAGM

Gfkl

Breaks