

GCP WMV 2015



photos: Robert Menzel



Aachen, October 7-10, 2015



Visual Computing
Institute

RWTHAACHEN
UNIVERSITY



DAGM
Deutsche Arbeitsgemeinschaft
für Mustererkennung e.V.

GCPR / VMV 2015

37th German Conference on Pattern Recognition

in conjunction with

20th International Symposium on Vision, Modeling
and Visualization

October 7-10, 2015

Aachen, Germany

Hosted by:



Visual Computing
Institute

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Main Conference at a Glance

Wednesday, October 7th

12:00	Registration	
13:00 – 13:15	Opening	
13:15 – 14:15	Invited Talk: Niloy Mitra	
14:15 – 14:45	Coffee Break	
14:45 – 15:05	GCPR Opening + DAGM MVTec Award	VMV session 1: Geometry
15:15 – 16:00	German Pattern Recognition Award	
16:00 – 16:15	Coffee Break	
16:00 – 18:00	Meeting of the GI Fachgruppe „Grafische Datenverarbeitung“	
16:15 – 17:45	GCPR session 2: Motion and Reconstruction	VMV session 2: Visualization
18:00 – 19:30	DAGM Meeting	

Thursday, October 8th

08:30	Registration	
09:00 – 10:00	Invited Talk: Max Welling	
10:00 – 10:45	Plenary Oral session 1	
10:45 – 11:15	Coffee Break	
11:15 – 12:30	GCPR session 3: Math. Foundations & Image Processing	VMV session 3: Rendering
12:30 – 13:30	Lunch	
13:30 – 15:00	GCPR session 4: Biomedical Image Analysis & Applications	VMV session 4: Images & Video
15:00 – 17:00	Poster session 1 (with integrated Coffee Break 15:00 – 15:30)	
17:00 – 17:45	GCPR session 5: Human Pose Analysis	VMV session 5: Simulation
19:00 – 23:00	Conference Banquet (Coronation Hall, Aachen Town Hall)	

Friday, October 9th

08:30	Registration	
09:00 – 10:00	Invited Talk: Andrew Blake	
10:00 – 10:45	Plenary Oral session 2	
10:45 – 11:15	Coffee Break	
11:15 – 12:30	GCPR session 6: Recognition & Scene Understanding	VMV session 6: Acquisition
12:30 – 13:30	Lunch	
13:30 – 15:30	Poster session 2 (with integrated Coffee Break 15:00 – 15:30)	
15:30 – 16:00	Closing & Awards	

Main Conference Program in Detail

Wednesday, October 7th

12:00 **Registration**

13:00 **Opening**

Keynote:

Niloy Mitra

13:15 – 14:15

Room: Aula 2

Computational Design of Functional Objects

Niloy Mitra (University College London)

Abstract

Both designers and novice users like to design functional objects for physical use. However, there exists limited computational support to facilitate this process. Existing tools either require specialized skills and extensive training, or force the users to perform extensive trial and error based exploration with limited guidance. In this talk we will discuss computational tools that support functional prototyping, guided designing, and material-aware modeling.

Short biography

Niloy J. Mitra leads the Smart Geometry Processing group in the Department of Computer Science at University College London (UCL). Niloy received his PhD degree from Stanford University under the guidance of Prof. Leonidas Guibas. His research interests include shape understanding, computational design, geometric processing, and more generally in computer graphics. Niloy received the ACM Siggraph Significant New Researcher Award in 2013 and the BCS Roger Needham Award in 2015.

14:15 **Coffee Break**

Wednesday, October 7th

14:45 **GCPR Opening**

15:00 **DAGM MVTec Dissertation Award Ceremony**

GCPR Oral Session 1:

German Pattern Recognition Award Talk

15:15 – 16:00

Room: AH V

German Pattern Recognition Award Talk

To be announced

16:00 Coffee Break

GCPR Oral Session 2:

Motion and Reconstruction

16:15 – 17:45

Room: AH V

16:15 ***Road Condition Estimation based on Spatio-Temporal Reflection Models***
Manuel Amthor, Bernd Hartmann, and Joachim Denzler

16:37 ***Discrete Optimization for Optical Flow***
Moritz Menze, Christian Heipke, and Andreas Geiger

17:00 ***Multi-Camera Structure from Motion with Eye-to-Eye Calibration***
Sandro Esquivel and Reinhard Koch

17:22 ***Estimating Vehicle Ego-Motion and Piecewise Planar Scene Structure from
Optical Flow in a Continuous Framework***
Andreas Neufeld, Johannes Berger, Florian Becker, Frank Lenzen, and
Christoph Schnörr

18:00 DAGM Meeting

14:45 **VMV Opening**

VMV Oral Session 1:

Geometry

14:50 – 16:00

Room: AH VI

14:50 ***Anisotropic Template Fitting for High Resolution Face Reconstruction***
Jascha Achenbach, Eduard Zell, Mario Botsch

15:12 ***Data Driven 3D Face Tracking Based on a Facial Deformation Model***
Dominik Sibbing, Leif Kobbelt

15:35 ***Simple, robust, constant-time bounds on-surface geodesic distances using point landmarks***
Oliver Burghard, Reinhard Klein

16:00 Coffee Break

16:00 Meeting of the GI Fachgruppe „Grafische Datenverarbeitung“ (E3, room 118)

VMV Oral Session 2:

Visualization

16:15 – 17:45

Room: AH VI

16:15 ***Temporal Coherence Predictor for Time Varying Volume Data Based on Perceptual Functions***
Tom Noonan, Lazaro Campoalegre, John Dingliana

16:37 ***Hierarchical Hashing for Pattern Search in 3D Vector Fields***
Zhongjie Wang, Hans-Peter Seidel, Tino Weinkauff

17:00 ***Interactive GPU-based Visualization of Scalar Data with Gaussian Distributed Uncertainty***
Steven Schlegel, Mathias Goldau, Gerik Scheuermann

17:22 ***A Taxonomy of Integration Techniques for Spatial and Non-Spatial Visualizations***
Johannes Sorger, Thomas Ortner, Harald Piringer, Gerd Hesina, Eduard Gröller, Eduard

Thursday, October 8th

8:30 **Registration**

Invited Talk:

Max Welling

9:00 – 10:00

Room: Aula 2

Learning to Generate

Max Welling (University of Amsterdam and University of California Irvine)

Abstract

The recent amazing success of deep learning has been mainly in discriminative learning, that is, classification and regression. An important factor for this success has been, besides Moore's law, the availability of large labeled datasets. However, it is not clear whether in the future the amount of available labels grows as fast as the amount of unlabeled data, providing one argument to be interested in unsupervised and semi-supervised learning. Besides this there are a number of other reasons why unsupervised learning is still important, such as the fact that data in the life sciences often has many more features than instances ($p \gg n$), the fact that probabilities over feature space are useful for planning and control problems and the fact that complex simulator models are the norm in the sciences. In this talk I will discuss deep generative models that can be jointly trained with discriminative models and that facilitate semi-supervised learning. I will discuss recent progress in learning and Bayesian inference in these "variational auto-encoders". I will then extend the deep generative models to the class of simulators for which no tractable likelihood exists and discuss new Bayesian inference procedures to fit these models to data.

Short biography

Max Welling is a Professor of Computer Science at the University of Amsterdam and the University of California Irvine. In the past he held postdoctoral positions at Caltech ('98-'00), UCL ('00-'01) and the U. Toronto ('01-'03). He received his PhD in '98 under supervision of Nobel laureate Prof. G. 't Hooft.

Max Welling served as associate editor in chief of IEEE TPAMI from 2011-2015. He serves on the editorial boards of JMLR and JML and was an associate editor for Neurocomputing, JCGS and TPAMI. In 2009 he was

conference chair for AISTATS, in 2013 he was be program chair for NIPS, in 2014 he was the general chair for NIPS and in 2016 he will be a program chair at ECCV. He received multiple grants from NSF, NIH, ONR, NWO, Facebook, Yahoo and Google, among which an NSF career grant in 2005. He is recipient of the ECCV Koenderink Prize in 2010 and the best paper award at ICML 2012.

Welling is currently the director of the master program in artificial intelligence at the UvA and he is in the scientific board of the newly opened Data Science Research Center in Amsterdam. He is also an associate fellow of the Neural Computation and Adaptive Perception Program at the Canadian Institute for Advanced Research. Welling's research focuses on large-scale statistical learning. He has made contributions in Bayesian learning, approximate inference in graphical models and visual object recognition. He has over 150 academic publications.

Plenary Oral Session 1:

10:00 – 10:45

Room: Aula 2

10:00 ***Point-wise Map Recovery and Refinement from Functional Correspondence (VMV)***

Emanuele Rodola, Michael Moeller, Daniel Cremers

10:22 ***Efficient Two-View Geometry Classification (GCPR)***

Johannes L. Schönberger, Alexander C. Berg, and Jan-Michael Frahm

10:45 Coffee Break

Thursday, October 8th

GCPR Oral Session 3: Mathematical Foundations and Image Processing

11:15 – 12:30

Room: AH V

11:15 ***A Convex Relaxation Approach to the Affine Subspace Clustering Problem***

Francesco Silvestri, Gerhard Reinelt, and Christoph Schnörr

11:37 ***Introducing Maximal Anisotropy into Second Order Coupling Models***

David Hafner, Christopher Schroers, and Joachim Weickert

12:00 ***Binarization Driven Blind Deconvolution for Document Image Restoration***

Thomas Köhler, Andreas Maier, and Vincent Christlein

12:30 Lunch (Aula 2)

GCPR Oral Session 4: Biomedical Image Analysis and Applications

13:30 – 15:00

Room: AH V

13:30 ***Unsupervised and Accurate Extraction of Primitive Unit Cells from Crystal Images***

Niklas Mevenkamp and Benjamin Berkels

13:52 ***Copula Archetypal Analysis***

Dinu Kaufmann, Sebastian Keller, and Volker Roth

14:15 ***Interactive Image Retrieval for Biodiversity Research***

Alexander Freytag, Alena Schadt, and Joachim Denzler

14:37 ***Temporal Acoustic Words for Online Acoustic Event Detection***

Rene Grzeszick, Axel Plinge, and Gernot A. Fink

15:00 Coffee Break

VMV Oral Session 3: Rendering

11:15 – 12:30 Room: AH VI

11:15 ***Vector-to-Closest-Point Octree for Surface Ray-Casting***

Ismail Demir, Rüdiger Westermann

11:37 ***Level-of-Detail for Production-Scale Path Tracing***

Magdalena Prus, Christian Eisenacher, Marc Stamminger

12:00 ***The Bounced Z-buffer for Indirect Visibility***

Oliver Nalbach, Tobias Ritschel, Hans-Peter Seidel

12:30 Lunch (Aula 2)

VMV Oral Session 4: Images and Video

13:30 – 15:00 Room: AH VI

13:30 ***A Convex Clustering-based Regularizer for Image Segmentation***

Benjamin Hell, Markus Magnor

13:52 ***Temporally Consistent Wide Baseline Facial Performance Capture via Image Warping***

Markus Kettern, Anna Hilsmann, Peter Eisert

14:15 ***Efficient GPU Based Sampling for Scene-Space Video Processing***

Felix Klose, Oliver Wang, Jean-Charles Bazin, Markus Magnor, Alexander Sorkine-Hornung

14:37 ***Rotoscoping on Stereoscopic Images and Videos***

Dennis Bukenberger, Katharina Schwarz, Fabian Groh, Hendrik Lensch

15:00 Coffee Break

- 1 ***Line3D: Efficient 3D Scene Abstraction for the Built Environment***
Manuel Hofer, Michael Maurer, and Horst Bischof

- 2 ***An Efficient Linearisation Approach for Variational Perspective Shape From Shading***
Daniel Maurer, Yong Chul Ju, Michael Breuß, and Andrés Bruhn

- 3 ***TomoGC: Binary Tomography by Constrained GraphCuts***
Jörg Hendrik Kappes, Stefania Petra, Christoph Schnörr, and Matthias Zisler

- 4 ***An Improved Eikonal Method for Surface Normal Integration***
Martin Baehr and Michael Breuß

- 5 ***Fast Techniques for Monocular Visual Odometry***
M. Hossein Mirabdollah and Bärbel Mertsching

- 6 ***Iterative Automated Foreground Segmentation in Video Sequences Using Graph Cuts***
Tomislav Hrkać and Karla Brkić

- 7 ***A Parametric Spectral Model for Texture-Based Saliency***
Kasim Terzić, Sai Krishna, and J.M.H. du Buf

- 8 ***High Speed Lossless Image Compression***
Hendrik Siedelmann, Alexander Wender, and Martin Fuchs

- 9 ***Learning Reaction-Diffusion Models for Image Inpainting***
Wei Yu, Stefan Heber, and Thomas Pock

- 10 ***Image Orientation Estimation with Convolutional Networks***
Philipp Fischer, Alexey Dosovitskiy, and Thomas Brox

- 11 ***Semi-Automatic Basket Catheter Reconstruction from two X-ray views***
Xia Zhong, Matthias Hoffmann, Norbert Strobel, and Andreas Maier

- 16

12 ***Fast Brain MRI Registration with Automatic Landmark Detection Using a Single Template Image***

Olga V. Senyukova and Denis S. Zornin

13 ***Photorealistic Face Transfer in 2D and 3D Video***

Daniel Merget, Philipp Tiefenbacher, Mohammadreza Babaei, Nikola Mitov, and Gerhard Rigoll

Young Researcher Forum Posters

YRF1 ***Random Forests for 3D Pose Estimation from 2D Images***

Ilya Kostrikov

YRF2 ***Image Segmentation in Twenty Questions***

Christian Rupprecht

Nectar Track Posters

Discovering Object Classes from Activities

NT1 Abhilash Srikanta, Jürgen Gall
(ECCV 2014)

Stereo Ground Truth with Error Bars

NT2 Daniel Kondermann, Rahul Nair, Stephan Meister, Wolfgang Mischler, Burkhard Gusefeld, Claus Brenner, Bernd Jähne
(ACCV 2014)

Visualizing Tensor Normal Distributions at Multiple Levels of Detail

NT3 A. Abbasloo, V. Wiens, M. Hermann, T. Schultz
(TVCG / IEEE VIS 2015)

Learning Analysis-by-Synthesis for 6D Pose Estimation in RGB-D Images

NT4 Carsten Rother
(ICCV 2015)

Selecting Influential Examples: Active Learning with Expected Model Output Changes

NT5 Alexander Freytag, Erik Rodner, and Joachim Denzler
(ECCV 2014)

- NT6 ***Traditional Saliency Reloaded: A Good Old Model in New Shape***
Simone Frinotrop, Thomas Werner, and Germán Martín García
(CVPR 2015)
- NT7 ***Material Classification based on Training Data Synthesized Using a BTF Database***
Michael Weinmann, Juergen Gall, Reinhard Klein
(ECCV'14)
- NT8 ***Driven Learning for Driving: How Introspection Improves Semantic Mapping***
R. Triebel, H. Grimmet, R. Paul, I. Posner
(ISRR 2013)
- NT9 ***Face detection without bells and whistles***
Markus Mathias, Rodrigo Benenson, Marco Pedersoli, Luc Van Gool
(ECCV 2014)
- NT10 ***Linguistic Knowledge for Visual Recognition and Natural Language Descriptions of Visual Content***
Marcus Rohrbach
(DAGM MVTec Dissertation Award)

Thursday, October 8th

GCPR Oral Session 5:

Human Pose Analysis

17:00 – 17:45

Room: AH V

17:00 ***Biternion Nets: Continuous Head Pose Regression from Discrete Training Labels***
Lucas Beyer, Alexander Hermans, and Bastian Leibe

17:22 **A physics-based statistical model for human gait analysis**
Petrisa Zell and Bodo Rosenhahn

19:00 Conference Banquet
(Coronation Hall, Aachen Town Hall)

17:00 – 17:45

Room: AH VI

17:00 ***Tongue S(t)imulator - A Comprehensive Parametrized Pose Model for Speech Therapy***

Laura Haraké, Dorota Beltkiewicz, Gerrit Lochmann

17:22 **Simulation of Water Condensation based on a Thermodynamic Approach using Implicit Surfaces**

Sebastian-Torsten Tillmann, Christian-Arved Bohn

19:00 Conference Banquet

(Coronation Hall, Aachen Town Hall)

Friday, October 9th

8:30 **Registration**

Keynote:

Andrew Blake

9:00 – 10:00

Room: Aula 2

Analysis by Synthesis versus Learned Detection for Vision

Andrew Blake (Microsoft Research Cambridge)

Abstract

Machine vision works nowadays. Machines can: navigate using vision; separate object from background; recognise a wide variety of objects, and often track their motion. These abilities are great spin-offs in their own right, but are also part of an extended adventure in understanding the nature of intelligence through vision.

One question is whether intelligent systems will turn out to depend more on generative models, or on networks trained on data at ever greater scale? In vision systems this boils down to the roles of two paradigms: analysis-by-synthesis versus empirical recognisers. Each approach has its strengths, and empirical recognisers especially have made great strides in performance in the last few years, through deep learning. One can speculate about how deeply the two approaches may eventually be integrated, and on the progress that has already been made with such integration.

Short biography

Andrew Blake is a Microsoft Distinguished Scientist and the Laboratory Director of Microsoft Research Cambridge, England. He joined Microsoft in 1999 as a Senior Researcher to found the Computer Vision group. In 2008 he became a Deputy Managing Director at the lab, before assuming his current position in 2010. Prior to joining Microsoft Andrew trained in mathematics and electrical engineering in Cambridge England, and studied for a doctorate in Artificial Intelligence in Edinburgh. He was an academic for 18 years, latterly on the faculty at Oxford University, where he was a pioneer in the development of the theory and algorithms that can make it possible for computers to behave as seeing machines.

He has published several books including "Visual Reconstruction" with

A.Zisserman (MIT press), "Active Vision" with A. Yuille (MIT Press) and "Active Contours" with M. Isard (Springer-Verlag). He has twice won the prize of the European Conference on Computer Vision, with R. Cipolla in 1992 and with M. Isard in 1996, and was awarded the IEEE David Marr Prize (jointly with K. Toyama) in 2001.

In 2006 the Royal Academy of Engineering awarded him its Silver Medal and in 2007 the Institution of Engineering and Technology presented him with the Mountbatten Medal (previously awarded to computer pioneers Maurice Wilkes and Tim Berners-Lee, amongst others). He was elected Fellow of the in 1998, Fellow of the IEEE in 2008, and Fellow of the Royal Society in 2005. In 2010, Andrew was elected to the council of the Royal Society. In 2011, he and colleagues at Microsoft Research received the Royal Academy of Engineering MacRobert Award for their machine learning contribution to Microsoft Kinect human motion-capture. In 2012 Andrew was elected to the board of the EPSRC and also received an honorary degree of Doctor of Science from the University of Edinburgh. In 2013 Andrew was awarded an honorary degree of Doctor of Engineering from the University of Sheffield. In 2014, Andrew gave the prestigious Gibbs lecture at the Joint Mathematics Meetings.

Plenary Oral Session 2:

10:00 – 10:45

Room: Aula 2

10:00 ***Joint 3D Object and Layout Inference from a single RGB-D Image (GCPR)***
Andreas Geiger and Chaohui Wang

10:23 ***Variational Separation of Light Field Layers (VMV)***
Ole Johannsen, Antonin Sulc, Bastian Goldluecke

10:45 Coffee Break

Friday, September 5th

GCPR Oral Session 6:

Recognition and Scene Understanding

11:15 – 12:30

Room: AH V

Object Proposals Estimation in Single Depth Images Using Compact 3D Shape Manifolds

11:15

Shuai Zheng, Victor Adrian Prisacariu, Melinos Averkiou, Ming-Ming Cheng, Niloy J. Mitra, Jamie Shotton, Philip H.S. Torr, and Carsten Rother

The Long-Short Story of Movie Description

11:40

Anna Rohrbach, Marcus Rohrbach, and Bernt Schiele

Graph-Based Deformable 3D Object Matching

12:05

Bertram Drost and Slobodan Ilic

12:30

Lunch

11:15 – 12:30

Room: AH VI

11:15 ***Extrapolating Large-Scale Material BTFs under Cross-Device Constraints***
Heinz Christian Steinhausen, Dennis den Brok, Matthias Hullin, Reinhard Klein

11:40 ***Fast multiplexed acquisition of material reflectance***
Dennis den Brok, Heinz-Christian Steinhausen, Reinhard Klein

12:05 ***Light Field Imaging through Household Optics***
Alexander Wender, Julian Iseringhausen, Bastian Goldluecke, Martin Fuchs,
Matthias Hullin

12:30 Lunch

13:30 – 15:30

- 14 ***GraphFlow - 6D Large Displacement Scene Flow via Graph Matching***
Hassan Abu Alhaja, Anita Sellent, Daniel Kondermann, and Carsten Rother
- 15 ***FlowCap: 2D Human Pose from Optical Flow***
Javier Romero, Matthew Loper, and Michael J. Black
- 16 ***3D Facial Landmark Detection: How to Deal with Head Rotations?***
Anke Schwarz, Esther-Sabrina Wacker, Manuel Martin, M. Saquib Sarfraz, and Rainer Stiefelhagen
- 17 ***Enhanced GPT Correlation for 2D Projection Transformation Invariant Template Matching***
Toru Wakahara and Yukihiko Yamashita
- 18 ***Semantic segmentation based traffic light detection at day and at night.***
Vladimir Haltakov, Jakob Mayr, Christian Unger, and Slobodan Ilic
- 19 ***Pose Estimation and Shape Retrieval with Hough Voting in a Continuous Voting Space***
Viktor Seib, Norman Link, and Dietrich Paulus
- 20 ***Fast Approximate GMM Soft-Assign for Fine-Grained Image Classification with Large Fisher Vectors***
Josip Krapac and Siniša Šegvić
- 21 ***Regressor Based Estimation of The Eye Pupil Center***
Necmeddin Said Karakoc, Samil Karahan, and Yusuf Sinan Akgul
- 22 ***Patch-level Spatial Layout for Classification and Weakly Supervised Localization***
Valentina Zadrija, Josip Krapac, Jakob Verbeek, and Siniša Šegvić
- 23 ***A Deeper Look at Dataset Bias***
Tatiana Tommasi, Novi Patricia, Barbara Caputo, and Tinne Tuytelaars
- 26

- 24 ***What is Holding Back Convnets for Detection?***
Bojan Pepik, Rodrigo Benenson, Tobias Ritschel, and Bernt Schiele
- 25 ***A Modified Isomap Approach to Manifold Learning in Word Spotting***
Sebastian Sudholt and Gernot A. Fink
- 26 ***Offline Writer Identification Using Convolutional Neural Network Activation Features***
Vincent Christlein, David Bernecker, Andreas Maier, and Elli Angelopoulou

Young Researchers Forum Posters

- YRF3 ***Implicit-to-Implicit Registration for Real-Time 3D Reconstruction from RGB-D Data***
Miroslava Slavcheva
- YRF4 ***Superpixel Segmentation: An Evaluation***
David Stutz
- YRF5 ***Robot Arm Tracking with Random Decision Forests***
Felix Widmaier

Nectar Track Posters

- NT11 ***U-Net: Convolutional Networks for Biomedical Image Segmentation***
Olaf Ronneberger, Philipp Fischer, Thomas Brox
(MICCAI 2015)
- NT12 ***Active Learning and Discovery of Object Categories in the Presence of Unnameable Instances***
Christoph Käding, Alexander Freytag, Erik Rodner, Paul Bodesheim, Joachim Denzler
(CVPR 2015)
- NT13 ***Ask Your Neurons: A Neural-based Approach to Answering Questions about Images***
Mateusz Malinowski, Marcus Rohrbach, Mario Fritz
(ICCV 2015)

Friday, September 5th

NT14 ***A TV Prior for High-Quality Local Multi-view Stereo Reconstruction***
Andreas Kuhn, Helmut Mayer, Heiko Hirschmüller, Daniel Scharstein
(3DV 2014)

NT15 ***Human Pose Estimation with Fields of Parts***
Martin Kiefel, Peter Gehler
(ECCV 2014)

NT16 ***The Language of Actions: Recovering the Syntax and Semantics of Goal-Directed Human Activities***
Hilde Kuehne, Ali Arslan, Thomas Serre

NT17 ***Expanding Object Detector's Horizon: Incremental Learning Framework for Object Detection in Videos***
Alina Kuznetsova, Sung Ju Hwang, Bodo Rosenhahn, Leonid Sigal
(CVPR 2015)

NT18 ***Extended Pie Menus for Immersive Virtual Environments***
S. Gebhardt, S. Pick, F. Leithold, B. Hentschel, T.W. Kuhlen
(IEEE TVCG 2013)

NT19 ***Dyna: A Model of Dynamic Human Shape in Motion***
G. Pons-Moll, J. Romero, N. Mahmood, M.J. Black
(SIGGRAPH 2015)

NT20 ***Efficient Dense Rigid-Body Motion Segmentation and Estimation in RGB-D Video***
Jörg Stückler, Sven Behnke
(IJCV 2015)

15:00 Coffee Break

15:30 **Awards and Closing**

Tutorials/Workshop at a Glance

Saturday, October 10th

08:30	Registration
09:00 – 12:30	Tutorial: Causality (Part 1)
09:00 – 12:30	Workshop: New Challenges in Neural Computation and Machine Learning
12:30 – 13:30	Lunch (Restaurant Lara)
13:30 – 17:00	Tutorial: Causality (Part 2)
14:00 – 17:45	Workshop: New Challenges in Neural Computation and Machine Learning

Tutorials/Workshop Program in Detail

Saturday, October 10th

8:30 **Registration**

Tutorial:

Causality

9:00 – 17:00

Room: AH VI

Causality

Jonas Peters (Max Planck Institute for Intelligent Systems, Tübingen)

Abstract

In the field of causality we are interested in answering questions like how a system reacts under interventions (e.g. in gene knock-out experiments). These questions go beyond statistical dependencies and can therefore not be answered by standard regression or classification techniques. While humans are very efficient in learning causal relations between few random variables, we require automated procedures in situations where many and/or high-dimensional data are available.

In this tutorial you will learn about the interesting problem of causal inference and recent developments in the field. The tutorial does not require any prior knowledge about causality.

Part 1: We introduce structural equation models and formalize interventional distributions. We define causal effects and show how to compute them if the causal structure is known.

Part 2: We present three ideas that can be used to infer causal structure from data: (1) finding (conditional) independences in the data, (2) restricting structural equation models and (3) exploiting the fact that causal models remain invariant in different environments.

Part 3: If time allows, we show how causal concepts can be applied in the field of machine learning.

09:00 **Opening**

Oral Session 1

Representation Learning

9:00 – 09:50

9:00 ***Archetypal Analysis as an Autoencoder***
Christian Bauckhage, Kristian Kersting, Florian Hoppe, Christian Thureau

9:10 ***Learning Transformation Invariance from Global to Local***
Jens Hocke, Thomas Martinetz

9:20 ***Polynomial approximation of spectral data in LVQ and Relevance Learning***
Friedrich Melchert, Michael Biehl

9:30 ***Dissimilarity Extraction in a Median Variant of Learning Vector Quantization***
David Nebel, Marika Kaden

9:40 ***Towards Dimensionality Reduction for Smart Home Sensor Data***
Bassam Mokbel, Alexander Schulz

Oral Session 2

Time Series and Sensor Streams

9:50 – 10:40

9:50 ***Impact of Regularization on the Model Space for Time Series Classification***
Witali Aswolinskiy, René Felix Reinhart, Jochen Steil

10:00 ***Ensembles of Neural Oscillators***
Danil Koryakin, Fabian Schrodtt, Martin V. Butz

10:10 ***Ensemble Methods and Active Learning in HCI***
Patrick Thiam, Markus Kächele, Friedhelm Schwenker, Günther Palm

10:20 ***Predictable Feature Analysis***
Stefan Richthofer, Laurenz Wiskott

10:30 ***Incremental learning of action models as HMMs over qualitative trajectory representations***
Maximilian Panzner, Philipp Cimiano

Saturday, October 10th

10:40 Coffee Break

Poster Session

10:40 – 11:40

All talks from Oral Sessions 1 and 2 have a poster here.

Invited Talk

Joschka Boedecker

11:40 – 12:30

Representation Learning for Control

Joschka Boedecker (University of Freiburg)

12:30 Lunch (Restaurant Lara)

Oral Session 3

Deep Learning

13:30 – 15:10

13:30 ***On the Applicability of Recurrent Neural Networks for Pattern Recognition in Electroencephalography Signals***

Marcel Binz, Sebastian Otte, Andreas Zell

13:40 ***Population Monte Carlo Meets Contrastive Divergence Learning***

Oswin Krause, Asja Fischer, Christian Igel

13:50 ***CAPTCHA Recognition with Active Deep Learning***

Fabian Stark, Caner Hazırbaş, Rudolph Triebel, Daniel Cremers

14:00 ***Intrinsic Plasticity: A Simple Mechanism to Stabilize Hebbian Learning in Multilayer Neural Networks***

Michael Teichmann, Fred H. Hamker

14:10 ***Identifying bank stress by deep learning of news***

Samuel Rönnqvist, Peter Sarlin

Oral Session 4**Dimensionality Reduction & Information Transfer**

13:30 – 15:10

Visualisation of heterogeneous data with simultaneous feature saliency using Generalised Generative Topographic Mapping

14:20

Shahzad Mumtaz, Michel F. Randrianandrasana, Gurjinder Bassi, Ian T. Nabney

Incremental Class Learning and Novel Class Detection of Gestures Using Ensemble

14:30

Husam Al-Behadili, Arne Grumpe, Christian Dopp, Christian Wöhler

Attention as cognitive, holistic control of the visual system

14:40

Frederik Beuth, Fred H. Hamker

Learning Conditional Mappings between Population-Coded Modalities

14:50

Fabian Schrodt, Martin V. Butz

Nyström approximation toolbox

15:00

Andrej Gisbrecht and Frank-Michael Schleich

15:10Coffee Break

Poster Session 2

15:10 – 16:10

All talks from Oral Sessions 3 and 4 have a poster here.

Invited Talk:***Christian Igel***

16:10 – 17:00

Deep Learning and Medical Image Analysis

Christian Igel (University of Copenhagen)

17:00

Awards and Closing

17:10Meeting of the GI Fachgruppe Neural Networks

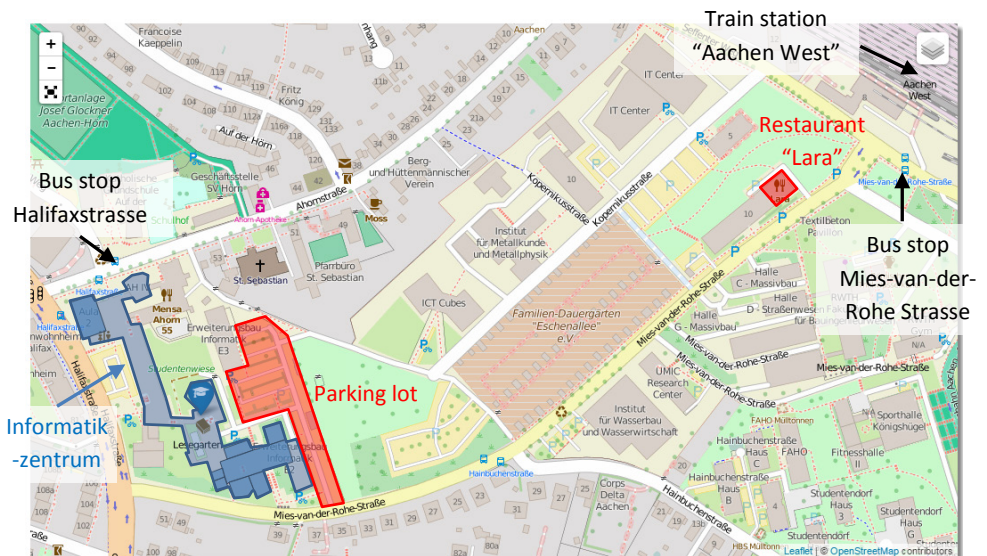
Notes

Notes

Additional Information: Conference Location

Directions:

- The conference takes place in RWTH Aachen University's "Informatikzentrum".
- Arrival by bus: The conference location is conveniently reachable with bus line 33 (direction "Uniklinik/Vaals", bus stop "Halifaxstrasse" directly in front of the building) and bus line 3A (direction "Uniklinik", bus stop "Mies-van-der-Rohe Strasse", 300m walk from there). Both bus lines pass through the inner city and are easily reachable from most hotels.
- Arrival by train: The closest train station is "Aachen West", 2 stations from "Aachen Hauptbahnhof". Many trains stop here, so this is a very convenient and fast way to reach the conference from the Hauptbahnhof area. After arriving at "Aachen West", leave the platform, go downstairs to the underpass and turn right into Seffenter Weg; turn left into Mies-van-der-Rohe-Straße and go straight uphill until you reach the Informatikzentrum.
- Arrival by taxi: The address of the conference location is "Informatikzentrum, Ahornstrasse 55".
- Arrival with an own car: The Informatikzentrum has an own parking lot with an entry on Mies-van-der-Rohe Strasse. Parking there requires a parking ticket, which you can get at the registration desk. **Please get your parking ticket directly after your arrival and put it into your car.**



Lunch breaks:

- For early arrivals on Wednesday, there will be some fingerfood at the conference in front of Aula2.
- On Thursday and Friday, there will be a catered lunch served from 12:30 – 13:30 in Aula2 (included in the conference registration).
- For the workshop and tutorial on Saturday, lunch arrangements have been made at restaurant “Lara”, Mies-van-der-Rohe Strasse 10 (included for NC2 participants).

WiFi access:

- Connect to “mops”
Login: gcprvmv2015
Password: tugebub

Android login



Conference banquet:

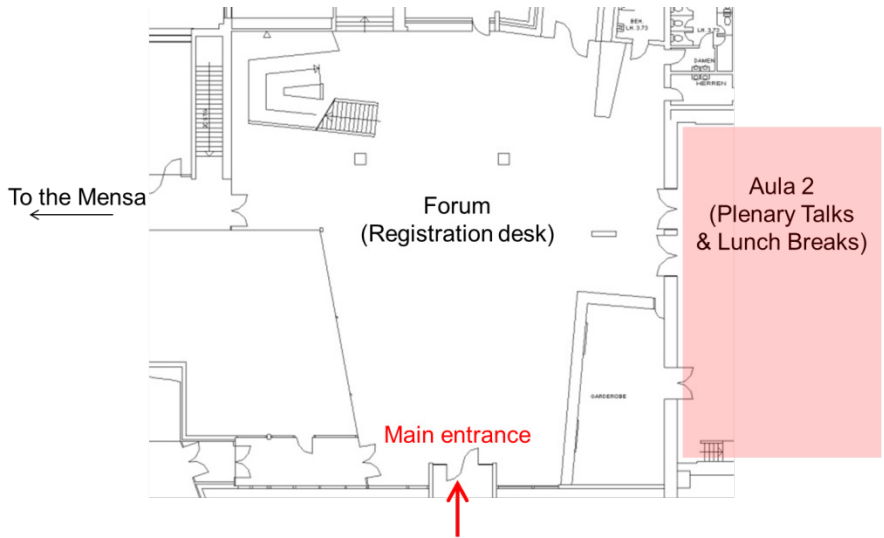
- The conference banquet will take place in the Coronation Hall of Aachen’s historic Town Hall building on Market Square (see big map on p.39). The Town Hall is one of Aachen’s main landmark buildings, located vis-à-vis the Cathedral. Parts of the building date back to the reign of Charlemagne (800 AD).
- Entry will be on Thursday evening at 19:00h and the dinner will start at around 19:30h.

Maps of the conference location:

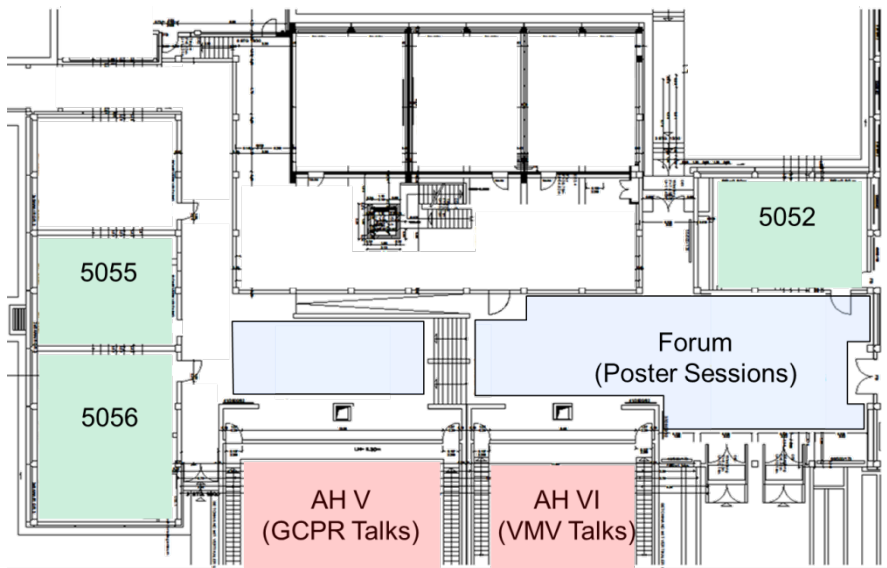
- The keynotes and plenary sessions of both conferences will take place jointly in “Aula2”, while the main conference talks will take place in parallel in lecture halls AH V (GCPR) and AH VI (VMV), respectively.



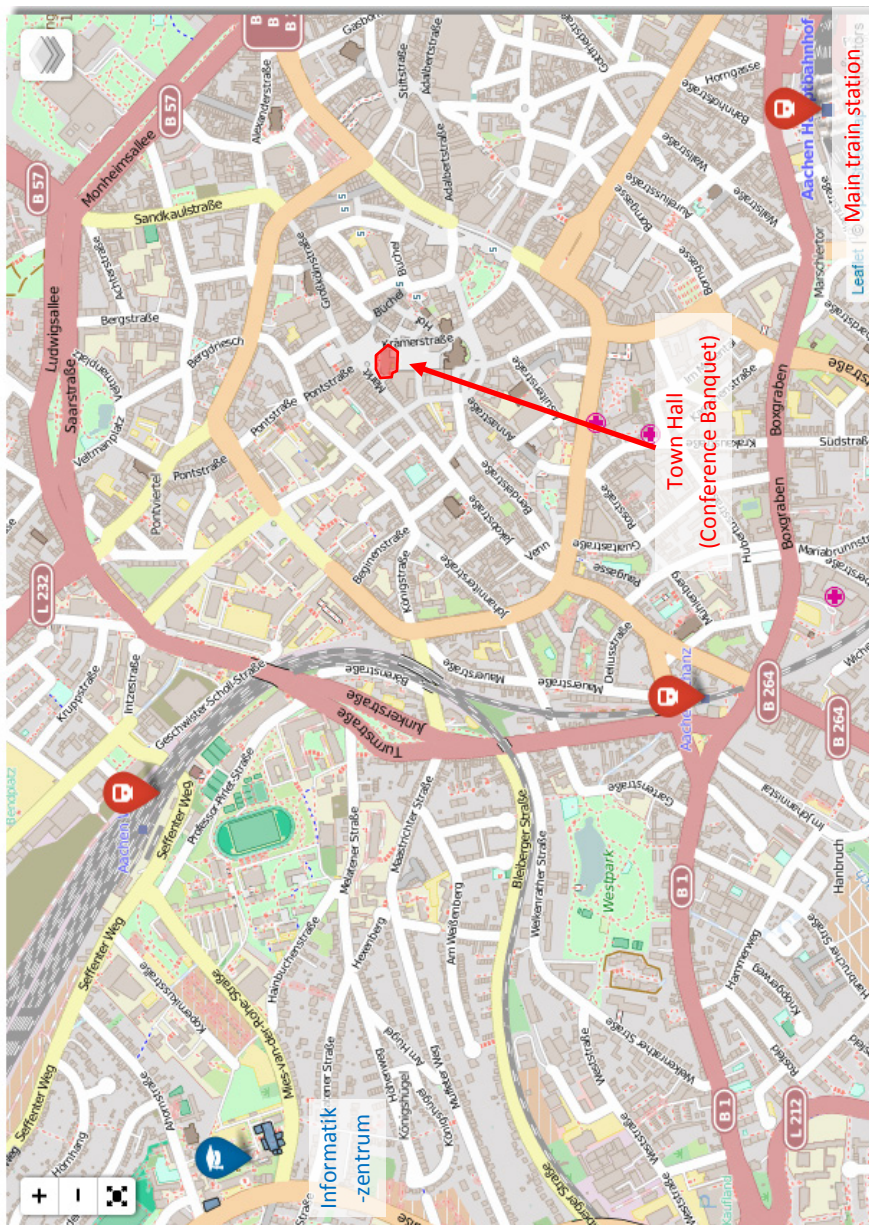
Keynote and plenary talks, lunch breaks:



Main conference talks and poster sessions:



City Map



Map by OpenStreetMap

Conference Program at a Glance

Time	Wed, 07.10.		Thu, 08.10.		Fri, 09.10.		Sat, 10.10.	
	G CPR	VMV	G CPR	VMV	G CPR	VMV	Tutorial Causality	NC2 Workshop
8:30			Registration		Registration		Registration	
9:00			Keynote: Max Welling		Keynote: Andrew Blake		Part 1a Causal Language	
9:30							Oral Sessions	
10:00			Plenary Oral Session 1		Plenary Oral Session 2			
10:30			Coffee		Coffee		Coffee	
11:00							Part 1b Causal Reasoning	
11:30			Oral Session 3 Math. Foundations & Img. Processing	Oral Session 3 Rendering	Oral Session 6 Recognition & Scene Understanding	Oral Session 6 Acquisition	Posters	
12:00	Registration						Invited Talk: Joschka Boedecker	
12:30	Opening		Lunch (Aula 2)		Lunch (Aula 2)		Lunch (Restaurant Lara)	
13:00	Keynote: Niloy Mitra						Part 2 Causal Discovery	
13:30	Coffee		Oral Session 4 Biomedical Image Analysis and Applications	Oral Session 4 Images and Video	Poster Session 2		Oral Sessions	
14:00	G CPR Opening						Coffee	
14:30	German Pattern Recognition Award Talk	Oral Session 1 Geometry	Coffee		Coffee			
15:00	Coffee		Poster Session 1		Closing & Awards		Part 3 Applications	
15:30	Oral Session 2 Motion and Reconstruction	Oral Session 2 Visualization	Oral Session 5 Human Pose Analysis	Oral Session 5 Simulation			Invited Talk: Christian Igel	
16:00							Posters	
16:30							Meeting of the GI Fachgruppe Neural Networks	
17:00	DAGM Meeting							
17:30								
18:00								
18:30								
19:00			Conference Dinner (Coronation Hall, Aachen Town Hall) 19:00 - 23:00					
19:30								
20:00								
20:30								

Room Legend:

Aula 2 (Plenary Sessions)	
AH V (G CPR)	AH VI (Tutorial)
AH VI (VMV)	AH V (NC2 Workshop)