

Katrin Franke
Klaus-Robert Müller
Bertram Nickolay
Ralf Schäfer (Eds.)

LNC5 4174

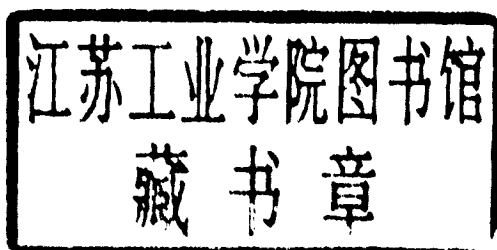
Pattern Recognition

28th DAGM Symposium
Berlin, Germany, September 2006
Proceedings

Katrin Franke Klaus-Robert Müller
Bertram Nickolay Ralf Schäfer (Eds.)

Pattern Recognition

28th DAGM Symposium
Berlin, Germany, September 12-14, 2006
Proceedings



Springer

Volume Editors

Katrin Franke

Bertram Nickolay

Fraunhofer Institute for Production Systems and Design Technology (IPK)

Department of Security Technology, Pascalstr. 8-9, 10587 Berlin, Germany

E-mail: {katrin.franke, bertram.nickolay}@ipk.fraunhofer.de

Klaus-Robert Müller

Fraunhofer Institute for Computer Architecture and Software Technology (FIRST)

Department of Intelligent Data Analysis, Kekulestr. 7, 12489 Berlin, Germany

E-mail: klaus-robert.mueller@first.fraunhofer.de

Ralf Schäfer

Fraunhofer Institute for Information and Communication Technology

Heinrich Hertz Institute (HHI), Department of Electronic Imaging Technology

Einsteinufer 37, 10587 Berlin, Germany

E-mail: ralf.schaefer@hhi.fraunhofer.de

Library of Congress Control Number: 2006932037

CR Subject Classification (1998): I.5, I.4, I.3.5, I.2.10, I.2.6, F.2.2

LNCS Sublibrary: SL 6 – Image Processing, Computer Vision, Pattern Recognition, and Graphics

ISSN 0302-9743

ISBN-10 3-540-44412-2 Springer Berlin Heidelberg New York

ISBN-13 978-3-540-44412-1 Springer Berlin Heidelberg New York

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, re-use of illustrations, recitation, broadcasting, reproduction on microfilms or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer. Violations are liable to prosecution under the German Copyright Law.

Springer is a part of Springer Science+Business Media

springer.com

© Springer-Verlag Berlin Heidelberg 2006

Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India
Printed on acid-free paper SPIN: 11861898 06/3142 5 4 3 2 1 0

Preface

This LNCS volume contains the papers presented at the 28th Annual Symposium of the German Association for Pattern Recognition, DAGM 2006, held during September 12-14, 2006 at Fraunhofer IPK in Berlin, Germany. This symposium was jointly organized by the three Fraunhofer Institutes HHI, IPK and FIRST, and it was a great honor for the organizers to host such a renowned, scientific event.

In total, 171 papers from 29 countries were submitted, of which 76 (44%) were accepted. We would therefore like to thank all the authors for submitting their work and apologize that not all papers could be accepted. This record number of submissions is an acknowledgement of the high reputation of the DAGM Symposium but at the same time it was a challenge for the Program Committee, as all papers were reviewed by three experts. Therefore we are especially grateful to the 62 members of the Program Committee for their remarkable effort and the high quality as well as the timely delivery of the reviews. Out of the 76 accepted papers, 31 were oral presentations and 45 were posters. However, this selection does not imply any quality ranking but reflects the preference of the authors or the clustering of certain topics.

It was also a special honor to have five very renowned invited speakers at this conference:

- *Gabriel Curio* – Charité, Bernstein Center for Computational Neuroscience, Berlin, Germany
- *Thomas Hofmann* – Technical University Darmstadt, Germany
- *Thomas Huang* – Beckman Institute, University of Illinois, USA
- *Sebastian Thrun* – Artificial Intelligence Lab, Stanford University, USA
- *Patrice Simard* – Document Processing and Understanding (DPU) Group - Microsoft Research, Redmond, USA

These speakers presented their views on the state of the art in pattern recognition and image processing.

One day prior to the symposium, there were four tutorials which gave an in-depth insight into topics of current interest:

- “Elements of Geometric Computer Vision” by Andrea Fusiello – University of Verona, Italy
- “Approximate Probabilistic Inference for Machine Learning” by Manfred Opper – Technical University Berlin, Germany
- “3D Camera Tracking, Reconstruction and View Synthesis at Interactive Frame Rates” by Jan-Michael Frahm – University of North Carolina at Chapel Hill (UNC), USA; Jan-Friso Evers-Senne and Reinhard Koch – Christian-Albrechts-University, Kiel, Germany
- “Level Set Methods in Computer Vision” by Daniel Cremers, Thomas Brox and Kalin Kolev – University of Bonn, Germany

The organization of such an event is not possible without the effort and the enthusiasm of the people involved. We would therefore like to thank all the members of the Local Organizing Committee and the Local Steering Committee. Moreover, special thanks go to Katrin Franke and Mario Köppen for managing the reviewing process, for handling of the papers and for the preparation of the book, to Elnaz Mazandarani for the maintenance of the conference system and to Andrea Semionyk for the complete organization of the event.

We would also like to thank our sponsors Deutsche Telekom Laboratories, Robert Bosch GmbH, Siemens AG, and idalab GmbH for their support of the symposium. We hope that these proceedings, published in Springer's *Lecture Notes in Computer Science* as in previous symposia, will not only impact on the current research of the readers, but will also represent important archival material.

June 2006

Klaus-Robert Müller
Bertram Nickolay
Ralf Schäfer

Awards 2005

Olympus Prize

The Olympus Prize 2005 was awarded to:

**Michael Felsberg and
Volker Roth**

for their outstanding contributions to the area of image segmentation.

DAGM Prizes

The main prize for 2005 was awarded to:

**Bodo Rosenhahn, Uwe G. Kersting, Andrew W. Smith,
Jason K. Gurney, Thomas Brox, Reinhard Klette**

A System for Marker-less Human Motion Estimation

Further DAGM prizes for 2005 were awarded to:

Natalia Slesareva, Andrés Bruhn, Joachim Weickert

Optic Flow Goes Stereo: A Variational Method for Estimating Discontinuity-
Preserving Dense Disparity Maps

Matthias Heiler, Jens Keuchel, Christoph Schnörr

Semidefinite Clustering for Image Segmentation with A-priori Knowledge

Olaf Ronneberger, Janis Fehr, Hans Burkhardt

Voxel-Wise Gray Scale Invariants for Simultaneous Segmentation and
Classification

Christian Perwass, Christian Gebken, Gerald Sommer

Estimation of Geometric Entities and Operators from Uncertain Data

DAGM 2006 Organization

DAGM 2006 was organized by the Fraunhofer Institutes FIRST, HHI and IPK. This 28th symposium of the German Association for Pattern Recognition (DAGM e.V.) was intended as a convention of renowned experts in all areas of pattern recognition and image processing to present and discuss recent progress and advances.

Chairmen and Organizing Committees

Honorary Chair	Hans Burkhardt (University of Freiburg)
General Co-chairs	Klaus-Robert Müller (Fraunhofer FIRST) Bertram Nickolay (Fraunhofer IPK) Ralf Schäfer (Fraunhofer HHI)
Program Chair	Katrin Franke (Fraunhofer IPK)
Tutorial Chair	Oliver Schreer (Fraunhofer HHI)
Award Chair	Peter Eisert (Fraunhofer HHI)
Web Chair	Mario Köppen (Fraunhofer IPK)
Organizing Chair	Andrea Semionyk (Fraunhofer HHI)
Local Steering Committee	Olaf Hellwich (TU Berlin) Jörg Krüger (TU Berlin) Klaus Obermayer (TU Berlin) Thomas Tolxdorff (FU Berlin)
Local Organization	Tomasz Gingold (Fraunhofer IPK) Elnaz Mazandarani (Fraunhofer IPK) Anton Schwaighofer (Fraunhofer FIRST)

Program Committee

Jürgen Beyerer (Uni. Karlsruhe)	Joaquin Candela (MPI Tübingen)
Niels Birbaumer (Uni. Tübingen)	Joaquin Curio (Charité Berlin)
Horst Bischof (TU Graz)	Peter Eisert (Fraunhofer HHI)
Gilles Blanchard (Fraunhofer FIRST)	Wolfgang Förstner (Uni. Bonn)
Benjamin Blankertz (Fraunhofer FIRST)	Armin Grün (ETH Zürich)
Joachim M. Buhmann (ETH Zürich)	Fred Hamprecht (Uni. Heidelberg)
Hans Burkhardt (Uni. Freiburg)	Heinz Handels (Uni. Hamburg)

Olaf Hellwich (TU Berlin)	Günter Palm (Uni. Ulm)
Gerd Hirzinger (DLR Oberpfaffenhofen)	Bernd Radig (TU München)
Thomas Hofmann (TU Darmstadt)	Gunnar Rätsch (F. Miescher Labs)
Joachim Hornegger (Uni. Erlangen)	Martin Riedmiller (Uni. Osnabrück)
Berndt Jähne (Uni. Heidelberg)	Helge Ritter (Uni. Bielefeld)
Herbert Janssen (Honda Research Inst.)	J. Ruiz del Solar (Universidad de Chile)
Xiaoyi Jiang (Uni. Münster)	Dietmar Sagerer (Uni. Bielefeld)
Thorsten Joachims (Cornell)	Dietmar Saupe (Uni. Konstanz)
Wilhelm Kinsces (Daimler-Chrysler)	Tobias Scheffer (HU Berlin)
Reinhard Koch (Uni. Kiel)	Bernt Schiele (ETH Zürich)
Mario Köppen (Fraunhofer IPK)	Bernhard Schölkopf (MPI Tübingen)
Edgar Körner (Honda Research Inst.)	Christoph Schnörr (Uni. Mannheim)
Ulrich Kressel (Daimler-Chrysler)	Hans-Peter Seidel (MPI Saarbrücken)
Walter Kropatsch (TU Wien)	Gerald Sommer (Uni. Kiel)
Jürgen Kurths (Uni. Potsdam)	John Shawe-Taylor (Uni. of Southampton)
Thomas Martinetz (Uni. Lübeck)	Alex Smola (ANU)
Helmut Mayer (Uni.-BW München)	Winfried Teiwe (SMI Teltow)
Rudolf Mester (Uni. Frankfurt)	Thomas Tolxdorff (FU Berlin)
Bernd Michaelis (Uni. Magdeburg)	Thomas Vetter (Uni. Basel)
Hans-Hellmut Nagel (Uni. Karlsruhe)	Friedrich M. Wahl (Uni. Braunschweig)
Hermann Ney (RWTH Aachen)	Joachim Weickert (Uni. Saarland)
Heinrich Niemann (Uni. Erlangen)	Heinz Wörn (Uni. Karlsruhe)
Klaus Obermayer (TU Berlin)	Stefan Wrobel (Fraunhofer AIS)
Manfred Opper (TU Berlin)	
Manfred Paeschke (Bundesdruckerei)	

Additional Referees

Devrim Akca	Charanpal Dhanjal	Jürgen Gall
Klaus Arbter	Stephan Didas	Christian Gebken
Martin Böhme	Gyuri Dorko	Stefan Gehrig
Claus Bahlmann	Guido Dornhege	Christian Gollan
Matthew Blaschko	Michael Dorr	Markus Grabner
Fabio de Bona	Philippe Dreuw	Horia Grecu
Michael Brückner	Jan Ehrhardt	Allan Hanbury
Mikio L. Braun	MarkusENZweiler	Marc Hanheide
Ulf Brefeld	Kai Essig	Stefan Harmeling
Michael Breuss	Jörg Finger	Sasa Hasan
Andres Bruhn	Thomas Finley	Juergen Hesser
Jan Bungeroth	M.O. Franz	N. Jeremy Hill
Nikos Canterakis	Mario Fritz	Ulrich Hillenbrand
Marco A. Chavarria	Linus Görlitz	Heiko Hirschmüller
Alexandru Condurache	Michael Götting	Florian Hoppe
Thomas Deselaers	Dilan Gürur	Zakria Hussain

Adrian Ion	Petra Philips	Daniel Stein
Brijnesh J. Jain	Luis Pizarro	Klaus Strobl
Martin Kampel	Thomas Pock	Thorsten Sy
Jens Kohlmorgen	F.C. Popescu	Ryota Tamioka
Istvan Kokai	Herward Prehn	Alexandra Teynor
Reinhard Konthe	Matthias Raetsch	Marko Tscherepanow
Franz Kummert	Marco Reisert	Christian Veenhuis
Marcel Lüthi	Konrad Rieck	Rodrigo Verschae
Kai Labusch	Markus Rilk	Raul Vicente Garcia
Julian Laub	Sami Romdhani	Sven Wachsmuth
Steven Lemm	Bodo Rosenhahn	Christian James Walder
Ingo Luetkebohle	Volker Roth	Zhuoran Wang
Karsten Müller	Christian Schmaltz	Martin Welk
Nikodem Majer	Jan Schneider	Ralf Westphal
Arne Mauser	Oliver Schreer	Wilhelm Wilke
Frank C. Meinecke	Gabriele Schweikert	Simon Winkelbach
Zaharya Menevidis	Matthias Seeger	Sebastian Wrede
Sven Molkenstruck	Edgar Seemann	Mingrui Wu
Ugur Oezdemir	Wolfgang Sepp	Ulas Yilmaz
Björn Ommer	Lokesh Setia	Georg Zeller
Cheng Soon Ong	Benyah Shaparenko	Andreas Ziehe
Peter Orbanz	Nils T. Siebel	Alexander Zien
Pavel Pavlov	Natalia Slesareva	

Sponsoring Institutions

Deutsche Telekom Laboratories, Berlin, Germany
 Robert Bosch GmbH, Stuttgart, Germany
 Siemens AG, Munich, Germany
 idalab GmbH, Berlin, Germany

Table of Contents

Image Filtering, Restoration and Segmentation

Ultrasound Image Denoising by Spatially Varying Frequency Compounding	1
<i>Yael Erez, Yoav Y. Schechner, Dan Adam</i>	
Exploiting Low-Level Image Segmentation for Object Recognition	11
<i>Volker Roth, Björn Ommer</i>	
Wavelet Based Noise Reduction by Identification of Correlations	21
<i>Anja Borsdorf, Rainer Raupach, Joachim Hornegger</i>	
Template Based Gibbs Probability Distributions for Texture Modeling and Segmentation	31
<i>Dmitrij Schlesinger</i>	
Efficient Combination of Probabilistic Sampling Approximations for Robust Image Segmentation	41
<i>Jens Keuchel, Daniel Küttel</i>	
Diffusion-Like Reconstruction Schemes from Linear Data Models	51
<i>Hanno Scharf</i>	
Reduction of Ring Artifacts in High Resolution X-Ray Microtomography Images	61
<i>Maria Axelsson, Stina Svensson, Gunilla Borgefors</i>	
A Probabilistic Multi-phase Model for Variational Image Segmentation	71
<i>Thomas Pock, Horst Bischof</i>	
Provably Correct Edgel Linking and Subpixel Boundary Reconstruction	81
<i>Ulrich Köthe, Peer Stelldinger, Hans Meine</i>	
The Edge Preserving Wiener Filter for Scalar and Tensor Valued Images	91
<i>Kai Krajsek, Rudolf Mester</i>	

From Adaptive Averaging to Accelerated Nonlinear
Diffusion Filtering 101
Stephan Didas, Joachim Weickert

Introducing Dynamic Prior Knowledge to Partially-Blurred Image
Restoration 111
Hongwei Zheng, Olaf Hellwich

Shape Analysis and Representation

On-Line, Incremental Learning of a Robust Active
Shape Model 122
Michael Fussenegger, Peter M. Roth, Horst Bischof, Axel Pinz

Using Irreducible Group Representations for Invariant 3D Shape
Description 132
Marco Reisert, Hans Burkhardt

Shape Matching by Variational Computation of Geodesics
on a Manifold 142
Frank R. Schmidt, Michael Clausen, Daniel Cremers

A Modification of the Level Set Speed Function
to Bridge Gaps in Data 152
Karsten Rink, Klaus Tönnies

Generation and Initialization of Stable 3D Mass-Spring Models
for the Segmentation of the Thyroid Cartilage 162
*Jana Dornheim, Lars Dornheim, Bernhard Preim, Ilka Hertel,
Gero Strauss*

Preserving Topological Information in the Windowed Hough Transform
for Rectangle Extraction 172
Dan Cireşan, Dana Damian

Recognition, Categorization and Detection

Fast Scalar and Vectorial Grayscale Based Invariant Features for 3D
Cell Nuclei Localization and Classification 182
*Janina Schulz, Thorsten Schmidt, Olaf Ronneberger,
Hans Burkhardt, Taras Pasternak, Alexander Dovzhenko,
Klaus Palme*

Integrating Recognition and Reconstruction for Cognitive Traffic Scene Analysis from a Moving Vehicle	192
<i>Bastian Leibe, Nico Cornelis, Kurt Cornelis, Luc Van Gool</i>	
Sparse Patch-Histograms for Object Classification in Cluttered Images	202
<i>Thomas Deselaers, Andre Hegerath, Daniel Keysers, Hermann Ney</i>	
An Object-Oriented Approach Using a Top-Down and Bottom-Up Process for Manipulative Action Recognition	212
<i>Zhe Li, Jannik Fritsch, Sven Wachsmuth, Gerhard Sagerer</i>	
Detecting Intrinsically Two-Dimensional Image Structures Using Local Phase	222
<i>Di Zang, Gerald Sommer</i>	
Towards Unsupervised Discovery of Visual Categories	232
<i>Mario Fritz, Bernt Schiele</i>	
Cross-Articulation Learning for Robust Detection of Pedestrians	242
<i>Edgar Seemann, Bernt Schiele</i>	
Analysis on a Local Approach to 3D Object Recognition	253
<i>Elisabetta Delponte, Elise Arnaud, Francesca Odone, Alessandro Verri</i>	
Phase Based 3D Texture Features	263
<i>Janis Fehr, Hans Burkhardt</i>	
Learning of Graphical Models and Efficient Inference for Object Class Recognition	273
<i>Martin Bergtholdt, Jörg H. Kappes, Christoph Schnörr</i>	
Properties of Patch Based Approaches for the Recognition of Visual Object Classes	284
<i>Alexandra Teynor, Esa Rahtu, Lokesh Setia, Hans Burkhardt</i>	
 Computer Vision and Image Retrieval	
Feature Selection for Automatic Image Annotation	294
<i>Lokesh Setia, Hans Burkhardt</i>	

Image Database Navigation on a Hierarchical MDS Grid	304
<i>Gerald Schaefer, Simon Ruszala</i>	

Linear vs. Nonlinear Feature Combination for Saliency Computation: A Comparison with Human Vision	314
<i>Nabil Ouerhani, Alexandre Bur, Heinz Hügli</i>	

Facial Expression Modelling from Still Images Using a Single Generic 3D Head Model	324
<i>Michael Hähnel, Andreas Wiratanaya, Karl-Friedrich Kraiss</i>	

Extraction of Haar Integral Features on Omnidirectional Images: Application to Local and Global Localization	334
<i>Ouiddad Labbani-Igbida, Cyril Charron, El Mustapha Mouaddib</i>	

Machine Learning and Statistical Data Analysis

Model Selection in Kernel Methods Based on a Spectral Analysis of Label Information	344
<i>Mikio L. Braun, Tilman Lange, Joachim M. Buhmann</i>	

Importance-Weighted Cross-Validation for Covariate Shift	354
<i>Masashi Sugiyama, Benjamin Blankertz, Matthias Krauledat, Guido Dornhege, Klaus-Robert Müller</i>	

Parameterless Isomap with Adaptive Neighborhood Selection	364
<i>Nathan Mekuz, John K. Tsotsos</i>	

Efficient Algorithms for Similarity Measures over Sequential Data: A Look Beyond Kernels	374
<i>Konrad Rieck, Pavel Laskov, Klaus-Robert Müller</i>	

Multi-scale Bayesian Based Horizon Matchings Across Faults in 3d Seismic Data	384
<i>Fitsum Admasu, Klaus Tönnies</i>	

Biomedical Data Analysis

Robust MEG Source Localization of Event Related Potentials: Identifying Relevant Sources by Non-Gaussianity	394
<i>Peter Breun, Moritz Grosse-Wentrup, Wolfgang Utschick, Martin Buss</i>	

Classifying Event-Related Desynchronization in EEG, ECoG and MEG Signals	404
<i>N. Jeremy Hill, Thomas Navin Lal, Michael Schröder, Thilo Hinterberger, Guido Widman, Christian E. Elger, Bernhard Schölkopf, Niels Birbaumer</i>	

Optimizing Spectral Filters for Single Trial EEG Classification.....	414
<i>Ryota Tomioka, Guido Dornhege, Guido Nolte, Kazuyuki Aihara, Klaus-Robert Müller</i>	

Probabilistic De Novo Peptide Sequencing with Doubly Charged Ions....	424
<i>Hansruedi Peter, Bernd Fischer, Joachim M. Buhmann</i>	

Motion Analysis and Tracking

Direct Estimation of the Wall Shear Rate Using Parametric Motion Models in 3D	434
<i>Markus Jehle, Bernd Jähne, Ulrich Kertzscher</i>	

On-Line Variational Estimation of Dynamical Fluid Flows with Physics-Based Spatio-temporal Regularization	444
<i>Paul Ruhnu, Annette Stahl, Christoph Schnörr</i>	

Near Real-Time Motion Segmentation Using Graph Cuts	455
<i>Thomas Schoenemann, Daniel Cremers</i>	

Segmentation-Based Motion with Occlusions Using Graph-Cut Optimization	465
<i>Michael Bleyer, Christoph Rhemann, Margrit Gelautz</i>	

Realtime Depth Estimation and Obstacle Detection from Monocular Video	475
<i>Andreas Wedel, Uwe Franke, Jens Klappstein, Thomas Brox, Daniel Cremers</i>	

3D Human Motion Sequences Synchronization Using Dense Matching Algorithm.....	485
<i>Mikhail Mozerov, Ignasi Rius, Xavier Roca, Jordi González</i>	

Cloth X-Ray: MoCap of People Wearing Textiles.....	495
<i>Bodo Rosenhahn, Uwe G. Kersting, Katie Powell, Hans-Peter Seidel</i>	

Unconstrained Multiple-People Tracking	505
<i>Daniel Rowe, Ian Reid, Jordi González, Juan Jose Villanueva</i>	
Robust Non-rigid Object Tracking Using Point Distribution Manifolds	515
<i>Tom Mathes, Justus H. Piater</i>	
A Variational Approach to Joint Denoising, Edge Detection and Motion Estimation	525
<i>Alexandru Telea, Tobias Preusser, Christoph Garbe, Marc Droske, Martin Rumpf</i>	
Multi-step Multi-camera View Planning for Real-Time Visual Object Tracking	536
<i>Benjamin Deutsch, Stefan Wenhardt, Heinrich Niemann</i>	

Pose Recognition

Nonparametric Density Estimation for Human Pose Tracking	546
<i>Thomas Brox, Bodo Rosenhahn, Uwe G. Kersting, Daniel Cremers</i>	
Learning to Mimic Motion of Human Arm and Hand Grabbing for Constraint Adaptation.....	556
<i>Stephan Al-Zubi, Gerald Sommer</i>	
Visual Hand Posture Recognition in Monocular Image Sequences	566
<i>Thorsten Dick, Jörg Zieren, Karl-Friedrich Kraiss</i>	
Monocular Body Pose Estimation by Color Histograms and Point Tracking	576
<i>Daniel Grest, Dennis Herzog, Reinhard Koch</i>	
Pose Estimation from Uncertain Omnidirectional Image Data Using Line-Plane Correspondences	587
<i>Christian Gebken, Antti Tolvanen, Gerald Sommer</i>	
Kernel Particle Filter for Visual Quality Inspection from Monocular Intensity Images	597
<i>Dirk Stöbel, Gerhard Sagerer</i>	

Stereo and Structure from Motion

Monocular 3D Scene Reconstruction at Absolute Scales by Combination of Geometric and Real-Aperture Methods	607
<i>Annika Kuhl, Christian Wöhler, Lars Krüger, Pablo d'Angelo, Horst-Michael Groß</i>	
An Effective Stereo Matching Algorithm with Optimal Path Cost Aggregation	617
<i>Mikhail Mozerov</i>	
Tracking Camera Parameters of an Active Stereo Rig	627
<i>Thao Dang, Christian Hoffmann</i>	
Handling Camera Movement Constraints in Reinforcement Learning Based Active Object Recognition	637
<i>Christian Derichs, Heinrich Niemann</i>	

Multi-view Image and Geometric Processing

The Inversion Camera Model	647
<i>Christian Perwass, Gerald Sommer</i>	
Determining an Initial Image Pair for Fixing the Scale of a 3D Reconstruction from an Image Sequence	657
<i>Christian Beder, Richard Steffen</i>	
Multi-camera Radiometric Surface Modelling for Image-Based Re-lighting	667
<i>Oliver Grau</i>	
A Multiple Graph Cut Based Approach for Stereo Analysis.....	677
<i>Ulas Vural, Yusuf Sinan Akgul</i>	
Robust Variational Segmentation of 3D Objects from Multiple Views	688
<i>Kalin Kolev, Thomas Brox, Daniel Cremers</i>	
Online Calibration of Two Zoom-Pan-Tilt Units for Planar Dynamic Events.....	698
<i>Kurt Cornelis, Nico Cornelis, Maarten Aerts, Egemen Özden, Luc Van Gool</i>	
Dense Stereo by Triangular Meshing and Cross Validation.....	708
<i>Peter Wey, Bernd Fischer, Herbert Bay, Joachim M. Buhmann</i>	

3D View Registration and Surface Modelling

Low-Cost Laser Range Scanner and Fast Surface Registration
Approach 718
Simon Winkelbach, Sven Molkenstruck, Friedrich M. Wahl

A Point-Based Approach to PDE-Based Surface Reconstruction..... 729
Christian Linz, Bastian Goldlücke, Marcus Magnor

Robust Feature Representation for Efficient Camera Registration 739
Kevin Köser, Volker Härtel, Reinhard Koch

Reconstruction of Façade Structures Using a Formal Grammar
and RjMCMC 750
Nora Ripperda, Claus Brenner

Stable Wave Detector of Blobs in Images..... 760
Jan Dupač, Václav Hlaváč

Author Index 771