

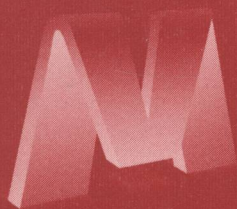
LNCS 4191

Rasmus Larsen
Mads Nielsen
Jon Sporring (Eds.)

Medical Image Computing and Computer-Assisted Intervention – MICCAI 2006

9th International Conference
Copenhagen, Denmark, October 2006
Proceedings, Part II

2 Part II



MICCAI



Springer

R 445-53

M 489

2006 Rasmus Larsen Mads Nielsen
Jon Sparring (Eds.)

V.2

Medical Image Computing and Computer-Assisted Intervention – MICCAI 2006

9th International Conference
Copenhagen, Denmark, October 1-6, 2006
Proceedings, Part II



Springer



E200604061

Volume Editors

Rasmus Larsen
Technical University of Denmark
Informatics and Mathematical Modelling
2800 Kgs. Lyngby, Denmark
E-mail: rl@imm.dtu.dk

Mads Nielsen
IT University of Copenhagen
Rued Langgaards Vej 7, 2300 København S, Denmark
E-mail: malte@itu.dk

Jon Sparring
University of Copenhagen
Department of Computer Science
Universitetsparken 1, 2100 København Ø, Denmark
E-mail: sparring@diku.dk

Library of Congress Control Number: 2006932793

CR Subject Classification (1998): I.5, I.4, I.3.5-8, I.2.9-10, J.3, J.6

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

ISSN 0302-9743
ISBN-10 3-540-44727-X Springer Berlin Heidelberg New York
ISBN-13 978-3-540-44727-6 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: 11866763 06/3142 5 4 3 2 1 0

Commenced Publication in 1973

Founding and Former Series Editors:

Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

Editorial Board

David Hutchison

Lancaster University, UK

Takeo Kanade

Carnegie Mellon University, Pittsburgh, PA, USA

Josef Kittler

University of Surrey, Guildford, UK

Jon M. Kleinberg

Cornell University, Ithaca, NY, USA

Friedemann Mattern

ETH Zurich, Switzerland

John C. Mitchell

Stanford University, CA, USA

Moni Naor

Weizmann Institute of Science, Rehovot, Israel

Oscar Nierstrasz

University of Bern, Switzerland

C. Pandu Rangan

Indian Institute of Technology, Madras, India

Bernhard Steffen

University of Dortmund, Germany

Madhu Sudan

Massachusetts Institute of Technology, MA, USA

Demetri Terzopoulos

University of California, Los Angeles, CA, USA

Doug Tygar

University of California, Berkeley, CA, USA

Moshe Y. Vardi

Rice University, Houston, TX, USA

Gerhard Weikum

Max-Planck Institute of Computer Science, Saarbruecken, Germany

Preface

The 9th International Conference on Medical Image Computing and Computer Assisted Intervention, MICCAI 2006, was held in Copenhagen, Denmark at the Tivoli Concert Hall with satellite workshops and tutorials at the IT University of Copenhagen, October 1-6, 2006.

The conference has become the premier international conference with in-depth full length papers in the multidisciplinary fields of medical image computing, computer-assisted intervention, and medical robotics. The conference brings together clinicians, computer scientists, engineers, physicists, and other researchers and offers a forum for the exchange of ideas in a multidisciplinary setting.

MICCAI papers are of high standard and have a long lifetime. In this volume as well as in the latest journal issues of Medical Image Analysis and IEEE Transactions on Medical Imaging papers cite previous MICCAIs including the first MICCAI conference in Cambridge, Massachusetts, 1998. It is obvious that the community requires the MICCAI papers as archive material. Therefore the proceedings of MICCAI are from 2005 and henceforth being indexed by Medline.

A careful review and selection process was executed in order to secure the best possible program for the MICCAI 2006 conference. We received 578 scientific papers from which 39 papers were selected for the oral program and 193 papers for the poster program.

The papers were evaluated by 3 independent scientific reviewers. Reviewer affiliations were carefully checked against author affiliations to avoid conflicts of interest, and the review process was run as a double blind process. A special procedure was devised for papers from the universities of the organizers upholding a double blind review process also for these papers. A total of 98 % of the reviews we asked for were received.

The MICCAI program committee consisted of the local organizers, 2 internationally selected co-chairs, and 15 internationally selected area chairs, each a leading expert in his/her field. Each area chair was assigned 40 papers from which he/she formed a recommendation for the program committee based on the scientific reviews as well as their own assessment.

The entire program committee met in Copenhagen for 2 full days in May 2006. At this meeting all 578 papers and their corresponding reviews were printed and discussed. In a first round of discussions the area chairs were divided into 5 groups of 3. From their joint pool of 120 papers each group identified 12 potential oral papers, 28 poster papers, and 16 potential poster papers. In the second round the oral program was made from the resulting 60 potential oral papers. Oral papers were selected based on their quality, total coverage of MICCAI topics, and suitability for oral presentation. In parallel the remaining 80 potential poster papers were considered and 33 papers were accepted for poster presentations.

The entire procedure was designed such that the papers were selected by paper to paper comparison forcing the committee members to argue for the decision in each individual case.

We believe a careful and fair selection process has been carried out for MICCAI 2006. Each paper was examined by 3 reviewers, and further scrutinized by 3-8 program committee members. Our thanks go to the reviewers and area chairs for their hard work and enthusiasm, and to the two program co-chairs David Hawkes and Wiro Niessen for their dedication to putting together the program.

This year's MICCAI was augmented by more workshops than previously. Twelve independent workshops were held prior and subsequent to the conference. These workshops served as a forum for MICCAI subfields and made room for many more presentations due to their parallel programs. The workshops were organized for all scientific and most practical matters by the workshop chairs. We thank the workshop organizers for suggesting, arranging, and managing these excellent workshops. It is our hope that we will see multiple workshops also at future MICCAI conferences. Three tutorials were also provided by leading experts in their fields of research.

We thank the two keynote speakers Terry Jernigan, UCSD and Copenhagen University Hospital, Hvidovre, Denmark and Thomas Sinkjær, Director, Center for Sensory-Motor Interaction, Aalborg University, Denmark. A series of sponsors helped make the conference possible. for this they are thanked. Finally, we thank our 3 general co-chairs Anthony Maeder, Nobuhiko Hata, and Olaf Paulson, who provided insightful comments and invaluable support during the entire process of planning MICCAI 2006.

The greater Copenhagen region in Denmark and the Skåne region in Southern Sweden are connected by the Øresund Bridge. The region hosts 14 universities and a large concentration of pharmaceutical and biotech industry as well as 26 hospitals. This makes Copenhagen the capital of one of the most important life science centers in Europe.

It was our great pleasure to welcome delegates from all over the world to Denmark and the city of Copenhagen. It is our hope that delegates in addition to attending the conference took the opportunity to sample the many excellent cultural offerings of Copenhagen.

We look forward to welcoming you to MICCAI 2007 to be held October 29 - November 2 in Brisbane, Australia and chaired by Anthony Maeder.

Organization

The university sponsors for MICCAI 2006 were the IT-University of Copenhagen, the Technical University of Denmark, and the University of Copenhagen.

Executive Committee

General Chairmanship

Mads Nielsen (chair)	IT-University of Copenhagen, Denmark
Nubohiko Hata	Brigham and Women's Hospital, Boston, USA
Anthony Maeder	University of Queensland, Brisbane, Australia
Olaf Paulson	Copenhagen University Hospital, Denmark

Program Chairmanship

Rasmus Larsen (chair)	Technical University of Denmark
David Hawkes	University College London, UK
Wiro Niessen	Erasmus Medical School, Netherlands

Workshop and Tutorials Chair

Jon Sporring	University of Copenhagen, Denmark
--------------	-----------------------------------

Program Committee

Leon Axel	New York University Medical Center, USA
Marleen de Bruijne	IT University of Copenhagen, Denmark
Kevin Cleary	Georgetown University Medical Center, USA
Hervé Delingette	INRIA, Sophia Antipolis, France
Polina Golland	Massachusetts Institute of Technology, USA
Nico Karssemeijer	Radboud University Nijmegen, Netherlands
Sven Krieborg	University of Copenhagen, Denmark
Jyrki Lötjönen	VTT, Finland
Kensaku Mori	Nagoya University, Japan
Sébastien Ourselin	CSIRO, Australia
Egill Røstrup	University of Copenhagen, Denmark
Julia Schnabel	University College London, UK
Pengcheng Shi	Hong Kong University of Science and Technology
Martin Styner	University of North Carolina, USA
Carl-Fredrik Westin	Harvard University, USA

Conference Secretariat and Management

Camilla Jørgensen	IT University of Copenhagen, Denmark
Eva Branner	Congress Consultants, Denmark
Henrik J. Nielsen	Congress Consultants, Denmark

Student Awards Coordinator

Karl Heinz Höhne	Germany
------------------	---------

Local Organizing Committee

Erik Dam	IT University of Copenhagen
Sune Darkner	Technical University of Denmark
Søren Erbou	Technical University of Denmark
Mads Fogtmann Hansen	Technical University of Denmark
Michael Sass Hansen	Technical University of Denmark
Peter Stanley Jørgensen	Technical University of Denmark
Marco Loog	IT University of Copenhagen
Hildur Ólafsdóttir	Technical University of Denmark
Ole Fogh Olsen	IT University of Copenhagen
Mikkel B. Stegmann	Technical University of Denmark
Martin Vester-Christensen	Technical University of Denmark

Sponsors

AstraZeneca
Center for Clinical and Basic Research
Claron
Elsevier
GE
Medtronic
NDI - Northern Digital Inc.
Siemens Corporate Research
Springer
Visiopharm

Reviewers

Hossam El Din Hassan Abd El Munim	D. Louis Collins
Purang Abolmaesumi	Olivier Colliot
Elsa Angelini	Lars Conrad-Hansen
Anastassia Angelopoulou	Jason Corso
Neculai Archip	Olivier Coulon
John Ashburner	Patrick Courtney
Stephen Aylward	Jessica Crouch
Fred S. Azar	Erik Dam
Jose M. Azorin	Mikhail Danilouchkine
Eric Bardinnet	Sune Darkner
Christian Barillot	Julien Dauguet
Philip Batchelor	Laura Dempere-Marco
Pierre-Louis Bazin	Maxime Descoteaux
Fernando Bello	Michel Desvignes
Marie-Odile Berger	Maneesh Dewan
Abhir Bhallerao	Jean-Louis Dillenseger
Rahul Bhotika	Simon DiMaio
Isabelle Bloch	Christophe Doignon
Emad Boctor	Etienne Dombre
Thomas Boettger	Andrew Dowsey
Hrvje Bogunovic	Ye Duan
Sylvain Bouix	Simon Duchesne
Pierrick Bourgeat	Ayman El-Baz
Roger Boyle	Randy Ellis
Elizabeth Bullitt	Søren Erbou
Catherina R. Burghart	Simon Eskildsen
Darius Burschka	Yong Fan
Nathan Cahill	Aly Farag
Hongmin Cai	Aaron Fenster
Darwin G. Caldwell	Gabor Fichtinger
Oscar Camara-Rey	Oliver Fleig
Carlos Alberto Castao Moraga	P. Thomas Fletcher
Pascal Cathier	Charles Florin
M. Mallar Chakravarty	Mads Fogtmann Hansen
Hsun-Hsien Chang	Jenny Folkesson
Jian Chen	Rui Gan
Lishui Cheng	Andrew Gee
Aichi Chien	Guido Gerig
Kiyoyuki Chinzei	David Gering
Gary Christensen	Frans Gerritsen
Albert C.S. Chung	Bernard Gibaud
Moo Chung	Maryellen Giger
Chris A. Cocosco	Gaolang Gong

Ren Hui Gong
 Miguel Á.G. Ballester
 Mark Gooding
 Girish Gopalakrishnan
 Vicente Grau
 Eric Grimson
 Christophe Grova
 Christoph Guetter
 Efstathios Hadjidemetriou
 Horst Hahn
 Haissam Haidar
 Ghassan Hamarneh
 Lars G. Hanson
 Matthias Harders
 Makoto Hashizume
 M. Sabry Hassouna
 Mark Hastenteufel
 Peter Hastreiter
 Yong He
 Pierre Hellier
 David Holmes
 Byung-Woo Hong
 Robert Howe
 Qingmao Hu
 Zhenghui Hu
 Heng Huang
 Karl Heinz Höhne
 Ameet Jain
 Pierre Jannin
 Branislav Jaramaz
 Tianzi Jiang
 Yuchong Jiang
 Ge Jin
 Leigh Johnston
 Julien Jomier
 Sarang Joshi
 Leo Joskowicz
 Ioannis Kakadiaris
 D.B. Karron
 Michael Kaus
 Peter Kazanzides
 Kamran Kazemi
 Erwan Kerrien
 Irina Boshko Kezele
 Ali Khamene

Ron Kikinis
 Adelaide Kissi
 Takayuki Kitasaka
 Jan Klein
 Ender Konukoglu
 Tim Kroeger
 Thomas Lange
 Thomas Lango
 Rudy Lapeer
 Sang-Chul Lee
 Koen van Leemput
 Chunming Li
 Shuo Li
 Jianming Liang
 Hongen Liao
 Rui Liao
 Yuan-Lin Liao
 Jean Lienard
 Marius George Linguraru
 Alan Liu
 Huafeng Liu
 Tianming Liu
 Marco Loog
 William Lorensen
 Peter Lorenzen
 Anant Madabhushi
 Mahnaz Maddah
 Frederik Maes
 Sherif Makram-Ebeid
 Gregoire Malandain
 Robert Marti
 Marcos Martin-Fernandez
 Ken Masamune
 Julian Mattes
 Tim McInerney
 Gloria Menegaz
 Chuck Meyer
 Michael I. Miga
 James Miller
 Abhilash Miranda
 Lopamudra Mukherjee
 William Mullally
 Yoshihiro Muragaki
 Delphine Nain
 Kyojiro Nambu

Sumit Nath
Nassir Navab
Stephane Nicolau
Marc Niethammer
Alison Noble
Herke Jan Noordmans
Wieslaw L. Nowinski
Thomas O'Donnell
Arnaud Ogier
Allison M. Okamura
Silvia Olabarriaga
Hildur Ólafsdóttir
Salvador Olmos
Ole Fogh Olsen
Mark Olszewski
Tobias Ortmaier
Xenophon Papademetris
Nikos Paragios
Hyunjin Park
Javier Pascau
Rajni Patel
Alexandru Patriciu
Perrine Paul
Rasmus Paulsen
Ioannis Pavlidis
Kim Steenstrup Pedersen
Heinz-Otto Peitgen
Mélanie Pelegriini-Issac
Xavier Pennec
Dimitrios Perperidis
Eric Pichon
Josien Pluim
Kilian Pohl
Richard Prager
Tobias Preusser
Sylvain Prima
Jerry L. Prince
Yingge Qu
Srinivasan Rajagopalan
Nasir Rajpoot
Richard A. Robb
Miguel Angel Rodriguez-Florido
Torsten Rohlfing
Karl Rohr
Michael Rosenthal

Daniel Rueckert
Daniel Russakoff
Ichiro Sakuma
Tim Salcudean
Thomas Sebastian
Zuyao Shan
Cartik Sharma
Dinggang Shen
Hongjian Shi
Lin Shi
Rudolf Sidler
Alberto Signoroni
Nabil Simaan
Vikas Singh
Karl Sjöstrand
Örjan Smedby
Xubo Song
Jon Sporring
James Stewart
Rik Stokking
Danail Stoyanov
Yi Su
Navneeth Subramanian
Paul Suetens
Gábor Székely
Songyuan Tang
Xiaodong Tao
Huseyin Tek
Demetri Terzopoulos
Jean-Philippe Thiran
Marc Thiriet
Carlos Thomaz
Jussi Tohka
Oliver Tonet
Shan Tong
Jocelyne Troccaz
Gözde Ünal
Regis Vaillant
Ragini Verma
Martin Vester-Christensen
Pierre Vieyres
Kirby Vosburgh
Albert Vossepoel
Lionel C. C. Wai
Defeng Wang

Linwei Wang
Qiang Wang
Yiying Wang
Yongmei Michelle Wang
Yuanquan Wang
Simon Warfield
Zhouping Wei
Ross Whitaker
James Williams
Cees van Wijk
Ivo Wolf
Wilbur C.K. Wong
Chia-Hsiang Wu
John Jue Wu
Ting Wu
Chris Wyatt
Stefan Wörz

Zhong Xue
Yasushi Yamauchi
Pingkun Yan
G.Z. Yang
Ziv Yaniv
Terry Yoo
Paul Yushkevich
Stefan Zachow
Jianchao Zeng
Yiqiang Zhan
Zheen Zhao
Guoyan Zheng
S. Kevin Zhou
Wanlin Zhu
Tatjana Zrimec
Reyer Zwiggelaar

MICCAI Society

Executive Officers

Alan Colchester	President and Board Chair
Richard A. Robb	Executive Director
Nicholas Ayache	Executive Secretary
Terry M. Peters	Treasurer
Karl Heinz Höhne	Elections Officer (Honorary Board member)

Staff

Gábor Székely	Membership Coordinator
Nobuhiko Hata	Publication Coordinator

Board of Directors

Nicholas Ayache	INRIA, Sophia Antipolis, France
Alan Colchester	University of Kent, Canterbury, UK
James Duncan	Yale University, New Haven, Connecticut, USA
Guido Gerig	University of North Carolina, Chapel Hill, USA
Anthony Maeder	University of Queensland, Brisbane, Australia
Dimitris Metaxas	Rutgers University, New Jersey, USA
Mads Nielsen	IT University of Copenhagen, Copenhagen, Denmark
Alison Noble	University of Oxford, Oxford, UK
Terry M. Peters	Robarts Research Institute, London, Ontario, Canada
Richard A. Robb	Mayo Clinic College of Medicine, Rochester, Minnesota, USA

Student Awards

Every year MICCAI awards outstanding work written and presented by students. Both oral and poster presentations are eligible for the awards, and the awards are presented to the winners in a public ceremony at the conference.

MICCAI 2005 – Palm Springs

At MICCAI 2005 five prizes each valued at 500 USD sponsored by Northern Digital Incorporation (NDI) were awarded in the following categories

Image segmentation and analysis: Pingkun Yan, MRA Image Segmentation with Capillary Active Contour

Image registration: Ashraf Mohamed, Deformable Registration of Brain Tumor Images via a Statistical Model of Tumor Induced Deformation

Computer assisted interventions and robotics: Henry C. Lin, Automatic Detection and Segmentation of Robot Assisted Surgical Motions

Simulation and visualization: Peter Savadjiev, 3D Curve Inference for Diffusion MRI Regularization

Clinical applications: Srinivasan Rajagopalan, Schwarz Meets Schwann: Design and Fabrication of Biomorphic Tissue Engineering Scaffolds

MICCAI 2004 – St. Malo

At MICCAI 2004 four prizes each valued at 600 Euros sponsored by Northern Digital Incorporation (NDI) were awarded in the following categories

Image segmentation and processing: Engin Dikici, Quantification of Delayed Enhancement MR Images

Image registration and analysis: Dimitrios Perperidis, Spatio-Temporal Free-Form Registration of Cardiac MR Image Sequences

Image guided therapy and robotics: Danail Stoyanov, Dense 3D Depth Recovery for Soft Tissue Deformation During Robotically Assisted Laparoscopic Surgery

Image Simulation and Display: Davide Valtorta, Dynamic Measurements of Soft Tissue Viscoelastic Properties with a Torsional Resonator Device

Lecture Notes in Computer Science

For information about Vols. 1–4115

please contact your bookseller or Springer

Vol. 4228: D.E. Lightfoot, C.A. Szyperski (Eds.), *Modular Programming Languages*. X, 415 pages. 2006.

Vol. 4224: E. Corchado, H. Yin, V. Botti, C. Fyfe (Eds.), *Intelligent, Data Engineering and, Automated Learning – IDEAL 2006*. XXVII, 1447 pages. 2006.

Vol. 4219: D. Zamboni, C. Kruegel (Eds.), *Recent Advances in Intrusion Detection*. XII, 331 pages. 2006.

Vol. 4217: P. Cuenca, L. Orozco-Barbosa (Eds.), *Personal Wireless Communications*. XV, 532 pages. 2006.

Vol. 4213: J. Fürnkranz, T. Scheffer, M. Spiliopoulou (Eds.), *Knowledge Discovery in Databases: PKDD 2006*. XXII, 660 pages. 2006. (Sublibrary LNAI).

Vol. 4212: J. Fürnkranz, T. Scheffer, M. Spiliopoulou (Eds.), *Machine Learning: ECML 2006*. XXIII, 851 pages. 2006. (Sublibrary LNAI).

Vol. 4208: M. Gerndt, D. Kranzlmüller (Eds.), *High Performance Computing and Communications*. XXII, 938 pages. 2006.

Vol. 4207: Z. Ésik (Ed.), *Computer Science Logic*. XII, 627 pages. 2006.

Vol. 4206: P. Dourish, A. Friday (Eds.), *UbiComp 2006: Ubiquitous Computing*. XIX, 526 pages. 2006.

Vol. 4205: G. Bourque, N. El-Mabrouk (Eds.), *Comparative Genomics*. X, 231 pages. 2006. (Sublibrary LNBI).

Vol. 4202: E. Asarin, P. Bouyer (Eds.), *Formal Modeling and Analysis of Timed Systems*. XI, 369 pages. 2006.

Vol. 4201: Y. Sakakibara, S. Kobayashi, K. Sato, T. Nishino, E. Tomita (Eds.), *Grammatical Inference: Algorithms and Applications*. XII, 359 pages. 2006. (Sublibrary LNAI).

Vol. 4197: M. Raubal, H.J. Miller, A.U. Frank, M.F. Goodchild (Eds.), *Geographic, Information Science*. XIII, 419 pages. 2006.

Vol. 4196: K. Fischer, E. André, I.J. Timm, N. Zhong (Eds.), *Multiagent System Technologies*. X, 185 pages. 2006. (Sublibrary LNAI).

Vol. 4194: V.G. Ganzha, E.W. Mayr, E.V. Vorozhtsov (Eds.), *Computer Algebra in Scientific Computing*. XI, 313 pages. 2006.

Vol. 4193: T.P. Runarsson, H.-G. Beyer, E. Burke, J.J. Merelo-Guervós, L. D. Whitley, X. Yao (Eds.), *Parallel Problem Solving from Nature – PPSN IX*. XIX, 1061 pages. 2006.

Vol. 4192: B. Mohr, J.L. Träff, J. Worringer, J. Dongarra (Eds.), *Recent Advances in Parallel Virtual Machine and Message Passing Interface*. XVI, 414 pages. 2006.

Vol. 4191: R. Larsen, M. Nielsen, J. Sparring (Eds.), *Medical Image Computing and Computer-Assisted Intervention – MICCAI 2006, Part II*. XXXVIII, 981 pages. 2006.

Vol. 4190: R. Larsen, M. Nielsen, J. Sparring (Eds.), *Medical Image Computing and Computer-Assisted Intervention – MICCAI 2006, Part I*. XXXVIII, 949 pages. 2006.

Vol. 4189: D. Gollmann, J. Meier, A. Sabelfeld (Eds.), *Computer Security – ESORICS 2006*. XI, 548 pages. 2006.

Vol. 4188: P. Sojka, I. Kopeček, K. Pala (Eds.), *Text, Speech and Dialogue*. XIV, 721 pages. 2006. (Sublibrary LNAI).

Vol. 4187: J.J. Alferes, J. Bailey, W. May, U. Schwertel (Eds.), *Principles and Practice of Semantic Web Reasoning*. XI, 277 pages. 2006.

Vol. 4186: C. Jesshope, C. Egan (Eds.), *Advances in Computer Systems Architecture*. XIV, 605 pages. 2006.

Vol. 4185: R. Mizoguchi, Z. Shi, F. Giunchiglia (Eds.), *The Semantic Web – ASWC 2006*. XX, 778 pages. 2006.

Vol. 4184: M. Bravetti, M. Núñez, G. Zavattaro (Eds.), *Web Services and Formal Methods*. X, 289 pages. 2006.

Vol. 4183: J. Euzenat, J. Domingue (Eds.), *Artificial Intelligence: Methodology, Systems, and Applications*. XIII, 291 pages. 2006. (Sublibrary LNAI).

Vol. 4182: H.T. Ng, M.-K. Leong, M.-Y. Kan, D. Ji (Eds.), *Information Retrieval Technology*. XVI, 684 pages. 2006.

Vol. 4180: M. Kohlhase, OMDoc – An Open Markup Format for Mathematical Documents [version 1.2]. XIX, 428 pages. 2006. (Sublibrary LNAI).

Vol. 4179: J. Blanc-Talon, W. Philips, D. Popescu, P. Scheunders (Eds.), *Advanced Concepts for Intelligent Vision Systems*. XXIV, 1224 pages. 2006.

Vol. 4178: A. Corradini, H. Ehrig, U. Montanari, L. Ribeiro, G. Rozenberg (Eds.), *Graph Transformations*. XII, 473 pages. 2006.

Vol. 4176: S.K. Katsikas, J. Lopez, M. Backes, S. Gritzalis, B. Preneel (Eds.), *Information Security*. XIV, 548 pages. 2006.

Vol. 4175: P. Bücher, B.M.E. Moret (Eds.), *Algorithms in Bioinformatics*. XII, 402 pages. 2006. (Sublibrary LNBI).

Vol. 4174: K. Franke, K.-R. Müller, B. Nickolay, R. Schäfer (Eds.), *Pattern Recognition*. XX, 773 pages. 2006.

Vol. 4173: S. El Yacoubi, B. Chopard, S. Bandini (Eds.), *Cellular Automata*. XV, 734 pages. 2006.

- Vol. 4172: J. Gonzalo, C. Thanos, M. F. Verdejo, R.C. Carrasco (Eds.), Research and Advanced Technology for Digital Libraries. XVII, 569 pages. 2006.
- Vol. 4169: H.L. Bodlaender, M.A. Langston (Eds.), Parameterized and Exact Computation. XI, 279 pages. 2006.
- Vol. 4168: Y. Azar, T. Erlebach (Eds.), Algorithms – ESA 2006. XVIII, 843 pages. 2006.
- Vol. 4167: S. Dolev (Ed.), Distributed Computing. XV, 576 pages. 2006.
- Vol. 4165: W. Jonker, M. Petković (Eds.), Secure, Data Management. X, 185 pages. 2006.
- Vol. 4163: H. Bersini, J. Carneiro (Eds.), Artificial Immune Systems. XII, 460 pages. 2006.
- Vol. 4162: R. Kráľovič, P. Urzyczyn (Eds.), Mathematical Foundations of Computer Science 2006. XV, 814 pages. 2006.
- Vol. 4161: R. Harper, M. Rauterberg, M. Combetto (Eds.), Entertainment Computing - ICEC 2006. XXVII, 417 pages. 2006.
- Vol. 4160: M. Fisher, W.v.d. Hoek, B. Konev, A. Lisitsa (Eds.), Logics in Artificial Intelligence. XII, 516 pages. 2006. (Sublibrary LNAI).
- Vol. 4159: J. Ma, H. Jin, L.T. Yang, J.J.-P. Tsai (Eds.), Ubiquitous Intelligence and Computing. XXII, 1190 pages. 2006.
- Vol. 4158: L.T. Yang, H. Jin, J. Ma, T. Ungerer (Eds.), Autonomic and Trusted Computing. XIV, 613 pages. 2006.
- Vol. 4156: S. Amer-Yahia, Z. Bellahsene, E. Hunt, R. Unland, J.X. Yu (Eds.), Database and XML Technologies. IX, 123 pages. 2006.
- Vol. 4155: O. Stock, M. Schaerf (Eds.), Reasoning, Action and Interaction in AI Theories and Systems. XVIII, 343 pages. 2006. (Sublibrary LNAI).
- Vol. 4154: Y.A. Dimitriadis, I. Zigurs, E. Gómez-Sánchez (Eds.), Groupware: Design, Implementation, and Use. XIV, 438 pages. 2006.
- Vol. 4153: N. Zheng, X. Jiang, X. Lan (Eds.), Advances in Machine Vision, Image Processing, and Pattern Analysis. XIII, 506 pages. 2006.
- Vol. 4152: Y. Manolopoulos, J. Pokorný, T. Sellis (Eds.), Advances in Databases and Information Systems. XV, 448 pages. 2006.
- Vol. 4151: A. Iglesias, N. Takayama (Eds.), Mathematical Software - ICMS 2006. XVII, 452 pages. 2006.
- Vol. 4150: M. Dorigo, L.M. Gambardella, M. Birattari, A. Martinoli, R. Poli, T. Stützle (Eds.), Ant Colony Optimization and Swarm Intelligence. XVI, 526 pages. 2006.
- Vol. 4149: M. Klusch, M. Rovatsos, T.R. Payne (Eds.), Cooperative Information Agents X. XII, 477 pages. 2006. (Sublibrary LNAI).
- Vol. 4148: J. Vounckx, N. Azemard, P. Maurine (Eds.), Integrated Circuit and System Design. XVI, 677 pages. 2006.
- Vol. 4146: J.C. Rajapakse, L. Wong, R. Acharya (Eds.), Pattern Recognition in Bioinformatics. XIV, 186 pages. 2006. (Sublibrary LNBI).
- Vol. 4144: T. Ball, R.B. Jones (Eds.), Computer Aided Verification. XV, 564 pages. 2006.
- Vol. 4142: A. Campilho, M. Kamel (Eds.), Image Analysis and Recognition, Part II. XXVII, 923 pages. 2006.
- Vol. 4141: A. Campilho, M. Kamel (Eds.), Image Analysis and Recognition, Part I. XXVIII, 939 pages. 2006.
- Vol. 4139: T. Salakoski, F. Ginter, S. Pyysalo, T. Pahikkala, Advances in Natural Language Processing. XVI, 771 pages. 2006. (Sublibrary LNAI).
- Vol. 4138: X. Cheng, W. Li, T. Znati (Eds.), Wireless Algorithms, Systems, and Applications. XVI, 709 pages. 2006.
- Vol. 4137: C. Baier, H. Hermanns (Eds.), CONCUR 2006 – Concurrency Theory. XIII, 525 pages. 2006.
- Vol. 4136: R.A. Schmidt (Ed.), Relations and Kleene Algebra in Computer Science. XI, 433 pages. 2006.
- Vol. 4135: C.S. Calude, M.J. Dinneen, G. Păun, G. Rozenberg, S. Stepney (Eds.), Unconventional Computation. X, 267 pages. 2006.
- Vol. 4134: K. Yi (Ed.), Static Analysis. XIII, 443 pages. 2006.
- Vol. 4133: J. Gratch, M. Young, R. Aylett, D. Ballin, P. Olivier (Eds.), Intelligent Virtual Agents. XIV, 472 pages. 2006. (Sublibrary LNAI).
- Vol. 4132: S. Kollias, A. Stafylopatis, W. Duch, E. Oja (Eds.), Artificial Neural Networks – ICANN 2006, Part II. XXXIV, 1028 pages. 2006.
- Vol. 4131: S. Kollias, A. Stafylopatis, W. Duch, E. Oja (Eds.), Artificial Neural Networks – ICANN 2006, Part I. XXXIV, 1008 pages. 2006.
- Vol. 4130: U. Furbach, N. Shankar (Eds.), Automated Reasoning. XV, 680 pages. 2006. (Sublibrary LNAI).
- Vol. 4129: D. McGookin, S. Brewster (Eds.), Haptic and Audio Interaction Design. XII, 167 pages. 2006.
- Vol. 4128: W.E. Nagel, W.V. Walter, W. Lehner (Eds.), Euro-Par 2006 Parallel Processing. XXXIII, 1221 pages. 2006.
- Vol. 4127: E. Damiani, P. Liu (Eds.), Data and Applications Security XX. X, 319 pages. 2006.
- Vol. 4126: P. Barahona, F. Bry, E. Franconi, N. Henze, U. Sattler, Reasoning Web. XII, 269 pages. 2006.
- Vol. 4124: H. de Meer, J.P. G. Sterbenz (Eds.), Self-Organizing Systems. XIV, 261 pages. 2006.
- Vol. 4121: A. Biere, C.P. Gomes (Eds.), Theory and Applications of Satisfiability Testing - SAT 2006. XII, 438 pages. 2006.
- Vol. 4120: J. Calmet, T. Ida, D. Wang (Eds.), Artificial Intelligence and Symbolic Computation. XIII, 269 pages. 2006. (Sublibrary LNAI).
- Vol. 4119: C. Dony, J.L. Knudsen, A. Romanovsky, A. Tripathi (Eds.), Advanced Topics in Exception Handling Components. X, 302 pages. 2006.
- Vol. 4117: C. Dwork (Ed.), Advances in Cryptology - CRYPTO 2006. XIII, 621 pages. 2006.
- Vol. 4116: R. De Prisco, M. Yung (Eds.), Security and Cryptography for Networks. XI, 366 pages. 2006.

Table of Contents – Part II

Segmentation I

Robust Active Shape Models: A Robust, Generic and Simple Automatic Segmentation Tool	1
<i>Julien Abi-Nahed, Marie-Pierre Jolly, Guang-Zhong Yang</i>	
Automatic IVUS Segmentation of Atherosclerotic Plaque with Stop & Go Snake	9
<i>Ellen Brunenberg, Oriol Pujol, Bart ter Haar Romeny, Petia Radeva</i>	
Prostate Segmentation in 2D Ultrasound Images Using Image Warping and Ellipse Fitting	17
<i>Sara Badiel, Septimiu E. Salcudean, Jim Varah, W. James Morris</i>	
Detection of Electrophysiology Catheters in Noisy Fluoroscopy Images . . .	25
<i>Erik Franken, Peter Rongen, Markus van Almsick, Bart ter Haar Romeny</i>	
Fast Non Local Means Denoising for 3D MR Images	33
<i>Pierrick Coupé, Pierre Yger, Christian Barillot</i>	
Active Shape Models for a Fully Automated 3D Segmentation of the Liver – An Evaluation on Clinical Data	41
<i>Tobias Heimann, Ivo Wolf, Hans-Peter Meinzer</i>	
Patient Position Detection for SAR Optimization in Magnetic Resonance Imaging	49
<i>Andreas Keil, Christian Wachinger, Gerhard Brinker, Stefan Thesen, Nassir Navab</i>	
Symmetric Atlasing and Model Based Segmentation: An Application to the Hippocampus in Older Adults	58
<i>Günther Grabner, Andrew L. Janke, Marc M. Budge, David Smith, Jens Pruessner, D. Louis Collins</i>	
Image Diffusion Using Saliency Bilateral Filter	67
<i>Jun Xie, Pheng-Ann Heng, Simon S.M. Ho, Mubarak Shah</i>	
Data Weighting for Principal Component Noise Reduction in Contrast Enhanced Ultrasound	76
<i>Gord Lueck, Peter N. Burns, Anne L. Martel</i>	

Shape Filtering for False Positive Reduction at Computed Tomography
Colonography 84
*Abhilash A. Miranda, Tarik A. Chowdhury, Ovidiu Ghita,
Paul F. Whelan*

Validation and Quantitative Image Analysis

Evaluation of Texture Features for Analysis of Ovarian Follicular
Development 93
Na Bian, Mark.G. Eramian, Roger A. Pierson

A Fast Method of Generating Pharmacokinetic Maps from Dynamic
Contrast-Enhanced Images of the Breast 101
Anne L. Martel

Investigating Cortical Variability Using a Generic Gyrar Model 109
Gabriele Lohmann, D. Yves von Cramon, Alan C.F. Colchester

Blood Flow and Velocity Estimation Based on Vessel Transit Time
by Combining 2D and 3D X-Ray Angiography 117
Hrvoje Bogunović, Sven Lončarić

Accurate Airway Wall Estimation Using Phase Congruency 125
*Raúl San José Estépar, George G. Washko, Edwin K. Silverman,
John J. Reilly, Ron Kikinis, Carl-Fredrik Westin*

Generation of Curved Planar Reformations from Magnetic Resonance
Images of the Spine 135
*Tomaž Vrtovec, Sébastien Ourselin, Lavier Gomes, Boštjan Likar,
Franjo Pernuš*

Automated Analysis of Multi Site MRI Phantom Data for the NIHPD
Project 144
*Luke Fu, Vladimir Fonov, Bruce Pike, Alan C. Evans,
D. Louis Collins*

Performance Evaluation of Grid-Enabled Registration Algorithms
Using Bronze-Standards 152
Tristan Glatard, Xavier Pennec, Johan Montagnat

Anisotropic Feature Extraction from Endoluminal Images for Detection
of Intestinal Contractions 161
*Panagiota Spyridonos, Fernando Vilarinho, Jordi Vitrià,
Fernando Azpiroz, Petia Radeva*