

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

New York University, NY, 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

George Bebis Richard Boyle
Darko Koracin Bahram Parvin (Eds.)

Advances in Visual Computing

First International Symposium, ISVC 2005
Lake Tahoe, NV, USA, December 5-7, 2005
Proceedings

Volume Editors

George Bebis
University of Nevada, Computer Vision Laboratory
Department of Computer Science and Engineering
Reno, USA
E-mail: bebis@cse.unr.edu

Richard Boyle
NASA Ames, BioVis Technology Center
Moffett Field, CA, USA
E-mail: Richard.Boyle@nasa.gov

Darko Koracin
Desert Research Institute, Atmospheric Sciences
Reno, NV, USA
E-mail: darko@dri.edu

Bahram Parvin
Lawrence Berkeley National Laboratory, Imaging and Informatics
Berkeley, CA, USA
E-mail: B_Parvin@lbl.gov

Library of Congress Control Number: 2005936803

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

ISSN	0302-9743
ISBN-10	3-540-30750-8 Springer Berlin Heidelberg New York
ISBN-13	978-3-540-30750-1 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

springeronline.com

© Springer-Verlag Berlin Heidelberg 2005
Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India
Printed on acid-free paper SPIN: 11595755 06/3142 5 4 3 2 1 0

Preface

It is with great pleasure that I welcome you to Lake Tahoe for the 2005 *International Symposium on Visual Computing* (ISVC). ISVC provides a common umbrella for the four main areas of visual computing: vision, graphics, visualization, and virtual reality. The goal of ISVC is to provide a common forum for researchers, scientists, engineers, and practitioners throughout the world to present their latest research findings, ideas, developments, and applications in the broader area of visual computing.

The program consists of six oral sessions, two poster sessions, seven special tracks, four keynote presentations, and one invited presentation. The response to the call for papers for the general ISVC 2005 sessions was very good. We received over 110 submissions from which we accepted 33 papers for oral presentation and 26 papers for poster presentation. Special track papers were solicited separately through the organizing and program committees of each track. A total of 32 papers were accepted for inclusion in the special tracks.

All papers were reviewed with an emphasis on their potential to contribute to the state of the art in the field. Selection criteria included accuracy and originality of ideas, clarity and significance of results, and presentation quality. The review process was quite rigorous, involving two or three independent double-blind reviews followed by a one-week discussion period. During the discussion period we tried to correct anomalies and errors that might have existed in the initial reviews. Despite our efforts, we recognize that some papers worthy of inclusion may not have been included in the program. We offer our sincere apologies to authors whose contributions might have been overlooked.

I wish to thank everybody who submitted their work to ISVC 2005 for review. It was because of their contributions that we succeeded in having a technical program of high scientific quality. In particular, I would like to thank the ISVC 2005 area chairs, the organizing institutions (i.e., UNR, DRI, LBNL, and NASA Ames, the industrial sponsors (i.e., Intel, DigitalPersona, and Equinox), the International Program Committee, the special track organizers and their Program Committees, the keynote speakers, the reviewers, and especially the authors that contributed their work to the symposium.

I sincerely hope that ISVC 2005 will offer opportunities for professional growth. I wish you a pleasant time in Lake Tahoe.

September 2005

George Bebis

Organization

ISVC 2005 General Chair

George Bebis, University of Nevada, Reno, USA

ISVC 2005 Area Chairs

Computer Vision:

George Bebis, University of Nevada, Reno, USA

Bahram Parvin, Lawrence Berkeley National Laboratory, USA

Computer Graphics:

Lijun Yin, Binghamton University, USA

Ramesh Raskar, MERL, USA

Virtual Reality:

Richard Boyle, NASA Ames Research Center, USA

Reinhold Behringer, Rockwell Scientific, USA

Visualization:

Darko Koracin, Desert Research Institute, USA

Paolo Cignoni, ISTI - CNR, Italy

Publicity/Website:

Ali Erol, University of Nevada, Reno, USA

Local Arrangements:

Kostas Veropoulos, University of Nevada, Reno, USA

Publications:

Junxian Wang, University of Nevada, Reno, USA

ISVC 2005 International Program Committee

Ara Nefian, Intel, USA

Babak Hamidzadeh, The Library of Congress, USA

Christa Sommerer, ATR, Japan

Kenneth Wong, University of Hong Kong, Hong Kong, China

Anthony Maeder, CSIRO ICT Centre, Australia

Alexei Sourin, Nanyang Technological University, Singapore

Mircea Nicolescu, University of Nevada, Reno, USA
 J.K. Aggarwal, University of Texas, Austin, USA
 Ioannis Pavlidis, University of Houston, USA
 Godfried Toussaint, McGill University, Canada
 Marc Pollefeys, University of North Carolina, USA
 Mohan Trivedi, University of California, San Diego, USA
 Anders Heyden, Malmo University, Sweden
 Emanuele Trucco, Heriot-Watt University, UK
 Riad Hammoud, Delphi Corp., USA
 Reinhard Klette, Auckland University, New Zealand
 Nadia Magnenat-Thalmann, University of Geneva, Switzerland
 Swarup Medasani, HRL, USA
 Xiangjian He, University of Technology, Australia
 Shaogang Gong, University of London, UK
 Salil Prabhakar, DigitalPersona, USA
 Gian Luca Foresti, University of Udine, Italy
 Andrea Selinger, The College of New Jersey, USA
 Matthew Turk, University of California, Santa Barbara, USA
 Alexander Belyaev, Max-Planck-Institut für Informatik, Germany
 Carlo Regazzoni, University of Genoa, Italy
 Tieniu Tan, Chinese Academy of Sciences, China
 Stefanos Kollias, National Technical University of Athens, Greece
 Bogdan Georgescu, Siemens, USA
 James Davis, Ohio State University, USA
 Davide Maltoni, University of Bologna, Italy
 Karen Sutherland, Augsburg College, USA
 Alessandro Verri, University of Genoa, Italy
 Jos Roerdink, University of Groningen, The Netherlands
 Eam Khwang Teoh, Nanyang Technological University, Singapore
 Kenneth Tobin, Oak Ridge National Laboratory, USA
 Mark Allmen, Perceptek, USA
 Joaquim Jorge, University of Lisbon, Portugal
 Paolo Remagnino, Kingston University London, UK
 Michael Strintzis, Aristotle University of Thessaloniki, Greece
 Yunhong Wang, Chinese Academy of Sciences, China
 Ismail Haritaoglu, IBM Almaden, USA
 Philippe Palanque, University of Paul Sabatier, France
 Nikos Paragios, Ecole Nationale des Ponts et Chaussées, France
 Vladimir Brajovic, CMU, USA
 Nikolaos Bourbakis, ITRI Wright State University, USA
 Gopi Meenakshisundaram, University of California-Irvine, USA
 Manuel Oliveira, Univ. Fed. do Rio Grande do Sul, Brazil
 Xander Twombly, NASA Ames Research Center, USA
 Chandrika Kamath, Lawrence Livermore National Lab, USA
 Antonis Argyros, ICS-FORTH, Greece

Hanspeter Bieri, University of Bern, Switzerland
Alexei Skourikhine, Los Alamos National Lab, USA
Mark Billingham, University of Canterbury, New Zealand
Sabine Coquillart, INRIA, France
Rahul Singh, San Francisco State University, USA
Vana Kalogeraki, University of California, Riverside, USA
Nello Cristianini, University of California, Davis, USA
George Papadourakis, TEI Heraklion, Greece
Zehang Sun, eTreppid Technologies, USA

ISVC 2005 Special Tracks

Computer Vision Methods for Ambient Intelligence

Organizers:

Paolo Remagnino, DIRC, Kingston University, UK
Gian Luca Foresti, DIMI, Università di Udine, Italy
Ndedi D. Monekoso, DIRC, Kingston University, UK
Sergio Velastin, DIRC, Kingston University, UK

Program Committee:

Jan-Olof Eklund, KTH, Sweden
Yoshinori Kuno, Saitama University, Japan
Matt Brand, MERL, USA
Giulio Sandini, Università di Genova, Italy
Hani Hagra, Essex University, UK
Rita Cucchiara, Università di Modena, Italy
James Ferryman, Reading University, UK
Mohan Trivedi, UC San Diego, USA
Dimitrios Makris, Kingston University, UK
James Orwell, Kingston University, UK

Intelligent Vehicles and Autonomous Navigation

Organizers:

Fatih Porikli, MERL, USA
Ara Nefian, Intel, USA
Swarup Medasani, HRL Laboratories, USA
Riad Hammoud, Delphi Electronics and Safety, USA

Program Committee:

George Bebis, Univ. of Nevada, USA
Thorsten Graf, Volkswagen AG, Germany
Kikuo Fujimura, Honda Research, USA
Riad Hammoud, Delphi E&S, USA
Narayan Srinivasa, HRL Laboratories, USA

Swarup Medasani, HRL Laboratories, USA
Mohan Trivedi, Univ. of California, San Diego, USA
Alexander Zelinsky, Seeing Machines, USA
David Schwartz, Delphi
Ying Zhu, Siemens
Fatih Porikli, MERL

Pattern Analysis and Recognition Applications in Biometrics

Organizers:

Nello Cristianini, University of California, Davis, USA
Salil Prabhakar, DigitalPersona, USA
Kostas Veropoulos, University of Nevada, Reno USA

Visual Surveillance in Challenging Environments

Organizers:

Wei-Yun Yau, Institute for Infocomm Research, Singapore
How-Lung Eng, Institute for Infocomm Research, Singapore
Anastasios N. Venetsanopoulos, University of Toronto, Canada
Monique Thonnat, INRIA Sophia Antipolis, France
Tieniu Tan, CAS Institute of Automation, China

Program Committee:

Tele Tan, Curtin University of Technology, Australia
Weimin Huang, Institute for Infocomm Research, Singapore
Liyanage C De Silva, Massey University, New Zealand
Kap-Luk Chan, Nanyang Technological University, Singapore
Chin-Seng Chua, Nanyang Technological University, Singapore
Yap-Peng Tan, Nanyang Technological University, Singapore

Virtual Reality and Medicine

Organizers:

Fabio Ganovelli, VCG ISTI-CNR, Italy
Cesar Mendoza, Universidad Politécnica de Madrid, Spain
Min-Hyung Choi, University of Colorado at Denver, USA
John Dingliana, Image Synthesis Group, Trinity College, Dublin

Mediated Reality

Organizers:

Reinhold Behringer, Rockwell Scientific, USA
Steve Feiner, Columbia University, USA
Steve Mann, University of Toronto, USA
Jose Molineros, Rockwell Scientific, USA
Mohammed Yeasin, University of Memphis, USA

Visualization Techniques Applied to Geophysical Sciences Research

Organizers:

Darko Koracin, Desert Research Institute, USA

Robert Rabin, NOAA/National Severe Storms Laboratory, USA

Joseph Scire, Earth Tech, USA

William Sherman, Desert Research Institute, USA

Additional Reviewers

Sebastien Bougleux

Ananda Chowdhury

Renan Coudray

Ajay Daptardar

Jerome Darbon

Pablo Diaz-Gutierrez

Guoliang Fan Fan

Luiz Gonzaga da Silveira Jr

Haiying Guan

Fred Harris

Shinji Hayashi

Zhiyu He

Elsayed Hemayed

Altab Hossain

Bo Hu

Mao Lin Huang

Runzhen Huang

Kohei Inoue

Luca Iocchi

George Kamberov

Hang-Bong Kang

Kyungnam Kim

Julien Lamy

Minh Tuan Le

Woobeom Lee

Jongseok Lim

Nathan Lovell

Ruijiang Luo

Yunqian Ma

Aamir Saeed Malik

Aparecido Nilceu Marana

Isabelle Marchal

Yoshitaka Masutani

Satoru Morita

Ken'ichi Morooka

Masayuki Mukunoki

Jeffrey Mulligan

Congdu Nguyen

Jun-Taek Oh

Jonghyun Park

Nicolas Passat

Peeta Basa Pati

Stefano Piva

Andrea Salgian

Raul San Jose Estepar

Frutuoso Gomes Mendes da Silva

Gaetano Somma

Chung-Yen Su

Qingchuan Tao

Olaf J Thiele

David Thirde

Thanos Vasilakos

Inteck Whoang

Xinwei Xue

Chunrong Yuan

Yossi Zana

Sponsoring Institutions



UNR - Computer Vision Laboratory



DRI - Atmospheric Sciences



LBNL - Imaging Group



NASA Ames - BioVis Lab



digitalPersona.



EQUINOX
CORPORATION

Table of Contents

An NPR Technique for Pointillistic and Mosaic Images with Impressionist Color Arrangement <i>Linlin Jing, Kohei Inoue, Kiichi Urahama</i>	1
Active View Optimization for Viewing Objects in Motion <i>Matt Berger, Lijun Yin, Jason Moore</i>	9
Adding Hand Motion to the Motion Capture Based Character Animation <i>Ge Jin, James Hahn</i>	17
Oversimplified Euler Operators for a Non-oriented, Non-manifold B-Rep Data Structure <i>Frutuoso G.M. Silva, Abel J.P. Gomes</i>	25
The Number of Gaps in Binary Pictures <i>Valentin E. Brimkov, Angelo Maimone, Giorgio Nordo, Reneta P. Barneva, Reinhard Klette</i>	35
Video Codec for Classical Cartoon Animations with Hardware Accelerated Playback <i>Daniel Sýkora, Jan Buriánek, Jiří Žára</i>	43
Retinal Image Registration for NIH's ETDRS <i>Thitiporn Chanwimaluang, Guoliang Fan</i>	51
Using Multimodal MR Data for Segmentation and Topology Recovery of the Cerebral Superficial Venous Tree <i>N. Passat, C. Ronse, J. Baruthio, J.-P. Armspach, M. Bosc, J. Foucher</i>	60
Loop Removal from Colon Central Path Through Skeleton Scale-Space Tracking <i>Julien Lamy, Christian Ronse, Luc Soler</i>	68
Multiscale Segmentation of HRCT Images Using Bipolar Incoherent Filtering <i>Aamir Saeed Malik, Tae-Sun Choi</i>	76

Building Statistical Atlas of White Matter Fiber Tract Based on Vector/Tensor Field Reconstruction in Diffusion Tensor MRI <i>Yoshitaka Masutani, Shigeki Aoki, Osamu Abe, Mariko Yoshida, Haruyasu Yamada, Harushi Mori, Kenji Ino, Kuni Ohtomo</i>	84
Interactive 3D Heart Chamber Partitioning with a New Marker-Controlled Watershed Algorithm <i>Xinwei Xue</i>	92
Inferring Cause/Effect Relationships in Multi-sensor Ambient Intelligence Systems <i>S. Piva, C.S. Regazzoni</i>	100
Toward a Unified Probabilistic Framework for Object Recognition and Segmentation <i>Huei-Ju Chen, Kuang-Chih Lee, Erik Murphy-Chutorian, Jochen Triesch</i>	108
Distributed Multi-camera Surveillance for Aircraft Servicing Operations <i>David Thirde, Mark Borg, James Ferryman, Josep Aguilera, Martin Kampel</i>	118
Mining Paths of Complex Crowd Scenes <i>B. Zhan, P. Remagnino, S.A. Velastin</i>	126
Geometric and Photometric Analysis for Interactively Recognizing Multicolor or Partially Occluded Objects <i>Md. Altab Hossain, Rahmadi Kurnia, Yoshinori Kuno</i>	134
A Three-Level Graph Based Interactive Volume Segmentation System <i>Runzhen Huang, Kwan-Liu Ma</i>	143
Self-organizing Deformable Model: A New Method for Fitting Mesh Model to Given Object Surface <i>Ken'ichi Morooka, Hiroshi Nagahashi</i>	151
Image-Based Deformation of Objects in Real Scenes <i>Han-Vit Chung, In-Kwon Lee</i>	159
Comparing Sphere-Tree Generators and Hierarchy Updates for Deformable Objects Collision Detection <i>M. Garcia, S. Bayona, P. Toharia, C. Mendoza</i>	167
Simulating Complex Organ Interactions: Evaluation of a Soft Tissue Discrete Model <i>Maud Marchal, Emmanuel Promayon, Jocelyne Troccaz</i>	175

Face Verification in Polar Frequency Domain: A Biologically Motivated Approach <i>Yossi Zana, Roberto M. Cesar-Jr, Rogerio S. Feris, Matthew Turk</i>	183
Face Alignment and Adaptive Weight Assignment for Robust Face Recognition <i>Satyanadh Gundimada, Vijayan Asari</i>	191
Face Detection in Low-Resolution Images <i>Shinji Hayashi, Osamu Hasegawa</i>	199
Investigating the Impact of Face Categorization on Recognition Performance <i>Konstantinos Veropoulos, George Bebis, Michael Webster</i>	207
A Novel Approach on Silhouette Based Human Motion Analysis for Gait Recognition <i>Murat Ekinçi, Eyup Gedikli</i>	219
A Hybrid HMM/DPA Adaptive Gesture Recognition Method <i>Stjepan Rajko, Gang Qian</i>	227
Hifocon: Object and Dimensional Coherence and Correlation in Multidimensional Visualization <i>Soon Tee Teoh, Kwan-Liu Ma</i>	235
Efficient Compression of Visibility Sets <i>Christian Bouville, Isabelle Marchal, Loïc Bouget</i>	243
Rendering Optimizations Guided by Head-Pose Estimates and Their Uncertainty <i>Javier E. Martínez, Ali Erol, George Bebis, Richard Boyle, Xander Twombly</i>	253
Acceptance of Visual Search Interfaces for the Web - Design and Empirical Evaluation of a Book Search Interface <i>Olaf Thiele, Gunnar Mau</i>	263
Distributed and Collaborative Biomedical Data Exploration <i>Zhiyu He, Jason Kimball, Falko Kuester</i>	271
Image Database Navigation: A Globe-Al Approach <i>Gerald Schaefer, Simon Ruszala</i>	279

Viewpoint Interpolation Using an Ellipsoid Head Model for Video Teleconferencing <i>Na-Ree Yoon, Byung-Uk Lee</i>	287
Real-Time Video Annotations for Augmented Reality <i>Edward Rosten, Gerhard Reitmayr, Tom Drummond</i>	294
A Tree-Structured Model of Visual Appearance Applied to Gaze Tracking <i>Jeffrey B. Mulligan</i>	303
Emotional Expression in Virtual Agents Through Body Language <i>Vishal Nayak, Matthew Turk</i>	313
Visual Tracking for Seamless 3D Interactions in Augmented Reality <i>C. Yuan</i>	321
ARISupport - Interaction Support for Augmented Reality Systems <i>Luiz Fernando Braga Lopes, Antonio Carlos Sementille, José Remo Ferreira Brega, Fátima L.S. Nunes Marques, Ildeberto Aparecido Rodello</i>	329
Background Updating for Visual Surveillance <i>Kyungham Kim, David Harwood, Larry S. Davis</i>	337
Pattern Discovery for Video Surveillance <i>Yunqian Ma, Pradeep Buddharaju, Mike Bazakos</i>	347
Real-Time Crowd Density Estimation Using Images <i>A.N. Marana, M.A. Cavenaghi, R.S. Ulson, F.L. Drumond</i>	355
Automatic Robust Background Modeling Using Multivariate Non-parametric Kernel Density Estimation for Visual Surveillance <i>Alireza Tavakkoli, Mircea Nicolescu, George Bebis</i>	363
Recognition of Complex Human Behaviors in Pool Environment Using Foreground Silhouette <i>How-Lung Eng, Kar-Ann Toh, Wei-Yun Yau, Tuan-Kiang Chiew</i>	371
Adaptive Background Subtraction with Multiple Feedbacks for Video Surveillance <i>Liyuan Li, Ruijiang Luo, Weimin Huang, Karianto Leman, Wei-Yun Yau</i>	380

A Vectorial Self-dual Morphological Filter Based on Total Variation Minimization <i>Jérôme Darbon, Sylvain Peyronnet</i>	388
Wavelet Transform Based Gaussian Point Spread Function Estimation <i>Qing-Chuan Tao, Xiao-Hai He, Hong-Bin Deng, Ying Liu, Jia Zhao</i>	396
One-Point Hexagonal Inner Search for Fast Motion Estimation <i>Chorng-Yann Su, Cheng-Tao Chang</i>	406
Self-Describing Context-Based Pixel Ordering <i>Abdul Itani, Manohar Das</i>	413
Lossless Compression of CCD Sensor Data <i>Gerald Schaefer, Joanna Obstoż</i>	420
Geometric Approach to Segmentation and Protein Localization in Cell Cultured Assays <i>S. Raman, B. Parvin, C. Maxwell, M.H. Barcellos-Hoff</i>	427
Multi-level Thresholding Using Entropy-Based Weighted FCM Algorithm in Color Image <i>Jun-Taek Oh, Hyun-Wook Kwak, Young-Ho Sohn, Wook-Hyun Kim</i>	437
Adaptive Robust Structure Tensors for Orientation Estimation and Image Segmentation <i>Sumit K. Nath, Kannappan Palaniappan</i>	445
Structural and Textural Skeletons for Noisy Shapes <i>Wooi-Boon Goh, Kai-Yun Chan</i>	454
Accurate and Efficient Computation of High Order Zernike Moments <i>Gholamreza Amayeh, Ali Erol, George Bebis, Mircea Nicolescu</i>	462
3D Model Generation from Image Sequences Using Global Geometric Constraint <i>Masayuki Mukunoki, Kazutaka Yasuda, Naoki Asada</i>	470
Efficient Shot Boundary Detection for Action Movies Using Blockwise Motion-Based Features <i>Min-Ho Park, Rae-Hong Park, Sang Wook Lee</i>	478
Text Localization and Extraction from Complex Color Images <i>S. Sabari Raju, P.B. Pati, A.G. Ramakrishnan</i>	486

Using Linguistic Models for Image Retrieval <i>Brian Zambrano, Rahul Singh, Bibek Bhattacharai</i>	494
Content-Based Image Retrieval Via Vector Quantization <i>Ajay H. Daptardar, James A. Storer</i>	502
Multi-aspect Target Tracking in Image Sequences Using Particle Filters <i>Li Tang, Vijay Bhaskar Venkataraman, Guoliang Fan</i>	510
Segmentation and Recognition of Traffic Signs Using Shape Information <i>Jun-Taek Oh, Hyun-Wook Kwak, Young-Ho Sohn, Wook-Hyun Kim</i>	519
Detection and Tracking Multiple Pedestrians from a Moving Camera <i>Jong Seok Lim, Wook Hyun Kim</i>	527
Event Detection in Underground Stations Using Multiple Heterogeneous Surveillance Cameras <i>Andrea Cavallaro</i>	535
Large-Scale Geospatial Indexing for Image-Based Retrieval and Analysis <i>Kenneth W. Tobin, Budhendra L. Bhaduri, Eddie A. Bright, Anil Cheriyyadat, Thomas P. Karnowski, Paul J. Palathingal, Thomas E. Potok, Jeffery R. Price</i>	543
An Interactive Visualization Method for Integrating Digital Elevation Models and Geographic Information Systems Vector Layers <i>J. Stuart, J. Jaquish, S. Bassett, F. Harris, W. Sherman</i>	553
Splines Interpolation in High Resolution Satellite Imagery <i>José A. Malpica</i>	562
Tool for Storm Analysis Using Multiple Data Sets <i>Robert M. Rabin, Tom Whittaker</i>	571
3D Modeling and Adaptation for Virtual Heritage System <i>Minh Tuan Le, Hae-Kwang Kim, Yong-Moo Kwon</i>	579
Direct Point Rendering on GPU <i>Hiroaki Kawata, Takashi Kanai</i>	587
An Artistic Portrait Caricature Model <i>V. Boyer</i>	595
Capturing and View-Dependent Rendering of Billboard Models <i>Oliver Lee, Anusheel Bhushan, Pablo Diaz-Gutierrez, M. Gopi</i>	601

Error-Bounded Solid Voxelization for Polygonal Model Based on Heuristic Seed Filling <i>Jianguang Weng, Yueting Zhuang, Hui Zhang</i>	607
Riemannian Mean Curvature Flow <i>Raúl San José Estépar, Steve Haker, Carl-Fredrik Westin</i>	613
3D Shape from Unorganized 3D Point Clouds <i>George Kamberov, Gerda Kamberova, Amit Jain</i>	621
3D Hand Pose Reconstruction with ISOSOM <i>Haiying Guan, Matthew Turk</i>	630
A Motion Capture System for Sign Language Synthesis: Overview and Related Issues <i>László Havasi, Helga M. Szabó</i>	636
Dynamic Visualization of Spatially Referenced Information <i>Wu Quan, Mao Lin Huang</i>	642
WYSIWYG-Tool Tips: Enhancing Tool Tips with Translucent Preview Bitmaps <i>Heiko Drewes, Albrecht Schmidt</i>	647
Motion Visualization of Ultrasound Imaging <i>Dong C. Liu, Longlong Hou, Paul S. Liu</i>	653
Two Novel Complete Sets of Similarity Invariants <i>Hongchuan Yu, Mohammed Bennamoun</i>	659
Detection of Text Region and Segmentation from Natural Scene Images <i>Jonghyun Park, Soonyoung Park</i>	666
ARM Based Microcontroller for Image Capturing in FPGA Design <i>Chi-Jeng Chang, Wu-Ting Wu, Hui-Ching Su, Zen-Yi Huang, Hsin-Yen Li</i>	672
Contraction Mapping Calibration <i>Nicolas Guilbert, Anders Heyden</i>	678
Discrimination of Natural Contours by Means of Time-Scale-Frequency Decompositions <i>Leandro A. Loss, Clésio L. Tozzi</i>	684
Color and Edge Refinement Method for Content Based Image Retrieval <i>Taesu Park, Minhyuk Chang, Jongan Park</i>	690

Selecting a Discriminant Subset of Co-occurrence Matrix Features for
Texture-Based Image Retrieval
Najlae Idrissi, José Martinez, Driss Aboutajdine 696

An Automatic Relevance Feedback in Image Retrieval Using Belief
Functions
*Saïd Kharbouche, Patrick Vannorenberghe, Christèle Lecomte,
Pierre Miché* 704

A Fast Full Search Algorithm for Variable Block-Based Motion
Estimation of H.264
Chan Lim, Hyun-Soo Kang, Tae-Yong Kim, Kook-Yeol Yoo 710

Adaptive Switching Linear Predictor for Lossless Image Compression
Abdul Itani, Manohar Das 718

Toward Real Time Fractal Image Compression Using Graphics Hardware
Ugo Erra 723

Motion Based Segmentation Using MPEG Streams and Watershed
Method
Renan Coudray, Bernard Besserer 729

Efficient Depth Edge Detection Using Structured Light
Jiyoung Park, Cheolhwon Kim, Juneho Yi, Matthew Turk 737

Image Smoothing and Segmentation by Graph Regularization
Sébastien Bogleux, Abderrahim Elmoataz 745

Author Index 753