

Table of Contents

Invited Talks

Human Perception of 3D Shapes	1
<i>Zygmunt Pizlo</i>	

Connection Geometry, Color, and Stereo	13
<i>Ohad Ben-Shahar, Gang Li, and Steven W. Zucker</i>	

Motion Detection and Tracking

Adaptable Model-Based Tracking Using Analysis-by-Synthesis Techniques	20
<i>Harald Wuest, Folker Wientapper, and Didier Stricker</i>	

Mixture Models Based Background Subtraction for Video Surveillance Applications	28
<i>Chris Poppe, Gaëtan Martens, Peter Lambert, and Rik Van de Walle</i>	

Applicability of Motion Estimation Algorithms for an Automatic Detection of Spiral Grain in CT Cross-Section Images of Logs	36
<i>Karl Entacher, Christian Lenz, Martin Seidel, Andreas Uhl, and Rudolf Weiglmaier</i>	

Deterministic and Stochastic Methods for Gaze Tracking in Real-Time	45
<i>Javier Orozco, F. Xavier Roca, and Jordi González</i>	

Integration of Multiple Temporal and Spatial Scales for Robust Optic Flow Estimation in a Biologically Inspired Algorithm	53
<i>Cornelia Beck, Thomas Gottbehuet, and Heiko Neumann</i>	

Classification of Optical Flow by Constraints	61
<i>Yusuke Kameda and Atsushi Imiya</i>	

Target Positioning with Dominant Feature Elements	69
<i>Zhuan Qing Huang and Zhuhan Jiang</i>	

Speeding-Up Differential Motion Detection Algorithms Using a Change-Driven Data Flow Processing Strategy	77
<i>Jose A. Boluda and Fernando Pardo</i>	

Foreground and Shadow Detection Based on Conditional Random Field	85
<i>Yang Wang</i>	

<i>n</i> -Grams of Action Primitives for Recognizing Human Behavior	93
<i>Christian Thureau and Václav Hlaváč</i>	
Human Action Recognition in Table-Top Scenarios: An HMM-Based Analysis to Optimize the Performance	101
<i>Pradeep Reddy Raamana, Daniel Grest, and Volker Krueger</i>	
Grouping of Articulated Objects with Common Axis	109
<i>Levente Hajder</i>	
Decision Level Multiple Cameras Fusion Using Dezert-Smarandache Theory	117
<i>Esteban Garcia and Leopoldo Altamirano</i>	
Occlusion Removal in Video Microscopy	125
<i>Brian Eastwood and Russell M. Taylor II</i>	
A Modular Approach for Automating Video Analysis	133
<i>Gayathri Nadarajan and Arnaud Renouf</i>	
Rectified Reconstruction from Stereo Pairs and Robot Mapping	141
<i>Antonio Javier Gallego, Rafael Molina, Patricia Compañ, and Carlos Villagrà</i>	
Estimation Track-Before-Detect Motion Capture Systems State Space Spatial Component	149
<i>Przemysław Mazurek</i>	
Medical Imaging	
Real-Time Active Shape Models for Segmentation of 3D Cardiac Ultrasound	157
<i>Jøger Hansegård, Fredrik Orderud, and Stein I. Rabben</i>	
Effects of Preprocessing Eye Fundus Images on Appearance Based Glaucoma Classification	165
<i>Jörg Meier, Rüdiger Bock, Georg Michelson, László G. Nyúl, and Joachim Hornegger</i>	
Flexibility Description of the MET Protein Stalk Based on the Use of Non-uniform B-Splines	173
<i>Magnus Gedda and Stina Svensson</i>	
Virtual Microscopy Using JPEG2000	181
<i>Francisco Gómez, Marcela Iregui, and Eduardo Romero</i>	
A Statistical-Genetic Algorithm to Select the Most Significant Features in Mammograms	189
<i>Gonzalo V. Sánchez-Ferrero and Juan Ignacio Arribas</i>	

Biomarker Selection System, Employing an Iterative Peak Selection Method, for Identifying Biomarkers Related to Prostate Cancer	197
<i>Panagiotis Bougioukos, Dionisis Cavouras, Antonis Daskalakis, Ioannis Kalatzis, Spiros Kostopoulos, Pantelis Georgiadis, George Nikiforidis, and Anastasios Bezerianos</i>	
Automatic Segmentation of Femur Bones in Anterior-Posterior Pelvis X-Ray Images	205
<i>Feng Ding, Wee Kheng Leow, and Tet Sen Howe</i>	
Assessing Artery Motion Compensation in IVUS	213
<i>Debora Gil, Oriol Rodriguez-Leor, Petia Radeva, and Aura Hernández</i>	
Assessing Estrogen Receptors' Status by Texture Analysis of Breast Tissue Specimens and Pattern Recognition Methods	221
<i>Spiros Kostopoulos, Dionisis Cavouras, Antonis Daskalakis, Ioannis Kalatzis, Panagiotis Bougioukos, George Kagadis, Panagiota Ravazoula, and George Nikiforidis</i>	
Multimodal Evaluation for Medical Image Segmentation	229
<i>Rubén Cárdenes, Meritxell Bach, Ying Chi, Ioannis Marras, Rodrigo de Luis, Mats Anderson, Peter Cashman, and Matthieu Bultelle</i>	
Automated 3D Segmentation of Lung Fields in Thin Slice CT Exploiting Wavelet Preprocessing	237
<i>Panayiotis Korfiatis, Spyros Skiadopoulos, Philippos Sakellaropoulos, Christina Kalogeropoulou, and Lena Costaridou</i>	
Reconstruction of Heart Motion from 4D Echocardiographic Images	245
<i>Michał Chłebiej, Krzysztof Nowiński, Piotr Ścisło, and Piotr Bała</i>	
Quantification of Bone Remodeling in the Proximity of Implants	253
<i>Hamid Sarve, Carina B. Johansson, Joakim Lindblad, Gunilla Borgefors, and Victoria Franke Stenport</i>	
Delaunay-Based Vector Segmentation of Volumetric Medical Images	261
<i>Michal Španěl, Přemysl Kršek, Miroslav Švub, Vít Štancl, and Ondřej Šiler</i>	
Non-uniform Resolution Recovery Using Median Priors in Tomographic Image Reconstruction Methods	270
<i>Munir Ahmad and Andrew Todd-Pokropek</i>	
Detection of Postmenopausal Alteration of Bone Structure in Digitized X-rays	278
<i>Constantin Vertan, Ion Ștefan, and Laura Florea</i>	

Blood Detection in IVUS Images for 3D Volume of Lumen Changes Measurement Due to Different Drugs Administration	285
<i>David Rotger, Petia Radeva, Eduard Fernández-Nofrerías, and Josepa Mauri</i>	
Eigenmotion-Based Detection of Intestinal Contractions	293
<i>Laura Igual, Santi Seguí, Jordi Vitrià, Fernando Azpiroz, and Petia Radeva</i>	
Brain Tissue Classification with Automated Generation of Training Data Improved by Deformable Registration	301
<i>Daniel Schwarz and Tomas Kasperek</i>	
On Simulating 3D Fluorescent Microscope Images	309
<i>David Svoboda, Marek Kašík, Martin Maška, Jan Hubený, Stanislav Stejskal, and Michal Zimmermann</i>	
Hierarchical Detection of Multiple Organs Using Boosted Features	317
<i>Samuel Hugueny and Mikaël Rousson</i>	

Biometrics

Monitoring of Emotion to Create Adaptive Game for Children with Mild Autistic	326
<i>P. Ravindra S. De Silva, Masatake Higashi, Stephen G. Lambacher, and Minetada Osano</i>	
A Simplified Human Vision Model Applied to a Blocking Artifact Metric	334
<i>Hantao Liu and Ingrid Heynderickx</i>	
Estimating Reflectance Functions Using a Cyberware 3030 Scanner	342
<i>Matthew P. Dickens and Edwin R. Hancock</i>	
Are Younger People More Difficult to Identify or Just a Peer-to-Peer Effect	351
<i>Wai Han Ho, Paul Watters, and Dominic Verity</i>	
Lip Biometrics for Digit Recognition	360
<i>Maycel Isaac Faraj and Josef Bigun</i>	
An Embedded Fingerprint Authentication System Integrated with a Hardware-Based Truly Random Number Generator	366
<i>Murat Erat, Kenan Danışman, Salih Ergün, Alper Kanak, and Mehmet Kayaoglu</i>	
A New Manifold Representation for Visual Speech Recognition	374
<i>Dahai Yu, Ovidiu Ghita, Alistair Sutherland, and Paul F. Whelan</i>	

Fingerprint Hardening with Randomly Selected Chaff Minutiae	383
<i>Alper Kanak and İbrahim Soğukpınar</i>	
Wavelet-Based Fingerprint Region Selection	391
<i>Almudena Lindoso, Luis Entrena, and Judith Liu-Jimenez</i>	
Face Shape Recovery and Recognition Using a Surface Gradient Based Statistical Model	399
<i>Mario Castelán and Edwin R. Hancock</i>	
Representation of Facial Features by Catmull-Rom Splines	408
<i>Marco Maggini, Stefano Melacci, and Lorenzo Sarti</i>	
Automatic Quantitative Mouth Shape Analysis	416
<i>Augusto Salazar, Jorge Hernández, and Flavio Prieto</i>	

Color

Color Adjacency Histograms for Image Matching	424
<i>Allan Hanbury and Beatriz Marcotegui</i>	
Segmentation of Distinct Homogeneous Color Regions in Images	432
<i>Daniel Mohr and Gabriel Zachmann</i>	
Estimating the Color of the Illuminant Using Anisotropic Diffusion	441
<i>Marc Ebner</i>	
Restoration of Color Images Degraded by Space-Variant Motion Blur ...	450
<i>Michal Šorel and Jan Flusser</i>	
Real-Time Elimination of Brightness in Color Images by MS Diagram and Mathematical Morphology	458
<i>Francisco Ortiz</i>	

Curves and Surfaces Beyond 2 Dimensions

Surface Reconstruction Using Polarization and Photometric Stereo	466
<i>Gary A. Atkinson and Edwin R. Hancock</i>	
Curvature Estimation in Noisy Curves	474
<i>Thanh Phuong Nguyen and Isabelle Debled-Rennesson</i>	
3D+t Reconstruction in the Context of Locally Spheric Shaped Data Observation	482
<i>Wafa Rekik, Dominique Béréziat, and Séverine Dubuisson</i>	
Robust Fitting of 3D Objects by Affinely Transformed Superellipsoids Using Normalization	490
<i>Frank Ditrich and Herbert Suesse</i>	

Fast and Precise Weak-Perspective Factorization	498
<i>Levente Hajder, Ákos Pernek, and Csaba Kazó</i>	

A Graph-with-Loop Structure for a Topological Representation of 3D Objects	506
<i>Rocio Gonzalez-Diaz, María José Jiménez, Belen Medrano, and Pedro Real</i>	

Reading Characters, Words, Lines...

Print Process Separation Using Interest Regions	514
<i>Reinhold Huber-Mörk, Dorothea Heiss-Czedik, Konrad Mayer, Harald Penz, and Andreas Vrabl</i>	

Histogram-Based Lines and Words Decomposition for Arabic Omni Font-Written OCR Systems; Enhancements and Evaluation	522
<i>Mohamed Attia and Mohamed El-Mahallawy</i>	

Semi-automatic Training Sets Acquisition for Handwriting Recognition	531
<i>Jerzy Sas and Urszula Markowska-Kaczmar</i>	

Gabor-Based Recognizer for Chinese Handwriting from Segmentation-Free Strategy	539
<i>Tong-Hua Su, Tian-Wen Zhang, De-Jun Guan, and Hu-Jie Huang</i>	

Image Based Recognition of Ancient Coins	547
<i>Maia Zaharieva, Martin Kampel, and Sebastian Zambanini</i>	

Text Area Detection in Digital Documents Images Using Textural Features	555
<i>Ilktan Ar and M. Elif Karsligil</i>	

Image Segmentation

Optimal Threshold Selection for Tomogram Segmentation by Reprojection of the Reconstructed Image	563
<i>K. Joost Batenburg and Jan Sijbers</i>	

A Level Set Bridging Force for the Segmentation of Dendritic Spines ...	571
<i>Karsten Rink and Klaus Tönnies</i>	

Knowledge from Markers in Watershed Segmentation	579
<i>Sébastien Lefèvre</i>	

Image Segmentation Using Topological Persistence	587
<i>David Letscher and Jason Fritts</i>	

Image Modeling and Segmentation Using Incremental Bayesian Mixture Models	596
<i>Constantinos Constantinopoulos and Aristidis Likas</i>	
Model-Based Segmentation of Multimodal Images	604
<i>Xin Hong, Sally McClean, Bryan Scotney, and Philip Morrow</i>	
Image Segmentation Based on Height Maps	612
<i>Gabriele Peters and Jochen Kerdels</i>	
Shape	
Measuring the Orientability of Shapes	620
<i>Paul L. Rosin</i>	
A 3-Subiteration Surface-Thinning Algorithm	628
<i>Kálmán Palágyi</i>	
Extraction of River Networks from Satellite Images by Combining Mathematical Morphology and Hydrology	636
<i>Pierre Soille and Jacopo Grazzini</i>	
Fractal Active Shape Models	645
<i>Polychronis Manousopoulos, Vassileios Drakopoulos, and Theoharis Theoharis</i>	
Decomposition for Efficient Eccentricity Transform of Convex Shapes ...	653
<i>Adrian Ion, Samuel Peltier, Yll Haxhimusa, and Walter G. Kropatsch</i>	
Euclidean Shortest Paths in Simple Cube Curves at a Glance	661
<i>Fajie Li and Reinhard Klette</i>	
A Fast and Robust Ellipse Detection Algorithm Based on Pseudo-random Sample Consensus	669
<i>Ge Song and Hong Wang</i>	
A Definition for Orientation for Multiple Component Shapes	677
<i>Joviša Žunić and Paul L. Rosin</i>	
Definition of a Model-Based Detector of Curvilinear Regions	686
<i>Cédric Lemaître, Johel Miteran, and Jiří Matas</i>	
A Method for Interactive Shape Detection in Cattle Images Using Genetic Algorithms	694
<i>Horacio M. González-Velasco, Carlos J. García-Orellana, Miguel Macías-Macías, Ramón Gallardo-Caballero, and Fernando J. Álvarez-Franco</i>	

A New Phase Field Model of a 'Gas of Circles' for Tree Crown Extraction from Aerial Images	702
<i>Peter Horváth and Ian H. Jermyn</i>	
Shape Signature Matching for Object Identification Invariant to Image Transformations and Occlusion	710
<i>Stamatia Giannarou and Tania Stathaki</i>	
Junction Detection and Multi-orientation Analysis Using Streamlines ...	718
<i>Frank G.A. Faas and Lucas J. van Vliet</i>	
Decomposing a Simple Polygon into Trapezoids	726
<i>Fajie Li and Reinhard Klette</i>	
Shape Recognition and Retrieval: A Structural Approach Using Velocity Function	734
<i>Hamidreza Zaboli, Mohammad Rahmati, and Abdolreza Mirzaei</i>	
Improved Morphological Interpolation of Elevation Contour Data with Generalised Geodesic Propagations	742
<i>Jacopo Grazzini and Pierre Soille</i>	
Image Registration and Matching	
Cylindrical Phase Correlation Method	751
<i>Jakub Bican and Jan Flusser</i>	
Extended Global Optimization Strategy for Rigid 2D/3D Image Registration	759
<i>Alexander Kubias, Frank Deinzer, Tobias Feldmann, and Dietrich Paulus</i>	
A Fast B-Spline Pseudo-inversion Algorithm for Consistent Image Registration	768
<i>Antonio Tristán and Juan Ignacio Arribas</i>	
Robust Least-Squares Image Matching in the Presence of Outliers	776
<i>Patrice Delmas, Georgy Gimel'farb, Al Shorin, and John Morris</i>	
A Neural Network String Matcher	784
<i>Abdolreza Mirzaei, Hamidreza Zaboli, and Reza Safabakhsh</i>	
Incorporating Spatial Information into 3D-2D Image Registration	792
<i>Guoyan Zheng</i>	
Performance Evaluation and Recent Advances of Fast Block-Matching Motion Estimation Methods for Video Coding	801
<i>Berenice Ramirez</i>	

Spectral Eigenfeatures for Effective DP Matching in Fingerprint Recognition	809
<i>Boris Danev and Toshio Kamei</i>	
Registering Long-Term Image Series	817
<i>Detlev Droege and Dietrich Paulus</i>	
Graph Similarity Using Interfering Quantum Walks	823
<i>David Emms, Edwin R. Hancock, and Richard C. Wilson</i>	

Signal Decomposition and Invariants

Visual Speech Recognition Using Motion Features and Hidden Markov Models	832
<i>Wai Chee Yau, Dinesh Kant Kumar, and Hans Weghorn</i>	
Feature Extraction of Weighted Data for Implicit Variable Selection	840
<i>Luis Sánchez, Fernando Martínez, Germán Castellanos, and Augusto Salazar</i>	
Analysis of Prediction Mode Decision in Spatial Enhancement Layers in H.264/AVC SVC	848
<i>Koen De Wolf, Davy De Schrijver, Wesley De Neve, Saar De Zutter, Peter Lambert, and Rik Van de Walle</i>	
Object Recognition by Implicit Invariants	856
<i>Jan Flusser, Jaroslav Kautsky, and Filip Šroubek</i>	
An Automatic Microarray Image Gridding Technique Based on Continuous Wavelet Transform	864
<i>Emmanouil Athanasiadis, Dionisis Cavouras, Panagiota Spyridonos, Ioannis Kalatzis, and George Nikiforidis</i>	
Image Sifting for Micro Array Image Enhancement	871
<i>Pooria Jafari Moghadam and Mohamad H. Moradi</i>	
Wavelet Based Local Coherent Tomography with an Application in Terahertz Imaging	878
<i>Xiao-Xia Yin, Brian W.-H. Ng, Bradley Ferguson, and Derek Abbott</i>	
Nonlinear Approximation of Spatiotemporal Data Using Diffusion Wavelets	886
<i>Marie Wild</i>	
A New Wavelet-Based Texture Descriptor for Image Retrieval	895
<i>Esther de Ves, Ana Ruedin, Daniel Acevedo, Xaro Benavent, and Leticia Seijas</i>	

Space-Variant Restoration with Sliding Discrete Cosine Transform	903
<i>Vitaly Kober and Jacobo Gomez Agis</i>	

Features and Classification

Comparative Evaluation of Classical Methods, Optimized Gabor Filters and LBP for Texture Feature Selection and Classification	912
<i>Jaime Melendez, Domenec Puig, and Miguel Angel Garcia</i>	

A Multiple Classifier Approach for the Recognition of Screen-Rendered Text	921
<i>Steffen Wachenfeld, Stefan Fleischer, and Xiaoyi Jiang</i>	

Improving Stability of Feature Selection Methods	929
<i>Pavel Křížek, Josef Kittler, and Václav Hlaváč</i>	

A Movie Classifier Based on Visual Features	937
<i>Hui-Yu Huang, Weir-Sheng Shih, and Wen-Hsing Hsu</i>	

An Efficient Method for Filtering Image-Based Spam E-mail	945
<i>Ngo Phuong Nhung and Tu Minh Phuong</i>	

SVM-Based Active Feedback in Image Retrieval Using Clustering and Unlabeled Data	954
<i>Rujie Liu, Yuehong Wang, Takayuki Baba, Yusuke Uehara, Daiki Masumoto, and Shigemi Nagata</i>	

Hierarchical Classifiers for Detection of Fractures in X-Ray Images	962
<i>Joshua Congfu He, Wee Kheng Leow, and Tet Sen Howe</i>	

An Efficient Nearest Neighbor Classifier Using an Adaptive Distance Measure	970
<i>Omid Dehzangi, Mansoor J. Zolghadri, Shahram Taheri, and Abdollah Dehzangi</i>	

Accurate Identification of a Markov-Gibbs Model for Texture Synthesis by Bunch Sampling	979
<i>Georgy Gimel'farb and Dongxiao Zhou</i>	

Texture Defect Detection	987
<i>Michal Haindl, Jiří Grim, and Stanislav Mikeš</i>	

Extracting Salient Points and Parts of Shapes Using Modified kd-Trees	995
<i>Christian Bauckhage</i>	

Author Index	1003
---------------------------	-------------