

Table of Contents

Feature Extraction and Segmentation

Texture Description with Completed Local Quantized Patterns	1
<i>Xiaohua Huang, Guoying Zhao, Xiaopeng Hong, Matti Pietikäinen, and Wenming Zheng</i>	
A Local Image Descriptor Robust to Illumination Changes	11
<i>Sebastian Zambanini and Martin Kampel</i>	
Detection of Curvilinear Structures by Tensor Voting Applied to Fiber Characterization	22
<i>Nataliya Strokina, Tatiana Kurakina, Tuomas Eerola, Lasse Lensu, and Heikki Kälviäinen</i>	
Simple-Graphs Fusion in Image Mosaic: Application to Automated Cell Files Identification in Wood Slices	34
<i>Guilhem Brunel, Philippe Borianne, Gérard Subsol, and Marc Jaeger</i>	
Unsupervised Segmentation of Anomalies in Sequential Data, Images and Volumetric Data Using Multiscale Fourier Phase-Only Analysis . . .	44
<i>Fabian Bürger and Josef Pauli</i>	
Extended 3D Line Segments from RGB-D Data for Pose Estimation . . .	54
<i>Anders Glent Buch, Jeppe Barsøe Jessen, Dirk Kraft, Thiusius Rajeeth Savarimuthu, and Norbert Krüger</i>	
Incorporating Texture Intensity Information into LBP-Based Operators	66
<i>M. Ghahramani, Guoying Zhao, and Matti Pietikäinen</i>	
Bayesian Non-parametric Image Segmentation with Markov Random Field Prior	76
<i>Ehsan Amid</i>	
Evaluating Local Feature Detectors in Salient Region Detection	85
<i>Teemu Kinnunen, Mari Laine-Hernandez, and Pirkko Oittinen</i>	
Forest Stand Delineation Using a Hybrid Segmentation Approach Based on Airborne Laser Scanning Data	95
<i>Zhengzhe Wu, Ville Heikkinen, Markku Hauta-Kasari, Jussi Parkkinen, and Timo Tokola</i>	
Mean Shift with Flatness Constraints	107
<i>Eduard Sojka, Milan Šurkala, and Jan Gaura</i>	

Constructing Local Binary Pattern Statistics by Soft Voting	119
<i>Juha Ylioinas, Xiaopeng Hong, and Matti Pietikäinen</i>	

Pattern Recognition and Machine Learning

Cascaded Random Forest for Fast Object Detection	131
<i>Florian Baumann, Arne Ehlers, Karsten Vogt, and Bodo Rosenhahn</i>	
Multiplicative Updates for Learning with Stochastic Matrices	143
<i>Zhanxing Zhu, Zhirong Yang, and Erkki Oja</i>	
Validating the Visual Saliency Model	153
<i>Ali Alsam and Puneet Sharma</i>	
Bundle Methods for Structured Output Learning — Back to the Roots	162
<i>Michal Uříčář, Vojtěch Franc, and Václav Hlaváč</i>	
Continuous-Space Gaussian Process Regression and Generalized Wiener Filtering with Application to Learning Curves	172
<i>Simo Särkkä and Arno Solin</i>	
Approximations of Gaussian Process Uncertainties for Visual Recognition Problems	182
<i>Paul Bodesheim, Alexander Freytag, Erik Rodner, and Joachim Denzler</i>	
Topology-Preserving Dimension-Reduction Methods for Image Pattern Recognition	195
<i>Hayato Itoh, Tomoya Sakai, Kazuhiko Kawamoto, and Atsushi Imiya</i>	
Efficient Boosted Weak Classifiers for Object Detection	205
<i>Xiaopeng Hong, Guoying Zhao, Haoyu Ren, and Xilin Chen</i>	
Domain Adaptation for Sequential Detection	215
<i>Šimon Fojtů, Karel Zimmermann, Tomáš Pajdla, and Václav Hlaváč</i>	
Introducing a Inter-frame Relational Feature Model for Pedestrian Detection	225
<i>Andreas Zweng and Martin Kampel</i>	

Medical and Biomedical Image Analysis

Automated Cell Counting in Bürker Chamber	236
<i>Karel Štěpka</i>	
Adaptive Spatio-temporal Filtering of 4D CT-Heart	246
<i>Mats Andersson and Hans Knutsson</i>	

Toward Automated Validation of Sketch-Based 3D Segmentation Editing Tools	256
<i>Frank Heckel, Momchil I. Ivanov, Jan H. Moltz, and Horst K. Hahn</i>	
FAST-PVE: Extremely Fast Markov Random Field Based Brain MRI Tissue Classification	266
<i>Jussi Tohka</i>	
Automated Tracing of Retinal Blood Vessels Using Graphical Models . . .	277
<i>Jaydeep De, Tengfei Ma, Huiqi Li, Manoranjan Dash, and Cheng Li</i>	
Genus Zero Graph Segmentation: Estimation of Intracranial Volume . . .	290
<i>Rasmus R. Jensen, Signe S. Thorup, Rasmus R. Paulsen, Tron A. Darvann, Nuno V. Hermann, Per Larsen, Sven Kreiborg, and Rasmus Larsen</i>	
Vessel Wall Segmentation Using Implicit Models and Total Curvature Penalizers	299
<i>Rodrigo Moreno, Chunliang Wang, and Örjan Smedby</i>	
Faces and Gestures	
Dynamic 3D Facial Expression Recognition Using Robust Shape Features	309
<i>Ahmed Maalej, Hedi Tabia, and Halim Benhabiles</i>	
Head Pose Estimation Using Multi-scale Gaussian Derivatives	319
<i>Varun Jain and James L. Crowley</i>	
Finger Tracking for Gestural Interaction in Mobile Devices	329
<i>Matti Matilainen, Jari Hannuksela, and Lixin Fan</i>	
Extracting Local Binary Patterns from Image Key Points: Application to Automatic Facial Expression Recognition	339
<i>Xiaoyi Feng, Yangming Lai, Xiaofei Mao, Jinye Peng, Xiaoyue Jiang, and Abdenour Hadid</i>	
Head Pose Estimation for Sign Language Video	349
<i>Marcos Luzardo, Matti Karppa, Jorma Laaksonen, and Tommi Jantunen</i>	
Detecting Hand-Head Occlusions in Sign Language Video	361
<i>Ville Viitaniemi, Matti Karppa, Jorma Laaksonen, and Tommi Jantunen</i>	
Gender Recognition Using Nonsubsampled Contourlet Transform and WLD Descriptor	373
<i>Muhammad Hussain, Sarah Al-Otaibi, Ghulam Muhammad, Hatim Aboalsamh, George Bebis, and Anwar M. Mirza</i>	

Object and Scene Recognition

Unsupervised Visual Object Categorisation with BoF and Spatial Matching	384
<i>Teemu Kinnunen, Jukka Lankinen, Joni-Kristian Kämäräinen, Lasse Lensu, and Heikki Kälviäinen</i>	
Improved Object Detection and Pose Using Part-Based Models	396
<i>Fangyuan Jiang, Olof Enqvist, Fredrik Kahl, and Kalle Åström</i>	
Non Maximal Suppression in Cascaded Ranking Models	408
<i>Matthew B. Blaschko, Juho Kannala, and Esa Rahtu</i>	
Exploiting Object Characteristics Using Custom Features for Boosting-Based Classification	420
<i>Arne Ehlers, Florian Baumann, and Bodo Rosenhahn</i>	
Apprenticeship Learning: Transfer of Knowledge via Dataset Augmentation	432
<i>Miroslav Kobetski and Josephine Sullivan</i>	
Adding Discriminative Power to Hierarchical Compositional Models for Object Class Detection	444
<i>Matej Kristan, Marko Boben, Domen Tabernik, and Ales Leonardis</i>	

Matching, Registration and Alignment

Learning Multi-view Correspondences via Subspace-Based Temporal Coincidences	456
<i>Christian Conrad and Rudolf Mester</i>	
Interest Region Description Using Local Binary Pattern of Gradients ...	468
<i>Sajid Saleem and Robert Sablatnig</i>	
Probabilistic Hough Voting for Attitude Estimation from Aerial Fisheye Images	478
<i>Bertil Grelsson and Michael Felsberg</i>	
Automatic Optimization of Alignment Parameters for Tomography Datasets	489
<i>Folkert Bleichrodt and K. Joost Batenburg</i>	
Least-Squares Transformations between Point-Sets	501
<i>Kalle Rutanen, Germán Gómez-Herrero, Sirkka-Liisa Eriksson, and Karen Egiazarian</i>	
3D Object Pose Estimation Using Viewpoint Generative Learning	512
<i>Dissaphong Thachasongtham, Takumi Yoshida, François de Sorbier, and Hideo Saito</i>	

3D Vision

Structure from Motion Estimation with Positional Cues	522
<i>Linus Svärm and Magnus Oskarsson</i>	
Probabilistic Range Image Integration for DSM and True-Orthophoto Generation	533
<i>Markus Rumpler, Andreas Wendel, and Horst Bischof</i>	
On-line Stereo Self-calibration through Minimization of Matching Costs	545
<i>Robert Spangenberg, Tobias Langner, and Raúl Rojas</i>	
Depth Map Inpainting under a Second-Order Smoothness Prior	555
<i>Daniel Herrera C., Juho Kannala, L'ubor Ladický, and Janne Heikkilä</i>	
Merging Overlapping Depth Maps into a Nonredundant Point Cloud . . .	567
<i>Tomi Kyöstilä, Daniel Herrera C., Juho Kannala, and Janne Heikkilä</i>	
Industrial Phase-Shifting Profilometry in Motion	579
<i>P. Schroeder, R. Roux, J.-M. Favreau, M. Perriollat, and A. Bartoli</i>	

Color and Multispectral Image Analysis

Asymmetry as a Measure of Visual Saliency	591
<i>Ali Alsam, Puneet Sharma, and Anette Wrålsen</i>	
Detection of Small Roof Details in Image Sequences	601
<i>Dimitri Bulatov and Melanie Pohl</i>	
Supervised Object Class Colour Normalisation	611
<i>Ekaterina Riabchenko, Jukka Lankinen, Anders Glent Buch, Jonä-Kristian Kämäräinen, and Norbert Krüger</i>	
Statistical Quality Assessment of Pre-fried Carrots Using Multispectral Imaging	620
<i>Sara Sharifzadeh, Line H. Clemmensen, Hanne Løje, and Bjarne K. Ersbøll</i>	

Motion Analysis

A Feature-Based Adaptive Model for Realtime Face Tracking on Smart Phones	630
<i>Quang Nhat Vo and GueeSang Lee</i>	
Classification of RGB-D and Motion Capture Sequences Using Extreme Learning Machine	640
<i>Xi Chen and Markus Koskela</i>	

Robust Scale-Adaptive Mean-Shift for Tracking	652
<i>Tomas Vojir, Jana Noskova, and Jiri Matas</i>	

Systems and Applications

Airborne Based High Performance Crowd Monitoring for Security Applications	664
<i>Roland Perko, Thomas Schnabel, Gerald Fritz, Alexander Almer, and Lucas Paletta</i>	

Characterizing Spatters in Laser Welding of Thick Steel Using Motion Flow Analysis	675
<i>Olli Lahdenoja, Tero S�ntti, Jonne Poikonen, Mika Laiho, and Ari Paasio</i>	

Human-Centered Computing

Perceptually-Inspired Artistic Genre Identification System in Digitized Painting Collections	687
<i>Razvan George Condorovici, Corneliu Florea, Ruxandra Vr�nceanu, and Constantin Vertan</i>	

Video and Multimedia Analysis

High Capacity Reversible Watermarking for Images Based on Classified Neural Network	697
<i>Rongrong Ni, H.D. Cheng, Yao Zhao, and Yu Hou</i>	

Other

Saliency Detection Using Joint Temporal and Spatial Decorrelation	707
<i>Hamed Rezazadegan Tavakoli, Esa Rahtu, and Janne Heikkil�</i>	
Density Driven Diffusion	718
<i>Freddie �str�m, Vasileios Zografos, and Michael Felsberg</i>	

Author Index	731
------------------------	-----