

Table of Contents

Analysis and Understanding

| | |
|--|----|
| On Design and Applications of Cylindrical Panoramas | 1 |
| <i>Reinhard Klette, Georgy Gimel'farb, Shou Kang Wei, Fay Huang, Karsten Scheibe, Martin Scheele, Anko Börner, and Ralf Reulke</i> | |
| Finding the Symmetry Axis of a Perspectively Projected Plane Curve | 9 |
| <i>Giovanni Marola</i> | |
| Representing Orientation in n -Dimensional Spaces | 17 |
| <i>B. Rieger and L.J. van Vliet</i> | |
| Docking of Polygons Using Boundary Descriptor | 25 |
| <i>A. Imiya and S. Kudo</i> | |
| Area and Moment Computation for Objects with a Closed Spline Boundary | 33 |
| <i>Stanislav Sheynin and Alexander Tuzikov</i> | |
| Construction of Complete and Independent Systems of Rotation Moment Invariants | 41 |
| <i>Jan Flusser and Tomáš Suk</i> | |
| A Structural Framework for Assembly Modeling and Recognition | 49 |
| <i>Christian Bauckhage, Franz Kummert, and Gerhard Sagerer</i> | |
| Simple Points in 2D and 3D Binary Images..... | 57 |
| <i>Gisela Klette</i> | |
| Viewpoint Selection | |
| – Planning Optimal Sequences of Views for Object Recognition | 65 |
| <i>Frank Deinzer, Joachim Denzler, and Heinrich Niemann</i> | |
| Epipolar Plane Images as a Tool to Seek Correspondences in a Dense Sequence | 74 |
| <i>Martin Matoušek and Václav Hlaváč</i> | |
| Computing Neck-Shaft Angle of Femur for X-Ray Fracture Detection | 82 |
| <i>Tai Peng Tian, Ying Chen, Wee Kheng Leow, Wynne Hsu, Tet Sen Howe, and Meng Ai Png</i> | |
| Illuminance Flow | 90 |
| <i>Sylvia C. Pont and Jan J. Koenderink</i> | |

| | |
|---|-----|
| Rough Surface Correction and Re-illumination Using the Modified Beckmann Model | 98 |
| <i>Hossein Ragheb and Edwin R. Hancock</i> | |
| Towards a Real Time Panoramic Depth Sensor | 107 |
| <i>Peter Peer and Franc Solina</i> | |
| Depth Recovery from Noisy Gradient Vector Fields Using Regularization .. | 116 |
| <i>Tiangong Wei and Reinhard Klette</i> | |
| Bunch Sampling for Fast Texture Synthesis | 124 |
| <i>Dongxiao Zhou and Georgy Gimel'farb</i> | |
| Automatic Detection of Specular Reflectance in Colour Images Using the MS Diagram | 132 |
| <i>Fernando Torres, Jesús Angulo, and Francisco Ortiz</i> | |
| Skeletonization of Character Based on Wavelet Transform | 140 |
| <i>Xinge You, Yuan Y. Tang, Weipeng Zhang, and Lu Sun</i> | |
| A New Sharpness Measure Based on Gaussian Lines and Edges | 149 |
| <i>Judith Dijk, Michael van Ginkel, Rutger J. van Asselt, Lucas J. van Vliet, and Piet W. Verbeek</i> | |
| Video | |
| A New Tracking Technique: Object Tracking and Identification from Motion | 157 |
| <i>Terrence Chen, Mei Han, Wei Hua, Yihong Gong, and Thomas S. Huang</i> | |
| Evaluation of an Adaptive Composite Gaussian Model in Video Surveillance | 165 |
| <i>Qi Zang and Reinhard Klette</i> | |
| Low Complexity Motion Estimation Based on Spatio-Temporal Correlations and Direction of Motion Vectors | 173 |
| <i>Hyo Sun Yoon and Guee Sang Lee</i> | |
| Stereo System for Tracking Moving Object Using Log-Polar Transformation and Zero Disparity Filtering | 182 |
| <i>Il Choi, Jong-Gun Yoon, Young-Beum Lee, and Sung-Il Chien</i> | |
| Monte Carlo Visual Tracking Using Color Histograms and a Spatially Weighted Oriented Hausdorff Measure | 190 |
| <i>Tao Xiong and Christian Debrunner</i> | |
| Object Classification and Tracking in Video Surveillance | 198 |
| <i>Qi Zang and Reinhard Klette</i> | |

| | |
|--|-----|
| Video Retrieval by Context-Based Interpretation of Time-to-Collision Descriptors | 206 |
| <i>Ankush Mittal and Wing-Kin Sung</i> | |
| Trajectory Estimation Based on Globally Consistent Homography | 214 |
| <i>Siwook Nam, Hanjoo Kim, and Jaihie Kim</i> | |
| Real-Time Optic Flow Computation with Variational Methods..... | 222 |
| <i>Andrés Bruhn, Joachim Weickert, Christian Feddern, Timo Kohlberger, and Christoph Schnörr</i> | |
| Adaptive Stabilization of Vibration on Archive Films | 230 |
| <i>Attila Licsár, László Czúni, and Tamás Szirányi</i> | |
| A Genetic Algorithm with Automatic Parameter Adaptation for Video Segmentation | 238 |
| <i>Eun Yi Kim and Se Hyun Park</i> | |
| Two-Step Unassisted Video Segmentation Using Fast Marching Method | 246 |
| <i>Piotr Steć and Marek Domański</i> | |
| Video Mosaicking for Arbitrary Scene Imaged under Arbitrary Camera Motion | 254 |
| <i>Man-Tai Cheung and Ronald Chung</i> | |
| Multi-loop Scalable MPEG-2 Video Coders..... | 262 |
| <i>Ślawomir Maćkowiak</i> | |
| Multimedia Simulation of Colour Blindness and Colour Enhancement Assisted Colour Blindness | 270 |
| <i>Chanjira Sinthanayothin and Suthee Phoojaruenchanachai</i> | |
| Coefficient Partitioning Scanning Order Wavelet Packet Algorithm for Satellite Images..... | 278 |
| <i>Seong-Yun Cho and Su-Young Han</i> | |
| Segmentation | |
| Support Vector Machines for Road Extraction from Remotely Sensed Images | 285 |
| <i>Neil Yager and Arcot Sowmya</i> | |
| Fingerprint Matching Based on Directional Image Feature in Polar Coordinate System | 293 |
| <i>Chul-Hyun Park, Joon-Jae Lee, and Kil-Houm Park</i> | |
| Efficient Algorithm of Eye Image Check for Robust Iris Recognition System | 301 |
| <i>Jain Jang, Kwiju Kim, and Yillbyung Lee</i> | |

| | |
|--|-----|
| Recognition of Car License Plate by Using Dynamical Thresholding Method and Enhanced Neural Networks | 309 |
| <i>Kwang-Baek Kim, Si-Woong Jang, and Cheol-Ki Kim</i> | |
| Generalizing the Active Shape Model by Integrating Structural Knowledge to Recognize Hand Drawn Sketches | 320 |
| <i>Stephan Al-Zubi and Klaus Tönnies</i> | |
| Automatic Segmentation of Diatom Images | 329 |
| <i>Andrei C. Jalba and Jos B.T.M. Roerdink</i> | |
| Topological Active Volumes | 337 |
| <i>N. Barreira, M.G. Penedo, C. Mariño, and F.M. Ansia</i> | |
| Genetic Algorithm to Set Active Contour | 345 |
| <i>Jean-Jacques Rousselle, Nicole Vincent, and Nicolas Verbeke</i> | |
| Unsupervised Segmentation Incorporating Colour, Texture, and Motion | 353 |
| <i>Thomas Brox, Mikael Rousson, Rachid Deriche, and Joachim Weickert</i> | |
| Image Segmentation Based on Transformations with Reconstruction Criteria | 361 |
| <i>Iván R. Terol-Villalobos and Jorge D. Mendiola-Santibáñez</i> | |
| Gaussian-Weighted Moving-Window Robust Automatic Threshold Selection | 369 |
| <i>Michael H.F. Wilkinson</i> | |
| Shape | |
| Shape from Photometric Stereo and Contours | 377 |
| <i>Chia-Yen Chen, Reinhard Klette, and Chi-Fa Chen</i> | |
| A Fast Algorithm for Constructing Parameterizations of Three-Dimensional Simply Connected Digital Objects | 385 |
| <i>Ola Weistrand</i> | |
| A Visual Comparison of Shape Descriptors Using Multi-Dimensional Scaling | 393 |
| <i>J.D. Edwards, K.J. Riley, and J.P. Eakins</i> | |
| Part-Based Shape Recognition Using Gradient Vector Field Histograms | 402 |
| <i>Wooi-Boon Goh and Kai-Yun Chan</i> | |
| Measuring Sigmoidality | 410 |
| <i>Paul L. Rosin</i> | |
| Optimization and Tracking of Polygon Vertices for Shape Coding | 418 |
| <i>Janez Zaleželj and Jurij F. Tasic</i> | |

Classification

| | |
|--|-----|
| Greedy Algorithm for a Training Set Reduction in the Kernel Methods | 426 |
| <i>Vojtěch Franc and Václav Hlaváč</i> | |
| Learning Statistical Structure for Object Detection | 434 |
| <i>Henry Schneiderman</i> | |
| Blind Source Separation Using Variational Expectation-Maximization Algorithm | 442 |
| <i>Nikolaos Nasios and Adrian G. Bors</i> | |
| Graph Clustering with Tree-Unions | 451 |
| <i>Andrea Torsello and Edwin R. Hancock</i> | |
| Writer Style from Oriented Edge Fragments | 460 |
| <i>Marius Bulacu and Lambert Schomaker</i> | |
| Font Classification Using NMF | 470 |
| <i>Chang Woo Lee, Hyun Kang, Keechul Jung, and Hang Joon Kim</i> | |
| Arabic Character Recognition Using Structural Shape Decomposition | 478 |
| <i>Abdullah Al Shaher and Edwin R. Hancock</i> | |
| Classifier Combination through Clustering in the Output Spaces | 487 |
| <i>Hakan Altınçay and Büket Çizili</i> | |
| An Image-Based System for Spoken-Letter Recognition | 494 |
| <i>Khalid Saeed and Marcin Kozłowski</i> | |
| A Comparative Study of Morphological and Other Texture Features for the Characterization of Atherosclerotic Carotid Plaques | 503 |
| <i>C.I. Christodoulou, E. Kyriacou, M.S. Pattichis, C.S. Pattichis, and A. Nicolaides</i> | |
| A Computation of Fingerprint Similarity Measures Based on Bayesian Probability Modeling | 512 |
| <i>Sungwook Joun, Eungbong Yi, Choonwoo Ryu, and Hakil Kim</i> | |
| Classifying Sketches of Animals Using an Agent-Based System | 521 |
| <i>Graham Mackenzie and Natasha Alechina</i> | |
| Iris Recognition for Iris Tilted in Depth | 530 |
| <i>Chun-Nam Chun and Ronald Chung</i> | |
| Spectral Clustering of Graphs | 540 |
| <i>B. Luo, R.C. Wilson, and E.R. Hancock</i> | |

| | |
|---|-----|
| Adaptive Segmentation of Remote-Sensing Images for Aerial Surveillance | 549 |
| <i>Sung W. Baik, Sung M. Ahn, Jong W. Lee, and Khin K. Win</i> | |
| Detecting and Classifying Road Turn Directions from a Sequence of Images | 555 |
| <i>A.P. Leitão, S. Tilie, S.-S. Ieng, and V. Vigneron</i> | |
| Classification of Connecting Points in Thai Printed Characters by Combining Inductive Logic Programming with Backpropagation Neural Network | 563 |
| <i>Luepol Pipanmaekaporn and Amorntheep Sachdev</i> | |
| Design of a Multilayered Feed-Forward Neural Network Using Hypersphere Neurons | 571 |
| <i>Vladimir Banarer, Christian Perwass, and Gerald Sommer</i> | |
| Analytical Decision Boundary Feature Extraction for Neural Networks with Multiple Hidden Layers | 579 |
| <i>Jinwook Go and Chulhee Lee</i> | |
| Feasible Adaptation Criteria for Hybrid Wavelet – Large Margin Classifiers | 588 |
| <i>Julia Neumann, Christoph Schnörr, and Gabriele Steidl</i> | |

Face Recognition

| | |
|---|-----|
| A New Fisher-Based Method Applied to Face Recognition | 596 |
| <i>Carlos E. Thomaz and Duncan F. Gillies</i> | |
| Merging Subspace Models for Face Recognition | 606 |
| <i>Włodzisław Skarbek</i> | |
| A Face Processing System Based on Committee Machine: The Approach and Experimental Results | 614 |
| <i>Kim-Fung Jang, Ho-Man Tang, Michael R. Lyu, and Irwin King</i> | |
| Multi-class Support Vector Machines with Case-Based Combination for Face Recognition | 623 |
| <i>Jaepil Ko and Hyeran Byun</i> | |
| Partial Faces for Face Recognition: Left vs Right Half | 630 |
| <i>Srinivas Gutta and Harry Wechsler</i> | |
| Face Recognition by Fisher and Scatter Linear Discriminant Analysis | 638 |
| <i>Miroslaw Bober, Krzysztof Kucharski, and Włodzisław Skarbek</i> | |
| Optimizing Eigenfaces by Face Masks for Facial Expression Recognition .. | 646 |
| <i>Carmen Frank and Elmar Nöth</i> | |

Interpolation and Spatial Transformations

| | |
|---|-----|
| Polyhedral Scene: Mosaic Construction from 2 Images Taken under the General Case | 655 |
| <i>Yong He and Ronald Chung</i> | |
| Modeling Adaptive Deformations during Free-Form Pose Estimation | 664 |
| <i>Bodo Rosenhahn, Christian Perwass, and Gerald Sommer</i> | |
| Super-resolution Capabilities of the Hough-Green Transform | 673 |
| <i>Vladimir Shapiro</i> | |
| The Generalised Radon Transform: Sampling and Memory Considerations | 681 |
| <i>C.L. Luengo Hendriks, M. van Ginkel, P.W. Verbeek, and L.J. van Vliet</i> | |
| Monocentric Optical Space | 689 |
| <i>Jan J. Koenderink</i> | |
| Cumulative Chord Piecewise-Quartics for Length and Curve Estimation | 697 |
| <i>Ryszard Kozera</i> | |
| PDE Based Method for Superresolution of Gray-Level Images | 706 |
| <i>A. Torii, Y. Wakazono, H. Murakami, and A. Imiya</i> | |
| Interpolating Camera Configurations | 714 |
| <i>Lyle Noakes</i> | |

Filtering

| | |
|--|-----|
| Discrete Morphology with Line Structuring Elements | 722 |
| <i>C.L. Luengo Hendriks and L.J. van Vliet</i> | |
| Weighted Thin-Plate Spline Image Denoising | 730 |
| <i>Roman Kašpar and Barbara Zitová</i> | |
| The D-Dimensional Inverse Vector-Gradient Operator and Its Application for Scale-Free Image Enhancement | 738 |
| <i>Piet W. Verbeek and Judith Dijk</i> | |
| A Simple and Efficient Algorithm for Detection of High Curvature Points in Planar Curves | 746 |
| <i>Dmitry Chetverikov</i> | |
| Modelling Non-linearities in Images Using an Auto-associative Neural Network | 754 |
| <i>Felix Wehrmann and Ewert Bengtsson</i> | |

XVIII Table of Contents

| | |
|--|------------|
| Conditions of Similarity between Hermite and Gabor Filters as Models of the Human Visual System | 762 |
| <i>Carlos Joel Rivero-Moreno and Stéphane Bres</i> | |
| Offset Smoothing Using the USAN's Principle | 770 |
| <i>Giovanni Gallo and Alessandro Lo Giuoco</i> | |
| Author Index | 779 |