

Table of Contents

Tracking

Multimodal Shape Tracking with Point Distribution Models 1
J. Giebel, D.M. Gavrilu, Germany

Real-Time Tracking of Complex Objects
 Using Dynamic Interpretation Tree 9
M. Brandner, A. Pinz, Austria

Posters I

On Optimal Camera Parameter Selection
 in Kalman Filter Based Object Tracking 17
J. Denzler, M. Zobel, H. Niemann, Germany

Video-Based Handsign Recognition
 for Intuitive Human-Computer-Interaction 26
S. Funck, Germany

Quality Enhancement of Reconstructed 3D Models
 Using Coplanarity and Constraints 34
H. Cantzler, R.B. Fisher, UK; M. Devy, France

Multispectral Texture Analysis
 Using Interplane Sum- and Difference-Histograms 42
*C. Münzenmayer, H. Volk, C. Küblbeck, K. Spinnler, T. Wittenberg,
 Germany*

Human Body Reconstruction from Image Sequences 50
F. Remondino, Switzerland

A Knowledge-Based System for Context Dependent Evaluation
 of Remote Sensing Data 58
J. Bückner, M. Pahl, O. Stahlhut, C.-E. Liedtke, Germany

Empirically Convergent Adaptive Estimation
 of Grayvalue Structure Tensors 66
M. Middendorf, H.-H. Nagel, Germany

Real Time Fusion of Motion and Stereo
 Using Flow/Depth Constraint for Fast Obstacle Detection 75
S. Heinrich, Germany

| | |
|--|-----|
| Polygon Partition into Stable Regions | 83 |
| <i>J. Rocha, Spain</i> | |
| Fast ICP Algorithms for Shape Registration | 91 |
| <i>T. Jost, H. Hügli, Switzerland</i> | |
| Appearance Based Generic Object Modeling and Recognition Using Probabilistic Principal Component Analysis | 100 |
| <i>C. Drexler, F. Mattern, J. Denzler, Germany</i> | |
| Skin Patch Detection in Real-World Images | 109 |
| <i>H. Kruppa, M.A. Bauer, B. Schiele, Switzerland</i> | |
| Logarithmic Tapering Graph Pyramid | 117 |
| <i>Y. Haxhimusa, Austria; R. Glantz, Italy; M. Saib, G. Langs, W.G. Kropatsch, Austria</i> | |
| A New and Efficient Algorithm for Detecting the Corners in Digital Images | 125 |
| <i>E. Sojka, Czech Republik</i> | |
| Fast Implicit Active Contour Models | 133 |
| <i>G. Kühne, J. Weickert, M. Beier, W. Effelsberg, Germany</i> | |
| Unsupervised Image Partitioning with Semidefinite Programming | 141 |
| <i>J. Keuchel, C. Schnörr, C. Schellewald, D. Cremers, Germany</i> | |
| The Application of Genetic Algorithms in Structural Seismic Image Interpretation | 150 |
| <i>M. Aurnhammer, K. Tönnies, Germany</i> | |
| Unsupervised Image Clustering Using the Information Bottleneck Method | 158 |
| <i>J. Goldberger, H. Greenspan, S. Gordon, Israel</i> | |
| Efficient Modification of the Central Weighted Vector Median Filter | 166 |
| <i>B. Smolka, Poland</i> | |
| Fast Recovery of Piled Deformable Objects Using Superquadrics | 174 |
| <i>D. Katsoulas, Germany; A. Jaklič, Slovenia</i> | |
| Analysis of Amperometric Biosensor Curves Using Hidden-Markov-Modells | 182 |
| <i>J. Weitzenberg, S. Posch, M. Rost, Germany</i> | |

Segmentation

| | |
|--|-----|
| Unifying Registration and Segmentation for Multi-sensor Images | 190 |
| <i>B. Flach, E. Kask, D. Schlesinger, Germany; A. Skulish, Ukraine</i> | |

| | |
|---|-----|
| Relations between Soft Wavelet Shrinkage and Total Variation Denoising | 198 |
| <i>G. Steidl, J. Weickert, Germany</i> | |
| Data Resampling for Path Based Clustering | 206 |
| <i>B. Fischer, J.M. Buhmann, Germany</i> | |
| Statistical Image Sequence Processing for Temporal Change Detection | 215 |
| <i>M. Brocke, Germany</i> | |
| Invited Talk | |
| Single-View Metrology: Algorithms and Applications | 224 |
| <i>A. Criminisi, USA</i> | |
| 3D Shape | |
| Shape from Single Stripe Pattern Illumination | 240 |
| <i>S. Winkelbach, F.M. Wahl, Germany</i> | |
| Disparity from Monogenic Phase | 248 |
| <i>M. Felsberg, Sweden</i> | |
| A Probabilistic Approach to Building Roof Reconstruction Using Semantic Labelling | 257 |
| <i>S. Scholze, Switzerland; T. Moons, L. Van Gool, Belgium</i> | |
| Adaptive Pose Estimation for Different Corresponding Entities | 265 |
| <i>B. Rosenhahn, G. Sommer, Germany</i> | |
| Posters II | |
| Properties of a Three-Dimensional Island Hierarchy for Segmentation of 3D Images with the Color Structure Code | 274 |
| <i>P. Sturm, L. Priese, Germany</i> | |
| A Real Time Implementation of the Saliency-Based Model of Visual Attention on a SIMD Architecture | 282 |
| <i>N. Ouerhani, H. Hügli, P.-Y. Burgi, P.-F. Ruedi, Switzerland</i> | |
| Designing 3-D Nonlinear Diffusion Filters for High Performance Cluster Computing | 290 |
| <i>A. Bruhn, T. Jakob, M. Fischer, T. Kohlberger, J. Weickert, U. Brünig, C. Schnörr, Germany</i> | |
| Hierarchical Primitives Based Contour Matching | 298 |
| <i>X. Zhang, H. Burkhardt, Germany</i> | |

| | |
|--|-----|
| Application of the Tensor Voting Technique for Perceptual Grouping to Grey-Level Images | 306 |
| <i>A. Massad, M. Babós, B. Mertsching, Germany</i> | |
| Combined Forward and Backward Anisotropic Diffusion Filtering of Color Images | 314 |
| <i>B. Smolka, Poland</i> | |
| Reinforcement Learning to Drive a Car by Pattern Matching | 322 |
| <i>M. Krödel, K.-D. Kuhnert</i> | |
| Robust Point Correspondence for Image Registration Using Optimization with Extremal Dynamics | 330 |
| <i>S. Meshoul, M. Batouche, Algeria</i> | |
| Extending Active Shape Models to Incorporate a-priori Knowledge about Structural Variability | 338 |
| <i>S. Al-Zubi, K. Tönnies, Germany</i> | |
| A New Approach for Defect Detection in X-ray CT Images | 345 |
| <i>H. Eisele, F.A. Hamprecht, Germany</i> | |
| Object Tracking with an Adaptive Color-Based Particle Filter | 353 |
| <i>K. Nummiaro, Belgium; E. Koller-Meier, Switzerland; L. Van Gool, Belgium/Switzerland</i> | |
| Analysis of Object Interactions in Dynamic Scenes | 361 |
| <i>B. Möller, S. Posch, Germany</i> | |
| Automatic Monocular 3D-Reconstruction of Indoor Environments Using Mobile Vehicles | 370 |
| <i>C. Bräuer-Burchardt, Germany</i> | |
| Dense Parameter Fields from Total Least Squares | 379 |
| <i>H. Spies, C. S. Garbe, Germany</i> | |
| A Factorization-Based Method for Projective Reconstruction with Minimization of 2-D Reprojection Errors | 387 |
| <i>W.K. Tang, Y.S. Hung, Hong Kong</i> | |
| Head Detection and Localization from Sparse 3D Data | 395 |
| <i>M. Clabian, H. Rötzer, H. Bischof, W. Kropatsch, Austria</i> | |
| Segmentation of the Date in Entries of Historical Church Registers | 403 |
| <i>M. Feldbach, K.D. Tönnies, Germany</i> | |
| Approach to Object Recognition by Learning Mobile Robots | 411 |
| <i>M.-C. Nguyen, B. Radig, Germany</i> | |

| | |
|--|-----|
| Ultrasonic Image Formation Using Wide Angle Sensor Arrays and Cross-Echo Evaluation | 421 |
| <i>A. Di Miro, B. Wirnitzer, C. Zott, R. Klinnert, Germany</i> | |
| Segmenting Microorganisms in Multi-modal Volumetric Datasets Using a Modified Watershed Transform | 429 |
| <i>S. Bergner, R. Pohle, S. Al-Zubi, K. Tönnies, A. Eitner, T.R. Neu, Germany</i> | |
| Bayesian Kernel Tracking | 438 |
| <i>D. Comaniciu, USA</i> | |

Optical Flow

| | |
|--|-----|
| Nonlinear Matrix Diffusion for Optic Flow Estimation | 446 |
| <i>T. Brox, J. Weickert, Germany</i> | |
| Combining the Advantages of Local and Global Optic Flow Methods | 454 |
| <i>A. Bruhn, J. Weickert, C. Schnörr, Germany</i> | |
| Mixed OLS-TLS for the Estimation of Dynamic Processes with a Linear Source Term | 463 |
| <i>C.S. Garbe, H. Spies, B. Jähne, Germany</i> | |
| Motion Competition: Variational Integration of Motion Segmentation and Shape Regularization | 472 |
| <i>D. Cremers, C. Schnörr, Germany</i> | |

Recognition

| | |
|---|-----|
| Fisher Light-Fields for Face Recognition across Pose and Illumination | 481 |
| <i>R. Gross, I. Matthews, S. Baker, USA</i> | |
| A Multimodal System for Object Learning | 490 |
| <i>F. Lömker, G. Sagerer, Germany</i> | |
| Maximum Entropy and Gaussian Models for Image Object Recognition | 498 |
| <i>D. Keysers, F.J. Och, H. Ney, Germany</i> | |
| Evaluation of Confidence Measures for On-Line Handwriting Recognition | 507 |
| <i>A. Brakensiek, A. Kosmala, G. Rigoll, Germany</i> | |

Posters III

| | |
|---|-----|
| ViRoom – Low Cost Synchronized Multicamera System and Its Self-calibration | 515 |
| <i>T. Svoboda, H. Hug, L. Van Gool, Switzerland</i> | |
| Real-Time Tracking Using Wavelet Representation | 523 |
| <i>T. Chateau, F. Jurie, M. Dhome, X. Clady, France</i> | |

| | |
|---|------------|
| Hands Tracking from Frontal View for Vision-Based Gesture Recognition | 531 |
| <i>J. Zieren, N. Unger, S. Akyol, Germany</i> | |
| Automatic Annotation of Tennis Video Sequences | 540 |
| <i>C. Calvo, A. Micarelli, E. Sangineto, Italy</i> | |
| Fitting of Parametric Space Curves and Surfaces by Using the Geometric Error Measure | 548 |
| <i>S.J. Ahn, W. Rauh, E. Westkämper, Germany</i> | |
| Efficient, Active 3D Acquisition, Based on a Pattern-Specific Snake | 557 |
| <i>T.P. Koninckx, L. Van Gool, Belgium</i> | |
| Appearance-Based 3-D Face Recognition from Video | 566 |
| <i>V. Krüger, R. Gross, S. Baker, USA</i> | |
| Direct Method for Motion Estimation: An Alternative to Decomposition of Planar Transformation Matrices | 575 |
| <i>N. Navab, Y. Genc, A. Khamene, M. Mitschke, USA</i> | |
| A Feature-Driven Attention Module for an Active Vision System | 583 |
| <i>K. Cheoi, Y. Lee, South Korea</i> | |
| Analytic Reduction of the Kruppa Equations | 591 |
| <i>N. Canterakis, Germany</i> | |
| Query-Dependent Performance Optimization for Vocabulary-Supported Image Retrieval | 600 |
| <i>J. Vogel, B. Schiele, Switzerland</i> | |
| Spherical Images | |
| Multiscale Image Processing on the Sphere | 609 |
| <i>T. Bülow, USA</i> | |
| Polydioptric Cameras: New Eyes for Structure from Motion | 618 |
| <i>J. Neumann, C. Fermüller, Y. Aloimonos, USA</i> | |
| Author Index | 627 |