# Table of Contents

## Tracking

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

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

## Posters I

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

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

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

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

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

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

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

Real Time Fusion of Motion and Stereo  
Using Flow/Depth Constraint for Fast Obstacle Detection  
*S. Heinrich, Germany*  
75
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polygon Partition into Stable Regions</td>
<td>83</td>
</tr>
<tr>
<td>J. Rocha, Spain</td>
<td></td>
</tr>
<tr>
<td>Fast ICP Algorithms for Shape Registration</td>
<td>91</td>
</tr>
<tr>
<td>T. Jost, H. Hügli, Switzerland</td>
<td></td>
</tr>
<tr>
<td>Appearance Based Generic Object Modeling and Recognition</td>
<td>100</td>
</tr>
<tr>
<td>C. Drexler, F. Mattern, J. Denzler, Germany</td>
<td></td>
</tr>
<tr>
<td>Skin Patch Detection in Real-World Images</td>
<td>109</td>
</tr>
<tr>
<td>H. Kruppa, M.A. Bauer, B. Schiele, Switzerland</td>
<td></td>
</tr>
<tr>
<td>Logarithmic Tapering Graph Pyramid</td>
<td>117</td>
</tr>
<tr>
<td>Y. Haxhimusa, Austria; R. Glantz, Italy; M. Saib, G. Langs,</td>
<td></td>
</tr>
<tr>
<td>W.G. Kropatsch, Austria</td>
<td></td>
</tr>
<tr>
<td>A New and Efficient Algorithm for Detecting the Corners in Digital Images</td>
<td>125</td>
</tr>
<tr>
<td>E. Sojka, Czech Republic</td>
<td></td>
</tr>
<tr>
<td>Fast Implicit Active Contour Models</td>
<td>133</td>
</tr>
<tr>
<td>G. Kühne, J. Weickert, M. Beier, W. Effelsberg, Germany</td>
<td></td>
</tr>
<tr>
<td>Unsupervised Image Partitioning with Semidefinite Programming</td>
<td>141</td>
</tr>
<tr>
<td>J. Keuchel, C. Schnörr, C. Schellewald, D. Cremers, Germany</td>
<td></td>
</tr>
<tr>
<td>The Application of Genetic Algorithms in Structural Seismic Image Interpretation</td>
<td>150</td>
</tr>
<tr>
<td>M. Aurnhammer, K. Tönnes, Germany</td>
<td></td>
</tr>
<tr>
<td>Unsupervised Image Clustering Using the Information Bottleneck Method</td>
<td>158</td>
</tr>
<tr>
<td>J. Goldberger, H. Greenspan, S. Gordon, Israel</td>
<td></td>
</tr>
<tr>
<td>Efficient Modification of the Central Weighted Vector Median Filter</td>
<td>166</td>
</tr>
<tr>
<td>B. Smolka, Poland</td>
<td></td>
</tr>
<tr>
<td>Fast Recovery of Piled Deformable Objects Using Superquadrics</td>
<td>174</td>
</tr>
<tr>
<td>D. Katsoulas, Germany; A. Jaklić, Slovenia</td>
<td></td>
</tr>
<tr>
<td>Analysis of Amperometric Biosensor Curves Using Hidden-Markov-Modells</td>
<td>182</td>
</tr>
<tr>
<td>J. Weitzenberg, S. Posch, M. Rost, Germany</td>
<td></td>
</tr>
<tr>
<td><strong>Segmentation</strong></td>
<td></td>
</tr>
<tr>
<td>Unifying Registration and Segmentation for Multi-sensor Images</td>
<td>190</td>
</tr>
<tr>
<td>B. Flach, E. Kask, D. Schlesinger, Germany; A. Skulish, Ukraine</td>
<td></td>
</tr>
</tbody>
</table>
Relations between Soft Wavelet Shrinkage and Total Variation Denoising .................................. 198
  G. Steidl, J. Weickert, Germany

Data Resampling for Path Based Clustering ........................................ 206
  B. Fischer, J.M. Buhmann, Germany

Statistical Image Sequence Processing for Temporal Change Detection .... 215
  M. Brocke, Germany

Invited Talk

Single-View Metrology: Algorithms and Applications ......................... 224
  A. Criminisi, USA

3D Shape

Shape from Single Stripe Pattern Illumination ................................ 240
  S. Winkelbach, F.M. Wahl, Germany

Disparity from Monogenic Phase ....................................................... 248
  M. Felsberg, Sweden

A Probabilistic Approach to Building Roof Reconstruction
Using Semantic Labelling ................................................................. 257
  S. Scholze, Switzerland; T. Moons, L. Van Gool, Belgium

Adaptive Pose Estimation for Different Corresponding Entities .......... 265
  B. Rosenhahn, G. Sommer, Germany

Posters II

Properties of a Three-Dimensional Island Hierarchy
for Segmentation of 3D Images with the Color Structure Code ............ 274
  P. Sturm, L. Priese, Germany

A Real Time Implementation of the Saliency-Based Model
of Visual Attention on a SIMD Architecture ................................. 282
  N. Ouerhani, H. Hugi, P.-Y. Burgi, P.-F. Ruedi, Switzerland

Designing 3-D Nonlinear Diffusion Filters
for High Performance Cluster Computing ....................................... 290
  A. Bruhn, T. Jakob, M. Fischer, T. Kohlberger, J. Weickert, U. Brüning,
  C. Schnörr, Germany

Hierarchical Primitives Based Contour Matching ............................... 298
  X. Zhang, H. Burkhardt, Germany
Application of the Tensor Voting Technique for Perceptual Grouping to Grey-Level Images .......................... 306
A. Massad, M. Babós, B. Mertsching, Germany

Combined Forward and Backward Anisotropic Diffusion Filtering of Color Images ............................................. 314
B. Smolka, Poland

Reinforcement Learning to Drive a Car by Pattern Matching ............. 322
M. Krödel, K.-D. Kühnert

Robust Point Correspondence for Image Registration Using Optimization with Extremal Dynamics ......................... 330
S. Mesgou, M. Batouche, Algeria

Extending Active Shape Models to Incorporate a-priori Knowledge about Structural Variability .................................. 338
S. Al-Zabi, K. Tönies, Germany

A New Approach for Defect Detection in X-ray CT Images ............... 345
H. Eisele, F.A. Hamprecht, Germany

Object Tracking with an Adaptive Color-Based Particle Filter .......... 353
K. Nummiaro, Belgium; E. Koller-Meier, Switzerland; L. Van Gool, Belgium/Switzerland

Analysis of Object Interactions in Dynamic Scenes ...................... 361
B. Möller, S. Posch, Germany

Automatic Monocular 3D-Reconstruction of Indoor Environments Using Mobile Vehicles ........................................ 370
C. Bräuer-Burchardt, Germany

Dense Parameter Fields from Total Least Squares .......................... 379
H. Spies, C. S. Garbe, Germany

A Factorization-Based Method for Projective Reconstruction with Minimization of 2-D Reprojection Errors ..................... 387
W.K. Tang, Y.S. Hung, Hong Kong

Head Detection and Localization from Sparse 3D Data .................... 395
M. Clabian, H. Rötzer, H. Bischof, W. Kropatsch, Austria

Segmentation of the Date in Entries of Historical Church Registers ...... 403
M. Feldbach, K.D. Tönies, Germany

Approach to Object Recognition by Learning Mobile Robots ............. 411
M.-C. Nguyen, B. Radig, Germany
Table of Contents

Ultrasonic Image Formation Using Wide Angle Sensor Arrays and Cross-Echo Evaluation ........................................ 421
   A. Di Miro, B. Wirnitzer, C. Zott, R. Klannert, Germany

Segmenting Microorganisms in Multi-modal Volumetric Datasets Using a Modified Watershed Transform .................... 429

Bayesian Kernel Tracking ........................................... 438
   D. Comaniciu, USA

Optical Flow

Nonlinear Matrix Diffusion for Optic Flow Estimation .................. 446
   T. Brox, J. Weickert, Germany

Combining the Advantages of Local and Global Optic Flow Methods ...... 454
   A. Bruhn, J. Weickert, C. Schnörr, Germany

Mixed OLS-TLS for the Estimation of Dynamic Processes with a Linear Source Term .............................................. 463
   C.S. Garbe, H. Spies, B. Jähne, Germany

Motion Competition: Variational Integration of Motion Segmentation and Shape Regularization ................................ 472
   D. Cremers, C. Schnörr, Germany

Recognition

Fisher Light-Fields for Face Recognition across Pose and Illumination .... 481
   R. Gross, I. Matthews, S. Baker, USA

A Multimodal System for Object Learning .................................. 490
   F. Lömker, G. Sagerer, Germany

Maximum Entropy and Gaussian Models for Image Object Recognition ... 498
   D. Keysers, F.J. Och, H. Ney, Germany

Evaluation of Confidence Measures for On-Line Handwriting Recognition 507
   A. Brakensiek, A. Kosmata, G. Rigoll, Germany

Posters III

ViRoom – Low Cost Synchronized Multicamera System and Its Self-calibration .................................................. 515
   T. Svoboda, H. Hug, L. Van Gool, Switzerland

Real-Time Tracking Using Wavelet Representation .......................... 523
   T. Chateau, F. Jurie, M. Dhome, X. Clady, France
Hands Tracking from Frontal View for Vision-Based Gesture Recognition ........................................ 531
   J. Zieren, N. Unger, S. Akyol, Germany

Automatic Annotation of Tennis Video Sequences .................. 540
   C. Calvo, A. Micarelli, E. Sangineto, Italy

Fitting of Parametric Space Curves and Surfaces by Using the Geometric Error Measure .................... 548
   S.J. Ahn, W. Rauh, E. Westkämper, Germany

Efficient, Active 3D Acquisition, Based on a Pattern-Specific Snake .......... 557
   T.P. Koninckx, L. Van Gool, Belgium

Appearance-Based 3-D Face Recognition from Video ........ 566
   V. Krüger, R. Gross, S. Baker, USA

Direct Method for Motion Estimation: An Alternative to Decomposition of Planar Transformation Matrices .... 575
   N. Navab, Y. Genc, A. Khamene, M. Mitschke, USA

A Feature-Driven Attention Module for an Active Vision System ........ 583
   K. Cheoi, Y. Lee, South Korea

Analytic Reduction of the Kruppa Equations ..................... 591
   N. Canterakis, Germany

Query-Dependent Performance Optimization for Vocabulary-Supported Image Retrieval ........ 600
   J. Vogel, B. Schiele, Switzerland

Spherical Images

Multiscale Image Processing on the Sphere ................. 609
   T. Bülow, USA

Polydoptric Cameras: New Eyes for Structure from Motion ........ 618
   J. Neumann, C. Fermüller, Y. Aloimonos, USA

Author Index ............................................................. 627
Pattern Recognition
24th DAGM Symposium, Zurich, Switzerland, September 16-18, 2002, Proceedings
Van Gool, L. (Ed.)
2002, XVI, 628 p., Softcover
ISBN: 978-3-540-44209-7