

# Table of Contents

---

## Chapter I. Invited Lectures

---

Invariant Recognition and Processing of Planar Shapes .....	3
<i>Alfred M. Bruckstein</i>	
Recent Advances in Structural Pattern Recognition with Applications to Visual Form Analysis .....	11
<i>Horst Bunke</i>	
On Learning the Shape of Complex Actions .....	24
<i>Terry Caelli, Andrew McCabe, Gordon Binsted</i>	
Mereology of Visual Form .....	40
<i>Donald D. Hoffman</i>	
On Matching Algorithms for the Recognition of Objects in Cluttered Background .....	51
<i>Josef Kittler, Alireza Ahmadyfard</i>	
A Unified Framework for Indexing and Matching Hierarchical Shape Structures .....	67
<i>Ali Shokoufandeh, Sven Dickinson</i>	
A Fragment-Based Approach to Object Representation and Classification .	85
<i>Shimon Ullman, Erez Sali, Michel Vidal-Naquet</i>	

---

## Chapter II. Representation

---

Minimum-Length Polygons in Approximation Sausages .....	103
<i>Tetsuo Asano, Yasuyuki Kawamura, Reinhard Klette, Koji Obokata</i>	
Optimal Local Distances for Distance Transforms in 3D Using an Extended Neighbourhood .....	113
<i>Gunilla Borgefors, Stina Svensson</i>	
Independent Modes of Variation in Point Distribution Models .....	123
<i>Marco Bressan, Jordi Vitrià</i>	

Qualitative Estimation of Depth in Monocular Vision . . . . .	135
<i>Virginio Cantoni, Luca Lombardi, Marco Porta, Ugo Vallone</i>	
A New Shape Space for Second Order 3D-Variations . . . . .	145
<i>Per-Erik Danielsson, Qingfen Lin</i>	
Spatial Relations among Pattern Subsets as a Guide for Skeleton Pruning . . . . .	155
<i>Claudio De Stefano, Maria Frucchi</i>	
Euclidean Fitting Revisited . . . . .	165
<i>Petko Faber, R.B. Fisher</i>	
On the Representation of Visual Information . . . . .	176
<i>Mario Ferraro, Giuseppe Boccignone, Terry Caelli</i>	
Skeletons in the Framework of Graph Pyramids . . . . .	186
<i>Roland Glantz, Walter G. Kropatsch</i>	
Computational Surface Flattening: A Voxel-Based Approach . . . . .	196
<i>Ruth Grossmann, Nahum Kiryati, Ron Kimmel</i>	
An Adaptive Image Interpolation Using the Quadratic Spline Interpolator . . . . .	205
<i>Hyo-Ju Kim, Chang-Sung Jeong</i>	
The Shock Scaffold for Representing 3D Shape . . . . .	216
<i>Frederic F. Leymarie, Benjamin B. Kimia</i>	
Curve Skeletonization by Junction Detection in Surface Skeletons . . . . .	229
<i>Ingela Nyström, Gabriella Sanniti di Baja, Stina Svensson</i>	
Representation of Fuzzy Shapes . . . . .	239
<i>Binh Pham</i>	
Skeleton-Based Shape Models with Pressure Forces: Application to Segmentation of Overlapping Leaves . . . . .	249
<i>Gilles Rabatel, Anne-Gaëlle Manh, Marie-José Aldon, Bernard Bonicelli</i>	
A Skeletal Measure of 2D Shape Similarity . . . . .	260
<i>Andrea Torsello, Edwin R. Hancock</i>	
Perception-Based 2D Shape Modeling by Curvature Shaping . . . . .	272
<i>Liangyin Yu, Charles R. Dyer</i>	

---

## Chapter III. Analysis

---

Global Topological Properties of Images Derived from Local Curvature Features .....	285
<i>Erhardt Barth, Mario Ferraro, Christoph Zetzsche</i>	
Adaptive Segmentation of MR Axial Brain Images Using Connected Components .....	295
<i>Alberto Biancardi, Manuel Segovia-Martínez</i>	
Discrete Curvature Based on Osculating Circle Estimation .....	303
<i>David Coeurjolly, Serge Miguet, Laure Tougne</i>	
Detection and Enhancement of Line Structures in an Image by Anisotropic Diffusion .....	313
<i>Koichiro Deguchi, Tadahiro Izumitani, Hidekata Hontani</i>	
How Folds Cut a Scene .....	323
<i>Patrick S. Huggins, Steven W. Zucker</i>	
Extraction of Topological Features from Sequential Volume Data .....	333
<i>Yukiko Kenmochi, Atsushi Imiya, Toshiaki Nomura, Kazunori Kotani</i>	
Using Beltrami Framework for Orientation Diffusion in Image Processing .....	346
<i>Ron Kimmel, Nir Sochen</i>	
Digital Planar Segment Based Polyhedrization for Surface Area Estimation .....	356
<i>Reinhard Klette, Hao Jie Sun</i>	
Shape-Guided Split and Merge of Image Regions .....	367
<i>Lifeng Liu, Stan Sclaroff</i>	
A Rotation-Invariant Morphology for Shape Analysis of Anisotropic Objects and Structures .....	378
<i>Cris L. Luengo Hendriks, Lucas J. van Vliet</i>	
Multiscale Feature Extraction from the Visual Environment in an Active Vision System .....	388
<i>Youssef Machrouh, Jean-Sylvain Liénard, Philippe Tarroux</i>	
2-D Shape Decomposition into Overlapping Parts .....	398
<i>Amin Massad, Gerard Medioni</i>	
Fast Line Detection Algorithms Based on Combinatorial Optimization ....	410
<i>Marco Mattavelli, Vincent Noel, Edoardo Amaldi</i>	

Koenderink Corner Points . . . . .	420
<i>Mads Nielsen, Ole Fogh Olsen, Michael Sig, M. Sigurd</i>	
Dynamic Models for Wavelet Representations of Shape . . . . .	431
<i>Fernando Pérez Nava, Antonio Falcón Martel</i>	
Straightening and Partitioning Shapes . . . . .	440
<i>Paul L. Rosin</i>	
Invariant Signatures from Polygonal Approximations of Smooth Curves . . .	451
<i>Doron Shaked</i>	

---

## Chapter IV. Recognition

---

On the Learning of Complex Movement Sequences . . . . .	463
<i>Walter F. Bischof, Terry Caelli</i>	
Possibility Theory and Rough Histograms for Motion Estimation in a Video Sequence . . . . .	473
<i>Frederic Comby, Olivier Strauss, Marie-José Aldon</i>	
Prototyping Structural Shape Descriptions by Inductive Learning . . . . .	484
<i>L.P. Cordella, P. Foggia, C. Sansone, F. Tortorella, M. Vento</i>	
Training Space Truncation in Vision-Based Recognition . . . . .	494
<i>René Dencker Eriksen, Ivar Balslev</i>	
Grouping Character Shapes by Means of Genetic Programming . . . . .	504
<i>Claudio De Stefano, A. Della Cioppa, A. Marcelli, F. Matarazzo</i>	
Pattern Detection Using a Maximal Rejection Classifier . . . . .	514
<i>Michael Elad, Yacov Hel-Or, Renato Keshet</i>	
Visual Search and Visual Lobe Size . . . . .	525
<i>Anand K. Gramopadhye, Kartik Madhani</i>	
Judging Whether Multiple Silhouettes Can Come from the Same Object . .	532
<i>David Jacobs, Peter Belhumeur, Ian Jermyn</i>	
Discrete Deformable Boundaries for the Segmentation of Multidimensional Images . . . . .	542
<i>Jacques-Olivier Lachaud, Anne Vialard</i>	
Camera Motion Extraction Using Correlation for Motion-Based Video Classification . . . . .	552
<i>Pierre Martin-Granel, Matthew Roach, John Mason</i>	
Matching Incomplete Objects Using Boundary Signatures . . . . .	563
<i>Adnan A.Y. Mustafa</i>	

General Purpose Matching of Grey Level Arbitrary Images . . . . .	573
<i>Francesca Odone, Emanuele Trucco, Alessandro Verri</i>	
Many-to-many Matching of Attributed Trees Using Association Graphs and Game Dynamics . . . . .	583
<i>Marcello Pelillo, Kaleem Siddiqi, Steven W. Zucker</i>	
An Expectation-Maximisation Framework for Perceptual Grouping . . . . .	594
<i>Antonio Robles-Kelly, Edwin R. Hancock</i>	
Alignment-Based Recognition of Shape Outlines . . . . .	606
<i>Thomas B. Sebastian, Philip N. Klein, Benjamin B. Kimia</i>	
Behind the Image Sequence: The Semantics of Moving Shapes . . . . .	619
<i>Guido Tascini, A. Montesanto, R. Palombo, P. Puliti</i>	
Probabilistic Hypothesis Generation for Rapid 3D Object Recognition . . . .	630
<i>June-Ho Yi</i>	

---

## Chapter V. Modelling and Retrieval

---

Efficient Shape Description Using NURBS . . . . .	643
<i>Djordje Brujic, Iain Ainsworth, Mihailo Ristic, Vesna Brujic</i>	
Non-manifold Multi-tessellation: From Meshes to Iconic Representations of Objects . . . . .	654
<i>Leila De Floriani, Paola Magillo, Franco Morando, Enrico Puppo</i>	
Image Indexing by Contour Analysis: A Comparison . . . . .	665
<i>Riccardo Distasi, Michele Nappi, Maurizio Tucci, Sergio Vitulano</i>	
Shape Reconstruction from an Image Sequence . . . . .	677
<i>Atsushi Imiya, Kazuhiko Kawamoto</i>	
3D Shape Reconstruction from Multiple Silhouettes: Generalization from Few Views by Neural Network Learning . . . . .	687
<i>Itsuo Kumazawa, Masayoshi Ohno</i>	
Robust Structural Indexing through Quasi-Invariant Shape Signatures and Feature Generation . . . . .	696
<i>Hirobumi Nishida</i>	
Fast Reconstruction of 3D Objects from Single Free-Hand Line Drawing . .	706
<i>Beom-Soo Oh, Chang-Hun Kim</i>	
Color and Shape Index for Region-Based Image Retrieval . . . . .	716
<i>B.G. Prasad, S.K. Gupta, K.K. Biswas</i>	

---

## Chapter VI. Applications

---

Virtual Drilling in 3-D Objects Reconstructed by Shape-Based Interpolation .....	729
<i>Adrian G. Borş, Lefteris Kechagias, Ioannis Pitas</i>	
Morphological Image Processing for Evaluating Malaria Disease .....	739
<i>Cecilia Di Ruberto, Andrew Dempster, Shahid Khan, Bill Jarra</i>	
A Binocular License Plate Reader for High Precision Speed Measurement .....	749
<i>Giovanni Garibotto</i>	
Volume and Surface Area Distributions of Cracks in Concrete .....	759
<i>George Nagy, Tong Zhang, W.R. Franklin, Eric Landis, Edwin Nagy, Denis T. Keane</i>	
Integration of Local and Global Shape Analysis for Logo Classification . . .	769
<i>Jan Neumann, Hanan Samet, Aya Soffer</i>	
Motion Tracking of Animals for Behavior Analysis .....	779
<i>Petra Perner</i>	
Head Model Acquisition from Silhouettes .....	787
<i>Kwan-Yee K. Wong, Paulo R.S. Mendonça, Roberto Cipolla</i>	
<b>Author Index</b> .....	797

Visual Form 2001

4th International Workshop on Visual Form, IWVF-4

Capri, Italy, May 28-30, 2001 Proceedings

Arcelli, C.; Cordella, L.P.; Sanniti di Baja, G. (Eds.)

2001, XIV, 797 p., Softcover

ISBN: 978-3-540-42120-7