

# Table of Contents

---

## I Cognitive Vision

---

Implementing the Expert Object Recognition Pathway.....	1
<i>Bruce A. Draper, Kyungim Baek, Jeff Boody</i>	
Efficient Pose Estimation Using View-Based Object Representations ....	12
<i>Gabriele Peters</i>	
Integrating Context-Free and Context-Dependent Attentional Mechanisms for Gestural Object Reference .....	22
<i>Gunther Heidemann, Robert Rae, Holger Bekel, Ingo Bax, Helge Ritter</i>	

---

## II Philosophical Issues in Cognitive Vision

---

Reflections on Cognitive Vision Systems .....	34
<i>Hans-Hellmut Nagel</i>	
Towards Ontology Based Cognitive Vision .....	44
<i>Nicolas Maillot, Monique Thonnat, Alain Boucher</i>	
A Self-Referential Perceptual Inference Framework for Video Interpretation .....	54
<i>Christopher Town, David Sinclair</i>	

---

## III Cognitive Vision and Applications

---

Recurrent Bayesian Network for the Recognition of Human Behaviors from Video .....	68
<i>Nicolas Moënné-Loccoz, François Brémond, Monique Thonnat</i>	
Implementation of Traffic Flow Measuring Algorithm Using Real-Time Dynamic Image Processing .....	78
<i>Tae-Seung Lee, Eung-Min Lee, Hyeong-Taek Park, Young-Kil Kwag, Sang-Seok Lim, Joong-Hwan Baek, Byong-Won Hwang</i>	
Efficient Fingertip Tracking and Mouse Pointer Control for a Human Mouse .....	88
<i>Jiyoung Park, Juneho Yi</i>	
Real-Time Camera Pose in a Room .....	98
<i>Manmohan Krishna Chandraker, Christoph Stock, Axel Pinz</i>	

Recognition of Obstacles on Structured 3D Background . . . . .	111
<i>Reinhold Huber, Jürgen Biber, Christoph Nowak, Bernhard Spatzek</i>	
Virtual Post-its: Visual Label Extraction, Attachment, and Tracking for Teleconferencing . . . . .	121
<i>Indra Geys, Luc Van Gool</i>	
Architecture for Image Labelling in Real Conditions . . . . .	131
<i>Juan Manuel García Chamizo, Andrés Fuster Guilló, Jorge Azorín López, Francisco Maciá Pérez</i>	
Alignment of Sewerage Inspection Videos for Their Easier Indexing . . . . .	141
<i>Karel Hanton, Vladimír Smutný, Vojtěch Franc, Václav Hlaváč</i>	
Information Selection and Probabilistic 2D – 3D Integration in Mobile Mapping . . . . .	151
<i>Lucas Paletta, Gerhard Paar</i>	
Tree Supported Road Extraction from Arial Images Using Global and Local Context Knowledge . . . . .	162
<i>Matthias Butenuth, Bernd-Michael Straub, Christian Heipke, Felicitas Willrich</i>	
Automatic Bridge Detection in High-Resolution Satellite Images . . . . .	172
<i>Roger Trias-Sanz, Nicolas Loménie</i>	
Computer Platform for Transformation of Visual Information into Sound Sensations for Vision Impaired Persons . . . . .	182
<i>Bogusław Cyganek, Jan Borgosz</i>	
A Real-Time Multisensory Image Segmentation Algorithm with an Application to Visual and X-Ray Inspection . . . . .	192
<i>Yuhua Ding, George J. Vachtsevanos, Anthony J. Yezzi, Wayne Daley, Bonnie S. Heck-Ferri</i>	
An Attentive, Multi-modal Laser “Eye” . . . . .	202
<i>Simone Frintrop, Erich Rome, Andreas Nüchter, Hartmut Surmann</i>	
Navigating through Logic-Based Scene Models for High-Level Scene Interpretations . . . . .	212
<i>Bernd Neumann, Thomas Weiss</i>	

---

## IV Computer Vision Architectures

---

A Real-World Vision System: Mechanism, Control, and Vision Processing . . . . .	223
<i>Andrew Danks, Alexander Zelinsky</i>	

Learning Optimal Parameters for Self-Diagnosis in a System for Automatic Exterior Orientation .....	236
<i>Wolfgang Förstner, Thomas Läbe</i>	
Multi-agent Activity Recognition Using Observation Decomposed Hidden Markov Model .....	247
<i>Xiaohui Liu, Chin-Seng Chua</i>	
VICs: A Modular Vision-Based HCI Framework .....	257
<i>Guangqi Ye, Jason Corso, Darius Burschka, Gregory D. Hager</i>	
A Miniature Stereo Vision Machine for Real-Time Dense Depth Mapping .....	268
<i>Yunde Jia, Yihua Xu, Wanchun Liu, Cong Yang, Yuwen Zhu, Xiaoxun Zhang, Luping An</i>	

---

## V Performance Evaluation

---

Performance Evaluation Metrics and Statistics for Positional Tracker Evaluation .....	278
<i>Chris J. Needham, Roger D. Boyle</i>	
On the Application of the Concept of Dependability for Design and Analysis of Vision Systems .....	290
<i>Christof Eberst, Thomas Herbig</i>	
The CSU Face Identification Evaluation System: Its Purpose, Features, and Structure .....	304
<i>David S. Bolme, J. Ross Beveridge, Marcio Teixeira, Bruce A. Draper</i>	

---

## VI Implementation Methods

---

The Imalab Method for Vision Systems .....	314
<i>Augustin Lux</i>	
Dynamically Reconfigurable Vision-Based User Interfaces .....	323
<i>Rick Kjeldsen, Anthony Levas, Claudio Pinhanez</i>	
From a CORBA-Based Software Framework to a Component-Based System Architecture for Controlling a Mobile Robot .....	333
<i>Stefan A. Blum</i>	

---

**VII Architecture and Classical Computer Vision**


---

A Framework for Visual Servoing .....	345
<i>Danica Kragic, Henrik I. Christensen</i>	
Automatic Mapping of Settlement Areas Using a Knowledge-Based Image Interpretation System .....	355
<i>Bernd-Michael Straub, Markus Gerke, Martin Pahl</i>	
A Software Architecture for Distributed Visual Tracking in a Global Vision Localization System .....	365
<i>Siniša Šegvić, Slobodan Ribarić</i>	
Multi-object Tracking Based on a Modular Knowledge Hierarchy .....	376
<i>Martin Spengler, Bernt Schiele</i>	
Monkeys — A Software Architecture for ViRoom — Low-Cost Multicamera System .....	386
<i>Petr Döubek, Tomáš Svoboda, Luc Van Gool</i>	
Hierarchical Bayesian Network for Handwritten Digit Recognition .....	396
<i>JaeMo Sung, Sung-Yang Bang</i>	
A Spectral Approach to Learning Structural Variations in Graphs .....	407
<i>Bin Luo, Richard C. Wilson, Edwin R. Hancock</i>	
Sigmoidal Weighted Vector Directional Filter .....	418
<i>Rastislav Lukac, Bogdan Smolka, Konstantinos N. Plataniotis, Anastasios N. Venetsanopoulos</i>	
Real-Time Extraction of Colored Segments for Robot Visual Navigation .....	428
<i>Pedro E. López-de-Teruel, Alberto Ruiz, Gines García-Mateos, Jose M. García</i>	
A Multiple Classifier System Approach to Affine Invariant Object Recognition .....	438
<i>Alireza R. Ahmadyfard, Josef Kittler</i>	
Measuring Scene Complexity to Adapt Feature Selection of Model-Based Object Tracking .....	448
<i>Minu Ayromlou, Michael Zillich, Wolfgang Ponweiser, Markus Vincze</i>	
A Framework for Robust and Incremental Self-Localization of a Mobile Robot .....	460
<i>Matjaž Jogan, Matej Artač, Danijel Skočaj, Aleš Leonardis</i>	

Discriminant Isometric Mapping for Face Recognition .....	470
<i>Ming-Hsuan Yang</i>	
Extracting Salient Image Features for Reliable Matching	
Using Outlier Detection Techniques .....	481
<i>Dimitri Lisin, Edward Riseman, Allen Hanson</i>	

---

## VIII Video Annotation

---

Brand Identification Using Gaussian Derivative Histograms .....	492
<i>Fabien Pelisson, Daniela Hall, Olivier Riff, James L. Crowley</i>	
Context Based Object Detection from Video .....	502
<i>Lucas Paletta, Christian Greindl</i>	
A Multimedia System Architecture for Automatic Annotation of	
Sports Videos .....	513
<i>William Christmas, Edward Jaser, Kieron Messer, Josef Kittler</i>	
Automatic Video Interpretation: A Recognition Algorithm for	
Temporal Scenarios Based on Pre-compiled Scenario Models .....	523
<i>Van-Thanh Vu, François Brémond, Monique Thonnat</i>	
Trajectory Based Assessment of Coordinated Human Activity .....	534
<i>Marko Jug, Janez Perš, Branko Dežman, Stanislav Kovačič</i>	
<b>Author Index</b> .....	545

Computer Vision Systems

Third International Conference, ICVS 2003, Graz,  
Austria, April 1-3, 2003, Proceedings

Crowley, J.; Piater, J.; Vincze, M.; Paletta, L. (Eds.)  
2003, XIV, 554 p., Softcover

ISBN: 978-3-540-00921-4