

# **12th International Workshop on Image Analysis for Multimedia Interactive Services**

**(WIAMIS 2011)**

**Delft, The Netherlands  
13-15 April 2011**

ISBN: 978-1-63266-254-5

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2011) by Delft University of Technology  
All rights reserved.

Printed by Curran Associates, Inc. (2014)

For permission requests, please contact Delft University of Technology  
at the address below.

Delft University of Technology  
c/o Emile Hendriks  
Department of Intelligent Systems  
Mekelweg 4  
2628 CD Delft  
The Netherlands

Phone: +31 15 27 86269

E.A.Hendriks@tudelft.nl

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2634  
Email: curran@proceedings.com  
Web: www.proceedings.com

# TABLE OF CONTENTS

## ORAL SESSION 1: FACIAL IMAGE ANALYSIS

<b>Improved Active Shape Model for Facial Feature Localization</b> .....	1
<i>Hui-Yu Huang, Shih-Hang Hsu</i>	
<b>Facial Recognition for Primate Photo Identification</b> .....	5
<i>Alexander Loos, Martin Pfitzer, Laura Aporius</i>	
<b>Prediction of Clinical Depression in Adolescents Using Facial Image Analysis</b> .....	9
<i>Kuan Ee Brian Ooi, Lu-Shih Alex Low, Margaret Lech, Nicholas Allen</i>	

## ORAL SESSION 2: OBJECT AND EVENT DETECTION

<b>Layered Background Modeling for Automatic Detection of Unattended Objects in Camera Images</b> .....	13
<i>Grzegorz Szwoch, Piotr Dalka</i>	
<b>Camera Orientation-Independent Parking Events Detection</b> .....	17
<i>Piotr Dalka, Damian Ellwart, Grzegorz Szwoch</i>	
<b>Viewpoint Independent Shape-based Object Classification for Video Surveillance</b> .....	21
<i>Damian Ellwart, Andrzej Czyewski</i>	

## ORAL SESSION 3: VIDEO SEGMENTATION AND CLASSIFICATION

<b>Video Classification by Main Frequencies of Repeating Movements</b> .....	25
<i>Kahraman Ayyildiz, Stefan Conrad</i>	
<b>Video Shot Boundary Detection by Structural Analysis of Local Image Features</b> .....	29
<i>Murat Birinci, Serkan Kiranyaz, Moncef Gabbouj</i>	
<b>Segmenting TV Series Into Scenes Using Speaker Diarization</b> .....	33
<i>Philippe Ercolessi, Christine Sénac, Philippe Joly, Hervé Bredin</i>	

## ORAL SESSION 4: RETRIEVAL

<b>Linking Thesauri to the Linked Open Data Cloud for Improved Media Retrieval</b> .....	37
<i>P. Debevere, D. Van Deursen, E. Mannens, R. Van De Walle, K. Braeckman, R. De Sutter</i>	
<b>Automatic Ground-Truth Image Generation from User Tags</b> .....	41
<i>Triantafillos Tsirelis, Anastasios Delopoulos</i>	
<b>Semantic Zoomable Interface for Multimedia Content</b> .....	45
<i>Daniele Panza, Alexandro Sentinelli, Gustavo Marfia, Andrea Vitali, Luca Celetto, Marco Rocchetti</i>	

## ORAL SESSION 5: POSE AND ACTION RECOGNITION

<b>Robust Human Action Recognition Using History Trace Templates</b> .....	49
<i>Georgios Goudelis, Konstantinos Karpouzis, Stefanos Kollias</i>	
<b>Circular Markers for Camera Pose Estimation</b> .....	53
<i>Alain Pagani, Johannes Koehler, Didier Stricker</i>	
<b>Higher Order Support Tensor Regression for Head Pose Estimation</b> .....	57
<i>Weiwei Guo, Irene Kotsia, Ioannis Patras</i>	

## ORAL SESSION 6: IMAGE AND VIDEO ANALYSIS

<b>The Mobile Museum Guide: Artwork Recognition with Eigenpaintings and Surf</b> .....	61
<i>Frederik Temmermans, Bart Jansen, Rudi Deklerck, Peter Schelkens, Jan Cornelis</i>	
<b>Multi-feature Fusion for Surveillance Video Indexing</b> .....	65
<i>Virginia Fernandez Arguedas, Qianni Zhang, Krishna Chandramouli, Ebroul Izquierdo</i>	

<b>Retrieval of Visual Composition in Film</b> .....	69
<i>Dalibor Mitrovic, Matthias Zeppelzauer, Maia Zaharieva, Christian Breiteneder</i>	

### **SPECIAL SESSION 'INTELLIGENT SPACE MONITORING'**

<b>Fusion of Multi-Modal Sensors in a Voxel Occupancy Grid for Tracking and Behaviour Analysis</b> .....	73
<i>Martin Hofmann, Moritz Kaiser, Hadi Aliakbarpour, Gerhard Rigoll</i>	
<b>The Noldus Database: Automated Recognition of Restaurant Related Activities for the Restaurant of the Future</b> .....	77
<i>Moritz Kaiser, Dejan Arsic, Benedikt Hörnler, Martin Hofmann, Gerhard Rigoll</i>	
<b>Probabilistic LMA-based Human Motion Analysis by Conjugating Frequency and Spatial Based Features</b> .....	81
<i>Kamrad Khoshhal, Hadi Aliakbarpour, Joao Quintas, Martin Hofmann, Jorge Dias</i>	
<b>Using Concurrent Hidden Markov Models to Analyse Human Behaviours in a Smart Home Environment</b> .....	85
<i>João Quintas, Kamrad Khoshhal, Hadi Aliakbarpour, Martin Hofmann, Jorge Dias</i>	

### **DEMO SESSION**

<b>Medialoop: Optimizing Search in a Broadcaster Archive</b> .....	89
<i>P. Debevere, D. Van Deursen, E. Mannens, R. Van De Walle, K. Braeckman, R. De Sutter</i>	
<b>Detection Tracking and Recognition of Human Poses for Real Time Applications</b> .....	91
<i>Feifei Huo, Emile Hendriks, Pavel Paclik</i>	
<b>Video Shot Boundary Detection by Structural Analysis of Local Image Features</b> .....	93
<i>Murat Birinci, Serkan Kiranyaz, Moncef Gabbouj</i>	
<b>Video Scene Segmentation System Using Audio-Visual Features</b> .....	95
<i>Panagiotis Sidiropoulos, Vasileios Mezaris, Ioannis Kompatsiaris, Hugo Meinedo, Miguel Bugalho, Isabel Trancoso</i>	
<b>Real-time Demonstration of the Framework for Event Detection in a Parking Lot</b> .....	97
<i>Piotr Dalka, Grzegorz Szwoch, Damian Ellwart</i>	

### **ORAL SESSION 7: SEGMENTATION**

<b>Stochastic Image Mosaicing for Improved Motion Compensated Background Subtraction</b> .....	99
<i>Peter Hosten, Julian Becker, Ningqing Qian</i>	
<b>Adaptive Clustering by Analysis of the Connectedness Degree. Application to Skin Segmentation.</b> .....	103
<i>Michèle Gouiffès</i>	
<b>A New Skin Colour Estimation Method Based on Change Detection and Cluster Analysis</b> .....	107
<i>Stefano Masneri, Oliver Schreer</i>	

### **ORAL SESSION 8: ENHANCEMENT**

<b>GPU Acceleration for Support Vector Machines</b> .....	111
<i>Andreas Athanopoulos, Anastasios Dimou, Vasileios Mezaris, Ioannis Kompatsiaris</i>	
<b>Early Termination Algorithm for One-bit Transform-based Motion Estimation Using Binomial Distribution</b> .....	115
<i>Hanjin Park, Changryoul Choi, Jechang Jeong</i>	
<b>Improved Partial Differential Equation-based Method to Remove Noise in Image Enhancement</b> .....	119
<i>H. Y. Tian, H. M. Cai, X. Xu, J. H. Lai</i>	

### **SPECIAL SESSION 'VIRTUAL HUMAN CLONES: WHERE IMAGE PROCESSING MEETS COMPUTER GRAPHICS'**

<b>Creation of Virtual Worlds from 3D Models Retrieved from Content Aware Networks Based on Sketch and Image Queries</b> .....	123
<i>Theodoros Semertzidis, Kevin McGuinness, Petros Daras, Lambros Makris, Noel O. E'Connor, Michael G. Strintzis</i>	

<b>3D Tracking of Facial Features for Augmented Reality Applications</b> .....	127
<i>Vlado Kitanovski, Ebroul Izquierdo</i>	
<b>Virtual Face Implant for Visual Character Variations</b> .....	131
<i>Mustafa Kasap, Sylvain Chague, Nadia Magnenat-Thalmann</i>	
<b>Activity Modeling with Spatio-temporal Texture Primitives</b> .....	135
<i>Burcu Kepenekci, Gozde B. Akar</i>	

## **ADDITIONAL PAPERS**

<b>The Optimized JPEG2000 Decoder on PDA</b> .....	139
<i>Hochul Shin, Byoungman An, Youngseop Kim</i>	
<b>Human Emotions Recognized by Audio Analysis, and Mapping</b> .....	143
<i>Carlos Faustino</i>	
<b>The Hole-Filling Method for View Synthesis in Free Viewpoint Television (FTV) and 3D Video</b> .....	147
<i>Qi Wang, Ning Cao</i>	
<b>Automatic Ore Image Segmentation Using Mean Shift and Watershed Transform</b> .....	150
<i>A. Amankwah, C. Aldrich</i>	
<b>Fast Block Motion Estimation Combined Search Pattern and Predictor</b> .....	154
<i>Hui-Yu Huang, Shih-Hsu Chang</i>	
<b>Hand Gesture Recognition Using Thinning Method: Number Expression for Deaf People Language</b> .....	158
<i>Alaa Barkoky, Nasrollah Moghaddam Charkari</i>	
<b>Automatic Left Ventricle Segmentation with K-means Clustering and Graph Searching on Cardiac Magnetic Resonance Image</b> .....	162
<i>Hyun-Wu Jo, Hae-Yeoun Lee</i>	
<b>Automatic Detection of Proliferative Cells in Immunohistochemically Images of Meningioma Using Fuzzy C-Means Clustering and HSV Color Space</b> .....	166
<i>Vahid Anari, Rasoul Amirfattahi</i>	
<b>Evaluation of Facial Expressions of Web Users</b> .....	170
<i>Ann Malsha De Silva, Amal Punchihewa</i>	
<b>DCT Or Wavelet-based Illumination Compensation for Robust Real Time Face Recognition</b> .....	174
<i>I Gede Pasek Suta Wijaya, Keiichi Uchimura, Gou Koutaki, Cuicui Zhang</i>	
<b>Low Complexity Multiple Candidate Motion Estimation Based on the Constrained One-bit Transform</b> .....	178
<i>Changryoul Choi, Jechang Jeong</i>	
<b>Research on Moving Object Detection Algorithm in Video Monitor System</b> .....	182
<i>Man Zhu, Shui-Fa Sun, Xian-Qiang Yang</i>	
<b>An Interactive Multimedia-based Learning Architecture: A Generic Virtual Lab</b> .....	187
<i>Amira Gaber, Omnia A. Naseef, Nashwa Abdelbaki</i>	
<b>Research and Implementation of Automatic Window Layout System Based on Evolutionary Algorithm</b> .....	191
<i>Li Xuan</i>	
<b>A Scalable Image Browsing Application Based on JPEG-XR</b> .....	197
<i>Bernardetta Saba, Cristian Perra, Daniele D. Giusto</i>	
<b>Applying 3D Camera Based Augmented Reality and Speech Technologies in Movement Oriented Learning</b> .....	201
<i>Frank (Jing-Guang) Han, Bryan Duggan</i>	
<b>Bio-inspired Features for Image Classification</b> .....	205
<i>Wafa Bel Haj Ali, Eric Debreuve, Michel Barlaud</i>	
<b>Off-line Handwritten Signature Verification Based on Support Vector Machine</b> .....	209
<i>Leonardo Lima Santos, Thiago Couto De Almeida, Marcos Cleison Silva Santana, Bensebaa Kamel</i>	
<b>Situation Awareness and Prediction Using Probabilistic Occupancy Map and Concurrent Hidden Markov Model Application to Abnormal Situation Detection Around an ATM</b> .....	213
<i>Julien Ros, Kamel Mekhnacha</i>	
<b>People Detection by Fusion of Multimodal Features from Multimodal Sensors</b> .....	217
<i>Martin Hofmann, Yan Li, Gerhard Rigoll</i>	
<b>ANN Based on Ultrasonic Weld Defects Classification</b> .....	221
<i>Ahmad Safayi, Ahmad Reza Eskandari</i>	
<b>Improvement Tracking Dynamic Programming Using Replication Function for Continuous Sign Language Recognition</b> .....	225
<i>S. Ildarabadi</i>	

<b>Fast Fingerprint Classification Via Frequency Patterns</b> .....	235
<i>N/A</i>	
<b>3D Cooperative Localization for Surveillance Applications</b> .....	239
<i>Mahmoud Tavakoli, Ricardo Faria, Lino Marques, Anibal T. De Almeida</i>	
<b>Image Retrieval Over Noisy Wireless Networks</b> .....	243
<i>Evaggelos Chatzistavros, Savvas A. Chatzichristos, Georgios Stamatellos, Kostantinos Zagoris</i>	
<b>Boolean Multidimensional Logic Facilitating Conceptual Description-based Inferences</b> .....	248
<i>Asami Sasaki, Hisashi Suzuki</i>	
<b>Overview of Three-Dimensional GIS Data Models</b> .....	252
<i>Anh Nguyen Gia Tuan</i>	
<b>Shape Matching Using the Minimum Area Rectangle</b> .....	256
<i>Saliha Bouagar, Slimane Larabi</i>	
<b>Litermed: Using Lire and Terrier for Image Retrieval in Medical Literature</b> .....	260
<i>Jose G. Moreno, Fabio A. González</i>	
<b>Automated Optimization of Object Detection Classifier Using Genetic Algorithm</b> .....	264
<i>Andrzej Mattiolski, Piotr Guzik</i>	
<b>Subjective Quality Evaluation of Joint Coding in H264 Video Coding Standard</b> .....	268
<i>Luís Teixeira</i>	
<b>Detection and Recognition of Moving Objects Using Temporal Difference Method and Hidden Markov Model</b> .....	273
<i>Wanhyun Cho, Jisoo Kim, Sunworl Kim, Gukdong Ahn, Myungeun Lee, Jonghyun Park, Soonyoung Park</i>	
<b>Experiments on Visual Codebook Sizes in the Context of User Intentions in Content-based Image Retrieval</b> .....	277
<i>Marian Kogler, Mathias Lux, Oge Marques</i>	
<b>Simulation Annealing Based Genetic Algorithm for Music Semantic Retrieval</b> .....	281
<i>Kaichun K. Chang, Costas S. Iliopoulos</i>	
<b>A 3D Based Framework for Production Audit in Industrial Applications</b> .....	287
<i>N/A</i>	
<b>Interpolation Method Identification from Resampled Images</b> .....	291
<i>Hyoungh Joong Kim, Soomin Lim, Sihwan Jang, Boram Kim, Eui S. Jung</i>	
<b>Adaptive Complexity-aware Bit-rate Control with Region-of Interest Pre-processing for Scalable Video Coding</b> .....	295
<i>Dan Grois, Ofer Hadar</i>	
<b>Author Index</b>	