

2012 IEEE International Symposium on Multimedia

(ISM 2012)

**Irvine, California, USA
10 – 12 December 2012**



IEEE Catalog Number: CFP12197-PRT
ISBN: 978-1-4673-4370-1

2012 IEEE International Symposium on Multimedia

ISM 2012

Table of Contents

General Co-chairs' Foreword	xiv
Message from the Program Co-chairs	xv
Message from the Workshop Chairs	xvi
Organization	xvii
Program Committee	xix
Reviewers	xxiv

Audio, Speech & Music Processing I

Multimodal Information Fusion of Audio Emotion Recognition Based on Kernel Entropy Component Analysis	1
<i>Zhibing Xie and Ling Guan</i>	
Recognition and Summarization of Chord Progressions and Their Application to Music Information Retrieval	9
<i>Yi Yu, Roger Zimmermann, Ye Wang, and Vincent Oria</i>	
A Study on Difficulty Level Recognition of Piano Sheet Music	17
<i>Shih-Chuan Chiu and Min-Syan Chen</i>	

Audio, Speech & Music Processing II

Spectral Noise Gate Technique Applied to Birdsong Preprocessing on Embedded Unit	24
<i>Davi Miara Kiapuchinski, Carlos Raimundo Erig Lima, and Celso Antônio Alves Kaestner</i>	
High Capacity Logarithmic Audio Watermarking Based on the Human Auditory System	28
<i>Mehdi Fallahpour and David Megías</i>	
Music Part Segmentation in Music TV Programs Based on Chroma Vector Analysis	32
<i>Aiko Uemura, Jiro Katto, Kyota Higa, Masumi Ishikawa, and Toshiyuki Nomura</i>	

Discriminative Multiple Canonical Correlation Analysis for Multi-feature Information Fusion	36
<i>Lei Gao, Lin Qi, Enqing Chen, and Ling Guan</i>	

Augmented Reality & 3D Models

ARtifact: Tablet-Based Augmented Reality for Interactive Analysis of Cultural Artifacts	44
<i>David Vanoni, Maurizio Seracini, and Falko Kuester</i>	
Interframe Coding of Canonical Patches for Mobile Augmented Reality	50
<i>Mina Makar, Sam S. Tsai, Vijay Chandrasekhar, David Chen, and Bernd Girod</i>	
3D Scene Generation by Learning from Examples	58
<i>Mesfin A. Dema and Hamed Sari-Sarraf</i>	

Content Analysis & Image Retrieval I

Photo-Taking Point Recommendation with Nested Clustering	65
<i>Kosuke Kimura, Hung-Hsuan Huang, and Kyoji Kawagoe</i>	
Simultaneous Image Annotation and Geo-Tag Prediction via Correlation	
Guided Multi-task Learning	69
<i>Hua Wang, Dhiraj Joshi, Jiebo Luo, Heng Huang, and Minwoo Park</i>	
Learning Multiple Sequence-Based Kernels for Video Concept Detection	73
<i>Werner Bailer</i>	
Commonsense Knowledge for the Collection of Ground Truth Data	
on Semantic Descriptors	78
<i>Vincenzo Lombardo and Rossana Damiano</i>	

Content Analysis & Image Retrieval II

FaceFetch: A User Emotion Driven Multimedia Content Recommendation System Based on Facial Expression Recognition	84
<i>Mahesh Babu Mariappan, Myunghoon Suk, and Balakrishnan Prabhakaran</i>	
Exploring Photos in Facebook	88
<i>Mark D. Wood and Minwoo Park</i>	
Automatic Classification of Teeth in Bitewing Dental Images Using OLPP	92
<i>Nourdin Al-sherif, Guodong Guo, and Hany H. Ammar</i>	
A Smart Kitchen Infrastructure	96
<i>Marcus Ständer, Aristotelis Hadjidakis, Niklas Lochschmidt, Christian Klos, Bastian Renner, and Max Mühlhäuser</i>	
Disaster Image Filtering and Summarization Based on Multi-layered Affinity Propagation	100
<i>Yimin Yang and Shu-Ching Chen</i>	

Analysis & Recognition of Facial Data

Facial Expression Recognition Using Dual Layer Hierarchical SVM Ensemble Classification	104
<i>Mahesh Babu Mariappan, Myunghoon Suk, and Balakrishnan Prabhakaran</i>	
Quantifying the Makeup Effect in Female Faces and Its Applications for Age Estimation	108
<i>Ranran Feng and Balakrishnan Prabhakaran</i>	
Detection and Identification of Chimpanzee Faces in the Wild	116
<i>Alexander Loos and Andreas Ernst</i>	
Face Recognition Using Discrete Tchebichef-Krawtchouk Transform	120
<i>Wissam A. Jassim and P. Raveendran</i>	

Image & Video Coding

Boundary Matching Based Spatial Interpolation for Consecutive Block Loss Concealment	128
<i>Shaoshuai Gao</i>	
Detailed Comparative Analysis of VP8 and H.264	133
<i>Yousef O. Sharrab and Nabil J. Sarhan</i>	
H.264-Compatible Coding of Background Soccer Video Using Temporal Subbands	141
<i>Xiaohua Lu, Haopeng Li, and Markus Flierl</i>	

Image Processing & Applications

A New Approach to Teeth Segmentation	145
<i>Nourdin Al-sherif, Guodong Guo, and Hany H. Ammar</i>	
Incorporating Fuzziness in Extended Local Ternary Patterns	149
<i>Wen-Hung Liao</i>	
EDContours: High-Speed Parameter-Free Contour Detector Using EDPF	153
<i>Cuneyt Akinlar and Cihan Topal</i>	
Automated Viral Plaque Counting Using Image Segmentation and Morphological Analysis	157
<i>Michael Moorman and Aijuan Dong</i>	
Automatic Segmentation of Interest Regions in Low Depth of Field Images Using Ensemble Clustering and Graph Cut Optimization Approaches	161
<i>G. Rafiee, S.S. Dlay, and W.L. Woo</i>	

Image Quality & Enhancement

Features for Predicting Quality of Images Captured by Digital Cameras	165
<i>Mikko Nuutinen, Pirkko Oittinen, and Toni Virtanen</i>	
Visualizing the Perceived Discomfort of Stereoscopic Video	169
<i>Yong Ju Jung, Seong-il Lee, Hosik Sohn, and Yong Man Ro</i>	
Color-Weakness Compensation Using Riemann Normal Coordinates	175
<i>Satoshi Oshima, Rika Mochizuki, Reiner Lenz, and Jinhui Chao</i>	
Exploiting Color Strength to Improve Color Correction	179
<i>Lisa Brown, Ankur Datta, and Sharathchandra Pankanti</i>	

Image Registration I

A Variational Bayesian Inference Framework for Multiview Depth Image Enhancement	183
<i>Pravin Kumar Rana, Jalil Taghia, and Markus Flierl</i>	
Feature-Based Multi-sensor Images Alignment and Enhancement	191
<i>Myung-Ho Ju, Sung-Yong Kim, and Hang-Bong Kang</i>	
Mutual Information Based Stereo Correspondence in Extreme Cases	199
<i>Qing Tian and Guangjun Tian</i>	
3D Model Hypotheses for Player Segmentation and Rendering in Free-Viewpoint Soccer Video	203
<i>Haopeng Li and Markus Flierl</i>	

Image Retrieval & Logo Detection

JIRL - A C++ Library for JPEG Compressed Domain Image Retrieval	210
<i>David Edmundson and Gerald Schaefer</i>	
Segmentation Tree Based Multiple Object Image Retrieval	214
<i>Wei-Bang Chen, Chengcui Zhang, and Song Gao</i>	
Logo Classification with Edge-Based DAISY Descriptor	222
<i>Baiying Lei, Vrizlynn L.L. Thing, Yu Chen, and Wee-Yong Lim</i>	
Using Low Level Gradient Channels for Computationally Efficient Object Detection and Its Application in Logo Detection	229
<i>Yu Chen and Vrizlynn L.L. Thing</i>	

Multimedia Networking II

QoE Enhancement by GUI for Threshold Selection in the QoE-Based Video Output Scheme SCS	233
<i>Tomohiro Yokoi, Shuji Tasaka, and Toshiro Nunome</i>	
Mediating Multimedia Traffic with Strict Delivery Constraints	241
<i>Michael Karl, Tatiana Polishchuk, Thorsten Herfet, and Andrei Gurtov</i>	
Level-Based Peer-to-Peer Live Streaming with Rateless Codes	249
<i>Eliya Buyukkaya, Shakeel Ahmad, Muneeb Dawood, Jiayi Liu, Fen Zhou, Raouf Hamzaoui, and Gwendal Simon</i>	
Understanding Your Needs: An Adaptive VoD System	255
<i>Mu Mu, William Knowles, and Nicholas Race</i>	

Multimedia Networking I

Energy Consumption Reduction via Context-Aware Mobile Video Pre-fetching	261
<i>Alisa Devlic, Pietro Lungaro, Pavan Kamaraju, Zary Segall, and Konrad Tollmar</i>	
Energy Conservation in 802.11 WLAN for Mobile Video Calls	266
<i>Haiyang Ma and Roger Zimmermann</i>	

Multimedia Security & Legal Aspects

Multimedia Copyright Protection on the Web - Issues and Suggestions	274
<i>Chanmin Park, Seunghyun Kim, and Taehyung Wang</i>	
A Strategy of Multimedia Reflectors to Encryption and Codification in Real Time	278
<i>Elenilson Vieira da Silva Filho, Glauco de Sousa e Silva, Hugo Neves de Oliveira, Anderson Vinícius Alves Ferreira, Erick Augusto Gomes de Melo, Tatiana Aires Tavares, Gustavo Henrique Matos Bezerra Motta, and Guido Lemos de Souza Filho</i>	
2D-FRFT Based Rotation Invariant Digital Image Watermarking	286
<i>Lei Gao, Lin Qi, Shouyi Yang, Yongjin Wang, Tie Yun, and Ling Guan</i>	
An Improved Double Compression Detection Method for JPEG Image Forensics	290
<i>Vrizlynn L.L. Thing, Yu Chen, and Carmen Cheh</i>	

Image Registration II

Super-resolution Using GMM and PLS Regression	298
<i>Yuki Ogawa, Takahiro Hori, Tetsuya Takiguchi, and Yasuo Ariki</i>	

Spatial and Temporal Information as Camera Parameters for Super-resolution Video	302
--	-----

Jussi Tarvainen, Mikko Nuutinen, and Pirkko Oittinen

Towards Automatic Stereoscopic Video Synthesis from a Casual Monocular Video	306
--	-----

Lin Zhong, Sen Wang, Minwoo Park, Rodney Miller, and Dimitris Metaxas

Sequential Image Registration for Astronomical Images	314
---	-----

Saeid Shahhosseini, Bahman Rezaie, and Vahid Emamian

User Interfaces & Collaboration

Tag Cloud++ - Scalable Tag Clouds for Arbitrary Layouts	318
---	-----

Minwoo Park, Dhiraj Joshi, and Alexander Loui

English2MindMap: An Automated System for MindMap Generation from English Text	326
---	-----

Mohamed Elhoseiny and Ahmed Elgammal

Configurable Middleware for Multimedia Collaboration Applications	332
---	-----

Daniel Schreiber, Max Mühlhäuser, Aristotelis Hadjidakos, and Erwin Aitenbichler

A Data Aware Admission Control Technique for Social Live Streams (SOLISs)	340
---	-----

Sumita Barahmand and Shahram Ghandeharizadeh

Video Content Analysis I

Shot Type and Replay Detection for Soccer Video Parsing	344
---	-----

Ngoc Nguyen and Atsuo Yoshitaka

Video-Based Lane Detection Using a Fast Vanishing Point Estimation Method	348
---	-----

Burak Benligiray, Cihan Topal, and Cuneyt Akinlar

Enhancing the MST-CSS Representation Using Robust Geometric Features, for Efficient Content Based Video Retrieval (CBVR)	352
--	-----

Chiranjoy Chattopadhyay and Sukhendu Das

Efficient Control of PTZ Cameras in Automated Video Surveillance Systems	356
--	-----

Musab S. Al-Hadrusi and Nabil J. Sarhan

Spatio-temporal Gaussian Mixture Model for Background Modeling	360
--	-----

Youngsung Soh, Yongsuk Hae, and Intaeck Kim

Video Content Analysis II

Effective Moving Object Detection and Retrieval via Integrating Spatial-Temporal Multimedia Information	364
---	-----

Dianting Liu and Mei-Ling Shyu

SAMHIS: A Robust Motion Space for Human Activity Recognition	372
--	-----

Suraj Raghuraman and Balakrishnan Prabhakaran

Poster

A Motion-Sketch Based Video Retrieval Using MST-CSS Representation	376
<i>Chiranjay Chattpadhyay and Sukhendu Das</i>	

Demo

TEEE-Remote: A Novel User-Interaction Solution for 3D Tele-immersive System	378
<i>Pengye Xia, Klara Nahrstedt, and Matthew Alan Jurik</i>	
A Cloud-Based Collaborative and Automatic Video Editor	380
<i>Abdelkader Outtagarts and Abderrazagh Mbodj</i>	
AudioAlign - Synchronization of A/V-Streams Based on Audio Data	382
<i>Mario Guggenberger, Mathias Lux, and Laszlo Böszörmenyi</i>	
Automatic Actor Recognition for Video Services on Mobile Devices	384
<i>Lai-Tee Cheok, Sol Yee Heo, Donato Mitrani, and Anshuman Tewari</i>	

Industry Track

Context Profiling Based Multimedia Service on Cloud	386
<i>Aditi Narula and Kaustubh Joshi</i>	
Automated Visual Quality Analysis for Media Production	394
<i>Hannes Fassold, Stefanie Wechtitsch, Albert Hofmann, Werner Bailer, Peter Schallauer, Roberto Borgotallo, Alberto Messina, Mohan Liu, Patrick Ndjiki-Nya, and Peter Altendorf</i>	
A Study on Caption Recognition for Multi-color Characters on Complex Background	401
<i>Yutaka Katsuyama, Akihiro Minagawa, Yoshinobu Hotta, Jun Sun, and Shinichiro Omachi</i>	
Visual Text Features for Image Matching	408
<i>Sam S. Tsai, Huizhong Chen, David Chen, Vasu Parameswaran, Radek Grzeszczuk, and Bernd Girod</i>	
GPU-Enabled High Performance Online Visual Search with High Accuracy	413
<i>Ali Cevahir and Junji Torii</i>	

IEEE-MIPR 2012: The Eighth IEEE International Workshop on Multimedia Information Processing and Retrieval

Using Wavelets and Gaussian Mixture Models for Audio Classification	421
<i>Ching-Hua Chuan, Susan Vasana, and Asai Asaithambi</i>	
A Generic Audio Identification System for Radio Broadcast Monitoring Based on Data-Driven Segmentation	427
<i>Houssemeddine Khemiri, Dijana Petrovska-Delacrétaz, and Gérard Chollet</i>	
Efficient Filtering of JPEG Images	433
<i>David Edmundson and Gerald Schaefer</i>	
Person-Independent Deformable Templates for Fast Face Recognition	439
<i>Simon Clippingdale and Mahito Fujii</i>	

IEEE-MTEL 2012: Multimedia Technologies for E-Learning

Towards Reducing Cognitive Load and Enhancing Usability through a Reduced Graphical User Interface for a Dynamic Geometry System: An Experimental Study	445
<i>Helena M. Reis, Simone S. Borges, Vinicius H.S. Durelli, Luis Fernando de S. Moro, Anarosa A.F. Brandão, Ellen F. Barbosa, Leônidas O. Brandão, Seiji Isotani, Patricia A. Jaques, and Ig I. Bittencourt</i>	
A Standardized Metadata Set for Annotation of Virtual and Remote Laboratories	451
<i>Th. Richter, P. Grube, and D. Zutin</i>	
Integrating Production and Distribution of Lecture Related Media into an LMS	457
<i>André Klaßen, Rüdiger Rolf, Lars Kiesow, and Denis Meyer</i>	
LectureSight - An Open Source System for Automatic Camera Control in Lecture Recordings	461
<i>Benjamin Wulff and Alexander Fecke</i>	
Thin and Light Video Editing Extensions for Education with Opencast Matterhorn	467
<i>Greg Logan, Jim Greer, and Gord McCalla</i>	
Automatic Camera Control for Tracking a Presenter during a Talk	471
<i>Michael Björn Winkler, Kai Michael Höver, Aristotelis Hadjakos, and Max Mühlhäuser</i>	
DLH/CLLS: An Open, Extensible System Design for Prosuming Lecture Recordings and Integrating Multimedia Learning Ecosystems	477
<i>Kai Michael Höver, Gundolf von Bachhaus, Michael Hartle, and Max Mühlhäuser</i>	

Ph.D. Workshop

Strategies for Improving the QoE Assessment over iTV Platforms Based on QoS Metrics	483
<i>Diego J. Botia and Natalia Gaviria</i>	
Exploiting JPEG Compression for Image Retrieval	485
<i>David Edmundson and Gerald Schaefer</i>	
Graph Cut Based Unsupervised Color Image Segmentation	487
<i>Liang Bin-meи and Zhang Jian-zhou</i>	
Batch Mode Active Learning for Multimedia Pattern Recognition	489
<i>Shayok Chakraborty, Vineeth Balasubramanian, and Sethuraman Panchanathan</i>	
GPU Hierarchical Quilted Self Organizing Maps for Multimedia Understanding	491
<i>Youssef S.G. Nashed</i>	
Author Index	493