2012 IEEE Computer Society Conference on Computer Vision and Pattern Recognition Workshops

(CVPRW 2012)

Providence, Rhode Island, USA
16-21 June 2012

Part 1 of 2
Workshops

Saturday, June 16

Embedded Vision Workshop (EVW)
Ballroom B

Single-view Obstacle Detection for Smart Back-up Camera Systems
Authors: Jeff Lalonde, Robert Laganière, Luc Martel

High-Speed Line-Scan Camera with Multi-Line CMOS Color Sensor
Authors: Ernst Bodenstorfer, Ylber Hasani, Johannes Fürtler, Jörg Brodersen, Konrad J. Mayer

Stereo Vision Embedded System for Augmented Reality
Authors: Eduardo Gudis, Gooitzen van der Wal, Sujit Kuthirummal, Sek Chai, Supun Samarasekera, Rakesh Kumar, Vlad Branzoi

FeatureDetection and Matching on an SIMD/MIMD Hybrid Embedded Processor
Authors: Alejandro Nieto, David López Vilariño, Víctor M. Brea

Head-tracking Virtual 3-D Display for Mobile Devices
Authors: Miguel Bordallo López, Jari Hannuksela, Olli Silvén, Lixin Fan

Spatiotemporal Multiple Persons Tracking Using Dynamic Vision Sensor
Authors: Ewa Piątkowska, Ahmed Nabil Belbachir, Stephan Schraml, Margrit Gelautz

SURF Cascade Face Detection Acceleration on Sandy Bridge Processor
Authors: Eric Li, Liu Yang, Bin Wang, Jianguo Li, Ya-ti Peng

Real-time Body Motion Analysis For Dance Pattern Recognition
Authors: Bernhard Kohn, Aneta Nowakowska, Ahmed Nabil Belbachir

Embedded Smart Sensor for Outdoor Parking Lot Lighting Control
Authors: Zhong Zhang, Amit Mistry, Weihong Yin, Péter L. Venetianer

Embedded Fall Detection with a Neural Network and Bio-Inspired Stereo Vision
Authors: Martin Humenberger, Stephan Schraml, Christoph Sulzbachner, Ahmed Nabil Belbachir, Ágoston Srp, Ferenc Vajda

A GPU Accelerated Fast Directional Chamfer Matching Algorithm and a Detailed Comparison with a Highly Optimized CPU Implementation
Event-driven Embodied System for Feature Extraction and Object Recognition in Robotic Applications
Authors: Georg Wiesmann, Stephan Schraml, Martin Litzenberger, Ahmed Nabil Belbachir, Chiara Bartolozzi, Michael Hofstätter

A CPU-GPU Hybrid People Counting System for Real-World Airport Scenarios using Arbitrary Oblique View Cameras
Authors: David Schreiber, Michael Rauter

The Challenge of Putting Vision Algorithms into a Car (Invited talk)
Authors: Fridtjof Stein

3D Cinematography (3DCINE)
Ballroom C

Keystone Correction for Stereoscopic Cinematography
Authors: Feng Liu, Yuzhen Niu, Hailin Jin

Perceptual Based Stereoscopic Content Analysis using Salient Information, Dense Disparity Maps, and Modified Random Walk Framework
Authors: Wei-Jia Huang, An-Chun Luo, Wen-Chao Chen, Wei-Hao Huang

2D-to-3D Image Conversion by Learning Depth from Examples
Authors: Janusz Konrad, Meng Wang, Prakash Ishwar

The Measurement of Eyestrain Caused from Diverse Binocular Disparities, Viewing Time and Display Sizes in Watching Stereoscopic 3D Contents
Authors: Sang-Hyun Cho, Hang-Bong Kang

Calibration for High-Definition Camera Rigs with Marker Chessboard
Authors: Jianhui Chen, Karim Benzeroual, Robert S. Allison

Capture Considerations for Multiview Panoramic Cameras
Authors: Harlyn Baker, Gregorij Kurillo, Zeyu Li, Q Luong, Constantin Papadas

3D Display Size Matters: Compensating for the Perceptual Effects of S3D Display Scaling
Authors: Karim Benzeroual, Robert S. Allison, Laurie M. Wilcox

Point Cloud Processing (PCP)
556-A

Online Facade Reconstruction from Dominant Frequencies in Structured Point
Authors: Michael Rauter, David Schreiber
Clouds
Authors: Sam Friedman, Ioannis Stamos

Road Network Extraction from Airborne LiDAR Data using Scene Context
Authors: Jiaping Zhao, Suya You
[Supplemental Material]

Detection of Windows in Point Clouds of Urban Scenes
Authors: Agis Mesolongitis, Ioannis Stamos

Shape Matching of Repeatable Interest Segments in 3D Point Clouds
Authors: Joseph Lam, Michael Greenspan

Automatic Registration of Mobile LiDAR and Spherical Panoramas
Authors: Ruisheng Wang, Frank P. Ferrie, Jane Macfarlane

Point Cloud Matching Based on 3D Self-Similarity
Authors: Jing Huang, Suya You

Simultaneous Image Segmentation and 3D Plane Fitting for RGB-D Sensors - An Iterative Framework
Authors: Li Guan, Ting Yu, Peter Tu, Ser-Nam Lim

3D Landmark Model Discovery from a Registered Set of Organic Shapes
Authors: Clement Creusot, Nick Pears, Jim Austin
[Supplemental Material]

Filling Large Holes in LiDAR Data By Inpainting Depth Gradients
Authors: David Doria, Richard J. Radke

Similarity Based Filtering of Point Clouds
Authors: Julie Digne

PCL and ParaView—Connecting the Dots (Poster)
Authors: Patrick Marion, Roland Kwitt, Brad Davis, Michael Gschwandtner

Change Detection Workshop (CDW)
556-B

changedetection.net: A New Change Detection Benchmarking Dataset
Authors: Nil Goyette, Pierre Jodoin, Fatih Porikli, Janusz Konrad, Prakash Ishwar

Evaluation Report of Integrated Background Modeling Based on Spatio-temporal Features
Authors: Yosuke Nonaka, Atsushi Shimada, Hajime Nagahara, Rin-Ichiro Taniguchi
Learning a Background Model for Change Detection
Authors: Ashutosh Morde, Xiang Ma, Sadiye Guler

The SOBS Algorithm: What are the Limits?
Authors: Lucia Maddalena, Alfredo Petrosino

Improving Foreground Segmentations with Probabilistic Superpixel Markov Random Fields
Authors: Alexander Schick, Martin Bäuml, Rainer Stiefelhagen

Background Subtraction: Experiments and Improvements for ViBe
Authors: Marc Van Droogenbroeck, Olivier Paquot

Background Segmentation with Feedback: The Pixel-Based Adaptive Segmenter
Authors: Martin Hofmann, Philipp Tiefenbacher, Gerhard Rigoll

Perceptual Organization in Computer Vision (POCV)
552-A

Probabilistic Tensor Voting for Robust Perceptual Grouping
Authors: Dian Gong, Gérard Medioni
[Supplemental Material]

On Evaluating Methods for Recovering Image Curve Fragments
Authors: Yuliang Guo, Benjamin Kimia

PartBook for Image Parsing
Authors: Kuiyuan Yang, Lei Zhang, Yong Rui, Hong-Jiang Zhang

Nonparametric Discovery of Activity Patterns from Video Collections
Authors: Michael C. Hughes, Erik B. Sudderth
[Supplemental Material]

A Grammar for Hierarchical Object Descriptions in Logic Programs
Authors: Toufiq Parag, Claus Bahlmann, Vinay Shet, Maneesh Singh

The Differential Geometry of Shape from Shading: Biology Reveals Curvature Structure
Authors: Benjamin Kunsberg, Steven W. Zucker

To Complete or Not to Complete: Gap Completion in Real Images
Authors: Maruthi Narayanan, Benjamin Kimia

Computer Vision for Computer Games (CVCG)
Gamesourcing to Acquire Labeled Human Pose Estimation Data
Authors: Richard Souvenir, Ayman Hajja, Scott Spurlock

G3D: A Gaming Action Dataset and Real Time Action Recognition Evaluation Framework
Authors: Victoria Bloom, Dimitrios Makris, Vasileios Argyriou

Computer Vision Based Assessment of Hand-Eye Coordination in Young Gamers: A Baseline Approach
Authors: Jeremy Svendsen, Trevor Beugeling, Alexandra Branzan-Albu

Reinforcement Learning based Visual Attention with Application to Face Detection
Authors: Ben Goodrich, Itamar Arel

Sunday, June 17

Gesture Recognition (GR)
Ballroom B

ChaLearn Gesture Challenge: Design and First Results
Authors: Isabelle Guyon, Vassilis Athitsos, Pat Jangyodsuk, Ben Hamner, Hugo Jair Escalante

One Shot Learning Gesture Recognition from RGBD Images
Authors: Di Wu, Fan Zhu, Ling Shao

A Least Squares Regression Framework on Manifolds and its Application to Gesture Recognition
Authors: Yui Man Lui

Magic Mirror: A Virtual Handbag Shopping System
Authors: Lu Wang, Ryan Villamil, Supun Samarasekera, Rakesh Kumar

Gaze Estimation from Multimodal Kinect Data
Authors: Kenneth Alberto Funes Mora, Jean-Marc Odobez

Randomized Decision Forests for Static and Dynamic Hand Shape Classification
Authors: Cem Keskin, Furkan Kiraç, Yunus Emre Kara, Lale Akarun

Real-time Gesture Recognition using Bio Inspired 3D Vision Sensor
Authors: Bernhard Kohn, Ahmed Nabil Belbachir, Aneta Nowakowska

A Temporal Bayesian Model for Classifying, Detecting and Localizing Activities in
Video Sequences
Authors: Manavender R. Malgireddy, Ifeoma Nwogu, Venu Govindaraju

Exploring Human Visual System: Study to Aid the Development of Automatic Facial Expression Recognition Framework
Authors: Rizwan Ahmed Khan, Alexandre Meyer, Hubert Konik, Saida Bouakaz

Enhanced Continuous Sign Language Recognition using PCA and Neural Network Features
Authors: Yannick L. Gweth, Christian Plahl, Hermann Ney

Vision Industry & Entrepreneur Workshop (VIEW)
Ballroom C
This workshop does not have published papers.

Egocentric Vision (EgoVision)
552-A
Coupling Eye-Motion and Ego-Motion Features for First-Person Activity Recognition
Authors: Keisuke Ogaki, Kris M. Kitani, Yusuke Sugano, Yoichi Sato

Wearable Omnidirectional Vision System for Personal Localization and Guidance
Authors: Ana C. Murillo, Daniel Gutiérrez-Gómez, Alejandro Rituerto, LuisPuig, Josechu J. Guerrero

Consistency Analysis and Improvement for Single-camera Localization
Authors: Joel A. Hesch, Stergios I. Roumeliotis

Adaptive Object Tracking by Learning Background Context
Authors: Ali Borjl, Simone Frintrop, Dicky N. Sihite, Laurent Itti

Projector-Camera Systems (PROCAMS)
552-B
Shading Illusion: A Novel Way for 3-D Representation on the Paper Media
Authors: Toshiyuki Amano
[Supplemental Material]

Gradient Domain Color Restoration of Clipped Highlights
Authors: Mushfiqur Rouf, Cheryl Lau, Wolfgang Heidrich
[Supplemental Material]

A Low-power Structured Light Sensor for Outdoor Scene Reconstruction and
Dominant Material Identification  
Authors: Christoph Mertz, Sanjeev J. Koppal, Solomon Sia, Srinivas Narasimhan

Single Lens Off-Chip Cellphone Microscopy  
Authors: Aydin Arpa, Gordon Wetzstein, Douglas Lanman, Ramesh Raskar  
[Supplemental Material]

Active 3D Shape Acquisition Using Smartphones  
Authors: Jae Hyun Won, Man Hee Lee, In Kyu Park

Making Any Planar Surface Into a Touch-sensitive Display by a Mere Projector and Camera  
Authors: Jingwen Dai, Ronald Chung  
[Supplemental Material]

ARmy: A Study of Multi-User Interaction in Spatially Augmented Games  
Authors: Andrew Dolce, Joshua Nasman, Barbara Cutler  
[Supplemental Material]

Workshop on Camera Networks & Wide Area Science Analysis (WCNWASA) 556-A

Manifold-based Fingerprinting for Target Identification  
Authors: Kang-Yu Ni, Terrell N. Mundhenk, Kyungnam Kim, Yuri Owechko

Object Browsing and Searching in A Camera Network using Graph Models  
Authors: Zefeng Ni, Jiejun Xu, B. S. Manjunath

Detecting and Tracking All Moving Objects in Wide-Area Aerial Video  
Authors: Thomas Pollard, Matthew Antone  
[Supplemental Material]

2D and 3D Visualization with Dual-Resolution for Surveillance  
Authors: Shen-Chi Chen, Chung-Yi Lee, Chih-Wei Lin, Iok-Long Chan, Yong-Sheng Chen, Sheng-Wen Shih, Yi-Ping Hung

Re-Identify people in wide area camera network  
Authors: Niki Martinel, Christian Micheloni

Tracking Many Vehicles in Wide Area Aerial Surveillance  
Authors: Jan Prokaj, Xuemei Zhao, Gérard Medioni

Pixel-wise Motion Detection in Persistent Aerial Video Surveillance  
Authors: Grace Vesom

Using Scene Features to Improve Wide-Area Video Surveillance  
Authors:
Authors: Ziyan Wu, Richard J. Radke

**Resource-Aware Configuration in Smart Camera Networks**
Authors: Bernhard Rinner, Bernhard Dieber, Lukas Esterle, Peter R. Lewis, Xin Yao

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**Biometrics (BIOM)**

**556-B**

**Data Insufficiency in Sketch Versus Photo Face Recognition**
Authors: Jonghyun Choi, Abhishek Sharma, David W. Jacobs, Larry S. Davis

**Preliminary Studies on the Good, the Bad, and the Ugly Face Recognition Challenge Problem**
Authors: Yui Man Lui, David Bolme, P. Jonathon Phillips, J. Ross Beveridge, Bruce A. Draper

**A Passive Stereo System for 3D Human Face Reconstruction and Recognition at a Distance**
Authors: Mostafa Abdelrahman, Asem Ali, Shireen Elhabian, Ham Rara, Aly A. Farag

**Restoring Occluded Regions Using FW-PCA for Face Recognition**
Authors: Tomoki Hosoi, Sei Nagashima, Koji Kobayashi, Koichi Ito, Takafumi Aoki

**Face Detection at a Distance using Saliency Maps**
Authors: Ahmed EL-Barkouky, Ham Rara, Aly Farag, Phil Womble

**Face Verification Using Sparse Representations**
Authors: Huimin Guo, Ruiping Wang, Jonghyun Choi, Larry S. Davis

**Analysis of Template Aging in Iris Biometrics**
Authors: Samuel P. Fenker, Kevin W. Bowyer

**Effects of Dominance and Laterality on Iris Recognition**
Authors: Amanda Sgroi, Kevin W. Bowyer, Patrick Flynn

**Iris Recognition using Quaternionic Sparse Orientation Code (QSOC)**
Authors: Ajay Kumar, Tak-Shing Chan

**Biometric Match Score Fusion using RVM: A Case Study in Multi-unit Iris Recognition**
Authors: Hunny Mehrotra, Mayank Vatsa, Richa Singh, Banshidhar Majhi

**Fingerprint Indexing Based on Local Combinations of Minutiae Neighborhoods**
Authors: Akhil Vij, Anoop Namboodiri

**Cascaded Filtering for Fingerprint Identification using Random Projections**
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<td>Ground Truth and Evaluation for Latent Fingerprint Matching</td>
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<td>&quot;Has this Person Been Encountered Before?&quot;: Modeling an Anonymous Identification System</td>
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<td>Vulnerabilities in Binary Face Template</td>
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<td>Authors: Yi C. Feng, Pong C. Yuen</td>
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<td>Utilization of Matching Score Vector Similarity Measures in Biometric Systems</td>
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<td>Keystroke Dynamics for User Authentication</td>
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<td>Analysis of User-specific Score Characteristics for Spoof Biometric Attacks</td>
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<td>Soft Biometric Trait Classification from Real-world Face Videos Conditioned on Head Pose Estimation</td>
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<td>Authors: Meltem Demirkus, Doina Precup, James J. Clark, Tal Arbel</td>
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<td>Lip-motion Events Analysis and Lip Segmentation using Optical Flow</td>
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<td>Authors: Stefan M. Karlsson, Josef Bigun</td>
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<td>Features and Fusion for Expression Recognition - A Comparative Analysis</td>
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<td>Authors: Usman Tariq, Thomas S. Huang</td>
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**Thursday, June 21**

**Frontiers in Computer Vision: Outreach and Core (FiCV)**

Ballroom B

This workshop does not have published papers.

**Human Activity Understanding from 3D Data (HAU3D)**
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<td>Authors: Ava Bargi, Yi Da Xu, Massimo Piccardi</td>
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<td>Sequence of the Most Informative Joints (SMIJ): A New Representation for Human Skeletal Action Recognition</td>
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<td>Authors: Ferda Ofli, Rizwan Chaudhry, Gregorij Kurillo, René Vidal, Ruzena Bajcsy</td>
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<td>EigenJoints-based Action Recognition Using Naïve-Bayes-Nearest-Neighbor</td>
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<tr>
<td>Authors: Xiaodong Yang, Ying Li Tian</td>
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<td>View Invariant Human Action Recognition Using Histograms of 3D Joints</td>
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<td>Authors: Lu Xia, Chia-Chih Chen, J.K. Aggarwal</td>
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<td>Two-person Interaction Detection Using Body-Pose Features and Multiple Instance Learning</td>
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<td>Authors: Kiwon Yun, Jean Honorio, Debaleena Chattopadhyay, Tamara L. Berg, Dimitris Samaras</td>
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<td>Human Pose Tracking by Parametric Annealing</td>
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<td>Authors: Prabhu Kaliamoorthi, Ramakrishna Kakarala</td>
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<td>Head Pose Estimation on Depth Data Based on Particle Swarm Optimization</td>
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<td>Scene Flow by Tracking in Intensity and Depth Data</td>
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<td>Authors: Julian Quiroga, Frédéric Devernay, James Crowley</td>
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<td>3D Skeletal Reconstruction from Low-resolution Multi-view Images</td>
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<td>Authors: Mayank Rana, Graham Taylor, Ian Spriro, Christoph Bregler</td>
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<td>Fast Quality-guided Phase Unwrapping Algorithm for 3D Profilometry Based on Object Image Edge Detection</td>
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<td>Authors: Ke Chen, Jiangtao Xi, Yanguang Yu</td>
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**Medical Computer Vision (MCV)**

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<td>Color-Based Hybrid Reconstruction for Endoscopy</td>
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<td>Authors: Haluk N. Tokgozoglu, Eric M. Meisner, Michael Kazhdan, Gregory D. Hager</td>
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<td>Randomness and Sparsity Induced Codebook Learning with Application to Cancer Image Classification</td>
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<td>Authors: Jean-Philippe Morin, Christian Desrosiers, Luc Duong</td>
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<td>Fast and Accurate Global Geodesic Registrations using Knee MRI from the Osteoarthritis Initiative</td>
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<td>Authors: Claire R. Donoghue, Anil Rao, Luis Pizarro, Anthony M. J. Bull, Daniel Rueckert</td>
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<td>Fully Automated 3D Colon Segmentation for Early Detection of Colorectal Cancer based on Convex Formulation of the Active Contour Model</td>
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<td>Authors: Marwa Ismail, Shireen Elhabian, Aly Farag, Gerald Dryden, Albert Seow</td>
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<td>Realistic 3D Reconstruction of the Human Teeth using Shape from Shading with Shape Priors</td>
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<td>Authors: Aly S. Abdelrahim, Moumen T. El-Melegy, Aly A. Farag</td>
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<td>Combining Laplacian Eigenmaps and Vessleness Filters for Vessel Segmentation in X-ray Angiography</td>
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<td>Authors: Faten M'hiri, Luc Duong, Christian Desrosiers</td>
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<td>Multiple Kernel Learning Based Modality Classification for Medical Images</td>
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<td>Authors: Viktor Gál, Etienne Kerre, Mike Nachtegael</td>
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<td>Temporally Consistent Diffeomorphic Motion Estimation with Mutual Information: Application to Echocardiographic Sequences</td>
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Large-Scale Video Search and Mining (LSVSM)

Multi-Video Browsing and Summarization
Authors: Kevin Dale, Eli Shechtman, Shai Avidan, Hanspeter Pfister
[Supplemental Material]

Video Object Proposals
Authors: Gilad Sharir, Tinne Tuytelaars

Automatic Collection of Web Video Shots Corresponding to Specific Actions using Web Images
Authors: Do Hang Nga, Keiji Yanai

A Content-based Video Copy Detection Method with Randomly Projected Binary Features
Authors: Chenxia Wu, Jianke Zhu, Jiemi Zhang

Learning Codebook Weights for Action Detection
Authors: Vijay Kumar B G, Ioannis Patras

Spatio-temporal Enhanced Sparse Feature Selection for Video Saliency Estimation
Authors: Ye Luo, Qi Tian

A Consumer Video Search System by Audio-Visual Concept Classification
Authors: Wei Jiang, Alexander C. Loui, Phoury Lei

Beyond Mahalanobis Distance: Learning Second-Order Discriminant Function for People Verification
Authors: Zhen Li, Liangliang Cao, shiyu Chang, John R. Smith, Thomas S. Huang

Computational Cameras and Displays (CCD)

Recovering Spectral Reflectance under Commonly Available Lighting Conditions
Authors: Jun Jiang, Jinwei Gu

Geometry-Corrected Light Field Rendering for Creating a Holographic Stereogram
Authors: Joel Jurik, Thomas Burnett, Michael Klug, Paul Debevec

Capturing Relightable Images using Computer Monitors
Authors: Prabath Gunawardane, Steven Scher, James Davis

Light Field Denoising, Light Field Superresolution and Stereo Camera Based Refocussing using a GMM Light Field Patch Prior
Authors: Kaushik Mitra, Ashok Veeraraghavan

**A Kaleidoscopic Approach to Surround Geometry and Reflectance Acquisition**

Authors: Ivo Ihrke, Ilya Reshetouski, Alkhazur Manakov, Art Tevs, Michael Wand, Hans-Peter Seidel

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**Socially Intelligent Surveillance and Monitoring (SISM)**

**556-B**

**Violent Flows: Real-Time Detection of Violent Crowd Behavior**

Authors: Tal Hassner, Yossi Itcher, Orit Kliper-Gross

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**Parameterizing Interpersonal Behaviour with Laban Movement Analysis - A Bayesian Approach**

Authors: Kamrad Khoshal Roudposhti, Luís Santos, Hadi Aliakbarpour, Jorge Miranda Dias

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**A Dynamic Curvature Based Approach For Facial Activity Analysis in 3D Space**

Authors: Shaun Canavan, Yi Sun, Xing Zhang, Lijun Yin

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**Understanding Dyadic Interactions Applying Proxemic Theory on Videosurveillance Trajectories**

Authors: Simone Calderara, Rita Cucchiara

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**Urban Tribes: Analyzing Group Photos from a Social Perspective.**

Authors: Ana C. Murillo, Iljung S. Kwak, Lubomir Bourdev, David kriegman, Serge Belongie