10th International Symposium on Visual Computing (ISVC'14)

December 8-10, 2014, Las Vegas, Nevada, USA

Contents

Final Program
10th International Symposium on Visual Computing (ISVC'14)
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Symposium Overview

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08:30 am – 9:30 am	**Keynote** *(Ballroom 5)*		
9:40 am – 10:40 am	**Parallel Sessions** (Ballrooms 2-5)		
10:40 am – 11:10 am	*Coffee Break*		
11:10 am – 12:10 am	**Parallel Sessions** (Ballrooms 2-5)		
12:10 pm – 1:30 pm	*Lunch Break* (on your own)		
1:30 pm – 2:30 pm	**Keynote** (Ballroom 5)	**Poster Session** * (Ballrooms 2=5)	**Keynote** (Ballroom 5)
2:40 pm – 3:40 pm	**Parallel Sessions** (Ballrooms 2-5)		
3:40 pm – 4:10 pm	*Coffee Break*		
4:10 pm – 6:00 pm	**Parallel Sessions** (Ballrooms 2-5)		

Registration Desk hours: Sunday, Dec 7th 5:00pm - 8:30pm
Monday, Dec 8th – Wednesday, Dec 10th: 7:30am – 5:30pm
Banquet Dinner: Tuesday, Dec 9th: 7:00pm – 9:30pm (Ballrooms 1-2)

*The poster session runs from 1:30pm to 3:30pm.

Monday, Dcember 8th

8:30-9:30	*Keynote:* ***Gopi Meenakshisundaram*****, University of California, Irvine, USA** (Ballroom 5)		
	Parallel Sessions		
9:40-12:10	**ST: Computational Bioimaging I** Chair: João Manuel R. S. Tavares ((Ballroom 5)		**Computer Graphics I** Chair: Jeffrey Holcomb (Ballroom 4)
	9:40	Learning Splines for Sparse Tomographic Reconstruction *Elham Sakhaee and Alireza Entezari*	Automatic Photorealistic 3D Inner Mouth Restoration from Frontal Images *Masahide Kawai, Tomoyori Iwao, Akinobu Maejim, and Shigeo Morishima*
	10:00	Rigid Multimodal/Multispectral Image Registration based on the Expectation-Maximization Algorithm *Edgar Arce-Santana, Daniel U. Campos-Delgado, Isnardo Reducindo, Aldo R. Meja-Rodrguez, and Giovanna Rizzo*	Local, Polynomial G^1 PN Quads *Chavdar Papazov*
	10:20	Roles of Various Brain Structures on Non-Invasive Lateralization of Temporal Lobe Epilepsy *Fariborz Mahmoudi, Mohammad-Reza Nazem-Zadeh,Hassan Bagher-Ebadian, Jason M. Schwalb, and Hamid Soltanian-Zadeh*	Voronoi Diagrams of Line Segments in 3D, with Application to Automatic Rigging *Jeffrey W. Holcomb and Jorge A. Cobb*
10:40-11:10	*Coffee Break*		
	11:10	Noise Analysis and Removal in 3D Electron Microscopy *Joris Roels, Jan Aelterman, Jonas De Vylder, Hiep Luong, Yvan Saeys, Saskia Lippens and Wilfried Philips*	Image Dehazing Using Regularized Optimization *Jiaxi He, Cishen Zhang and Ifat-Al Baqee*
	11:30	Ensemble Registration: Incorporating Structural Information into Groupwise Registration *Sri Purwani and Carole Twining*	Real-time Depth-Image-Based Rendering for 3DTV using OpenCL *Roberto Gerson de Albuquerque Azevedo, Fernando Ismério, Alberto Barbosa Raposo, and Luiz Fernando Gomes Soares*
	11:50		
9:40-12:10	**Motion and Tracking** Chair: Andreas E. Savakis (Ballroom 3)		**Feature Extraction and Matching I** Chair: Sokratis Makrogiannis (Ballroom 2)
	9:40	Direct estimation of dense scene flow and depth from a monocular sequence *Yosra Mathlouthi, Amar Mitiche, and Ismail Ben Ayed*	Efficient Object Localization and Segmentation in Weakly Labeled Videos *Mrigank Rochan and Yang Wang*
	10:00	3D Deformable Spatial Pyramid for Dense 3D Motion Flow of Deformable Object *Junhwa Hur, Hwasup Lim and Sang Chul Ahn*	Image Classication via Semi-Supervised Feature Extraction with Out-of-Sample Extension *F. Dornaika, Y. El Traboulsi, B. Cases, and A. Assoum*
	10:20	Visual Tracking Extensions for Accurate Target Recovery in Low Frame Rate Videos *Yoav Liberman and Adi Perry*	Evaluation of Different Features and Nodal Costs for Horizon Line Detection *Touqeer Ahmad, George Bebis, Emma Regentova, Ara Nefian, and Terry Fong*
10:40-11:10	*Coffee Break*		
	11:10	Optical Flow Computation in the Presence of Spatially-Varying Motion Blur *Mohammad Hossein Daraei*	3D Gesture Analysis Using a Large-Scale Gesture Database *Shahrouz Youse, Haibo Li, and Li Liu*
	11:30	A Fast TGV-l^1 RGB-D Flow Estimation *Junha Roh, Hwasup Lim, and Sang Chul Ahn*	A Biological Motivated Multi-Scale Keypoint Detector for local 3D Descriptors *Silvio Filipe and Luis A. Alexandre*
	11:50	Statistical estimation of fluid flow: An image restoration approach *Konstantia Moirogiorgou, Michalis Zervakis, Andreas E. Savakis, and Ioannis Sibetheros*	Object Classication Using a Semantic Hierarchy *Somayah Albaradei and Yang Wang*
12:10-1:30	*Lunch* (on your own)		

1:30-2:30	*Keynote:* ***Bernd Froehlich***, **Bauhaus-Universität Weimar, Germany** (Ballroom 5)		
	Parallel Sessions		
2:40-5:10	**Segmentation** Chair: Matthias Reso (Ballroom 5)		**Visualization** Chairs: Ying Zhu (Ballroom 4)
	2:40	Resistance-Geodesic Distance and its Use in Image Processing and Segmentation *Jan Gaura and Eduard Sojka*	A Human Perception based Performance Evaluation of Image Quality Metrics *Rameez Wajid, Atif Bin Mansoor, and Marius Pedersen*
	3:00	Compact Description of the Segments on the Segmented Digital Image *Tamaz Sulaberidze, Otar Tavdishvili, Tea Todua, Zurab Alimbarashvili*	Visual Analysis of 3D Data by Isovalue Clustering *Susanne K. Suter, Bo Ma, Alireza Entezari*
	3:20	Commonality Preserving Image-Set Clustering based on Diverse Density *Takayuki Fukui and Toshikazu Wada*	VideoZoom: An Interactive System for Video Summarization, Browsing and Retrieval *Kai Juengling, Scott Blunsden, Cristina Versino*
3:40-4:10	*Coffee Break*		
	4:10	A Pedestrian-pedestrian and Pedestrian-vehicle Interaction Motion Model for Pedestrians Tracking *Hao Sheng, Shukai Liu, Hengshan Ji, Jiahui Chen, and Zhang Xiong*	Adaptive Visualization of Social Media Data for Policy Modeling *Kawa Nazemi, Dirk Burkhardt, Wilhelm Retz, and Jorn Kohlhammer*
	4:30	Interactive Segmentation of High-Resolution Video Content using Temporally Coherent Superpixels and Graph Cut *M. Reso, B. Scheuermann, J. Jachalsky, B. Rosenhahn and J. Ostermann*	Combining Computational Models and Interactive Visualization to Support Rational Decision Making *Tobias Ruppert, Jurgen Bernard, Thorsten May, Jorn Kohlhammer*
	4:50	Extracting Noise-resistant Skeleton on Digital Shapes for Graph Matching *Aurelie Leborgne, Julien Mille, and Laure Tougne*	NetTimeView: Applying Spatio-Temporal Data Visualization Techniques to DDoS Attack Analysis *Ayush Shrestha, Ying Zhu, Kebina Manandhar*
2:40-5:10	**ST: 3D Mapping, Modeling and Surface Reconstruction** Chair: Corey Miller (Ballroom 3)		**ST: Unmanned Autonomous Systems** Chair: George Bebis (Ballroom 2)
	2:40	Shape from Specular Flow with Near-field Environment Motion Field *Hongsong Li, Ting Song, Zehuan Wu, Jiandong Ma, and Gangyi Ding*	Using Accurate Feature Matching for Unmanned Aerial Vehicle Ground Object Tracking *Alok Desai, Dah-Jye Lee, and Meng Zhang*
	3:00	Enhancement of 3D Capture of Room-sized Dynamic scenes with Pan-Tilt-Zoom Cameras *Asad Ullah Naweed, Lu Chen, Mingsong Dou, Henry Fuchs*	µ-UAV Based Dynamic Target Tracking for Surveillance & *Exploration* *Harish Bhaska, Jorge Dias, Lakmal Seneviratne, and Mohammed Al-Mualla*
	3:20	Loop Closing for Visual Pose Tracking during Close-Range 3-D Modeling *Klaus H. Strobl*	Telemetry-based search window correction for airborne tracking *Pau Climent-Perez, Georgios Lazaridis, Georg Hummel, Martin Russ, Dorothy N. Monekosso, and Paolo Remagnino*
3:40-4:10	*Coffee Break*		
	4:10	Reconstruction of a Complex Mirror Surface from a Single Image *Hongsong Li, Ting Song, Zehuan Wu, Jiandong Ma, and Gangyi Ding*	Fuzzy-Based Automatic Landmark Recognition in Aerial Images Using ORB for Aerial Auto-Localization *Paulo Silva Filho, Marcel Rodrigues, Osamu Saotome, and Elcio H. Shiguemori*
	4:30	Passive 3D Scene Reconstruction via Hyperspectral Imagery *Corey A. Miller and Thomas J. Walls*	Semantic Segmentation of Low Frame-Rate Image Sequence Using Statistical Properties of Optical Flow for Remote Exploration *Shun Inagaki and Atsushi Imiya*
	4:50	Constructing Point Clouds from Underwater Stereo Movies *Jesus Pulido, Ricardo Dutra da Silva, Dawn Sumner, Helio Pedrini, and Bernd Hamann*	

Tuesday, December 9th

8:30-9:30	*Keynote:* **Melanie Tory**, **University of Victoria, Canada** (Ballroom 5)		
	Parallel Sessions		
9:40-12:10	**Medical Imaging** Chair: Gurman Gill (Ballroom 5)		**Computer Graphics II** Chair: Tim McGraw (Ballroom 4)
	9:40	Coupled Dictionary Learning for Automatic Multi-Label Brain Tumor Segmentation in Flair MRI images *Saif Dawood Salman Al-Shaikhli, Michael Ying Yang, Bodo Rosenhahn*	Shape Modeling with Fractals *Tim McGraw and Donald Herring*
	10:00	Volumetric Topological Analysis on In Vivo Trabecular Bone Magnetic Resonance Imaging *Cheng Chen, Dakai Jin, Yinxiao Liu, Felix W. Wehrli, Gregory Chang, Peter J. Snyder, Ravinder R. Regatte, and Punam K. Saha*	GPU based particle coding scheme for virtual cutting of meshfree particle systems *Prateek Shrivastava, Sukhendu Das*
	10:20	Segmentation of Lungs with Interstitial Lung Disease in CT Scans: A TV-L^1 Based Texture Analysis Approach *Gurman Gill and Reinhard R. Beichel*	Constrained PatchMatch for Image Completion *Guillaume Chican and Mohamed Tamaazousti*
10:40-11:10	*Coffee Break*		
	11:10	Automated Assessment of Pulmonary Arterial Morphology in Multi-Row Detector CT Imaging using Correspondence with Anatomic Airway Branches *Dakai Jin, Krishna S Iyer, Eric A Hoffman, Punam K Sah*	Compression of 3-D Polygon Mesh Geometry Data by Wavelets with Structuring Surrounding Vertices Remeshing *Shingo Kouno, Masayuki Amano, and Akira Kawanaka*
	11:30	Non-rigid registration of vascular structures for align-ing 2D X-ray angiography with 3D CT angiography *Hye-Ryun Kim, Mi-Sun Kang and Myoung-Hee Kim*	Automatic Multi-Light White Balance using Illumination Gradients and Color Space Projection *Clifford Lindsay and Emmanuel Agu*
	11:50		
9:40-12:10	**ST: Tracking for Human Activity Monitoring** Chair: Antonis Argyros (Ballroom 3)		**N/A**
	9:40	Robust and Efficient Tracker using Dictionary of Binary Descriptors and Locality Constraints *Breton Minnehan, Henry Spang V, and Andreas Savakis*	
	10:00	Fast Human Pose Tracking with a Single Depth Sensor using Sum of Gaussians Models *Meng Ding and Guoliang Fan*	
	10:20	Human Centered Scene Understanding based on Depth Information - How to Deal with Noisy Skeleton Data? *Rainer Planinc and Martin Kampel*	
10:40-11:10	*Coffee Break*		
	11:10	Body Joint Tracking in Low Resolution Video using Region-based Filtering *Binu M Nair, Kimberly D Kendricks, Vijayan K Asari, and Ronald F Tuttle*	
	11:30	Human Action Recognition Using Histograms of Oriented Optical Flows from Depth *Baris Can Ustundag and Mustafa Unel*	
	11:50	Scale-Adaptive Object Tracking with Diverse Ensembles *Sara Elkerdawy, Abdelrahman Eldesokey, Ahmed Salaheldin, Mohamed ElHelw*	
12:10-1:30	*Lunch* (on your own)		

1:30-3:30	**Poster Session** (Ballrooms 2-5)		
	Parallel Sessions		
3:30-6:00	**Feature Extraction and Matching II** Chair: Mircea Nicolescu (Ballroom 5)		**ST: Intelligent Transportation Systems** Chair: Brendan Morris (Ballroom 4)
	3:30	Weighted Pooling Based on Visual Saliency for Image Classification *Byeongho Heo, Hawook Jeong, Jiyun Kim, Sang-Il Choi, Jin Young Choi*	Contextual Combination of Appearance and Motion for Intersection Videos with Vehicles and Pedestrians *Mohammad Shokrolah Shiraz and Brendan Morris*
	3:50	A Simple Visual Words Selection Strategy for Pedestrian Detection *Xingguo Zhang, Guoyue Chen, Kazuki Saruta, Yuki Terata*	Video-based Self-positioning for Intelligent Transportation Systems Applications *Parag S. Chandakkar, Ragav Venkatesan and Baoxin Li*
4:10-4:40	*Coffee Break*		
	4:40	Convolutional neural networks for steel surface defect detection from photometric stereo images *D. Soukup, R. Huber-Mork*	A Unified Approach for On-Road Visual Night-time Vehicle Light Detection *Darko Juric and Sven Loncar*
	5:00	Object Detection Using Deformable Part Model in RGB-D Data *Chao Li, Si Ma, Tao Wang, Hao Sheng, and Zhang Xiong*	Sparse Depth Calculation using Real-time Key-point Detection and Structure from Motion for Advanced Driver Assist Systems *Charan D. Prakash, Jinjin Li, Farshad Akhbari and Lina J. Karam*
	5:20	HLAC between Cells of HOG Feature for Crowd Counting *Shohei Kumaga and Kazuhiro Hotta*	Robust, Marker-based Head Tracking for Testing Cognitive Vehicles in the Loop *Marc Rene Zofka, Ralf Kohlhaas, Tobias Bar, Thomas Schamm, J. Marius Zollner, and Sebastian Schwab*
	5:40	Learning with Adaptive Rate for Online Detection of Unusual Appearance *Kimin Yun, Jiyun Kim, Soo Wan Kim, Hawook Jeong, and Jin Young Choi*	Real-Time 3D Reconstruction of Traffic Scenes under An Images-to-Model Framework *Anlong Ming, Liang Liu, Pengjie Li and Qin Yang*
3:30-6:00	**ST: Visual Perception and Robotic Systems** Chair: Hung La (Ballroom 3)		**N/A**
	3:30	Proactive 3D Robot Mapping in Environments with Sparse Features *Jianhao Du, Weihua Sheng, Qi Cheng, and Meiqin Liu*	
	3:50	Object Recognition using constraints from Primitive Shape Matching *ikhil Somaniz, Caixia Caiy, Alexander Perzyloz, Markus Rickertz, and Alois Knolly*	
4:10-4:40	*Coffee Break*		
	4:40	Gesture recognition supporting the interaction of humans with socially assistive robots *Damien Michel, Konstantinos Papoutsakis, and Antonis A. Argyros*	
	5:00	Multiple Robotic Wheelchair System Considering Group Communication *R. Suzuki, T.Yamada, M. Arai, Y. Sato, Y. Kobayashi and Y. Kuno*	
	5:20	Cost Aggregation Table: Cost Aggregation Method Using Summed Area Table Scheme for Dense Stereo Correspondence *JeongMok HA, JeaYoung JEON, GiYeong BAE, SungYong JO, and Hong JEONG*	
	5:40	Towards visual based navigation with power line detection *Alexander Ceron, Ivan F. Mondragon B, and Flavio Prieto*	
7:00-9:30	*Banquet Dinner* (Ballrooms 1-2) *Keynote:* **Rama Chellappa, University of Maryland, USA**		

Wednesday, December 10th

8:30-9:30	*Keynote:* **Arun Ross**, **Michigan State University, USA** (Ballroom 5)		
	Parallel Sessions		
9:40-12:10	**ST: Computational Bioimaging II** Chair: João Manuel R. S. Tavares (Ballroom 5)		**Recognition** Chair: Alexei N. Skurikhin (Ballroom 4)
	9:40	Fast Mesh-Based Medical Image Registration *Ahmadreza Baghaie, Zeyun Yu, and Roshan M. D'souza*	A Nonstationary Hidden Markov ModelWith Approximately Infinitely-Long Time-Dependencies *Sotirios P. Chatzis, Dimitrios I. Kosmopoulos, and George M. Papadourakis*
	10:00	Multimodal Non-Rigid Registration Methods Based on Demons Models and Local Uncertainty Quantification used in 3D Brain Images *I. Reducindoa, A. Mejıa-Rodrıgueza, E. Arce-Santanaa, D. Campos-Delgadoa, E. Scalcob, G. Cattaneoc, and G. Rizzo*	Proximity Clustering for Revealing a Semantically Dominant Class *Tushar Sandhan, Kimin Yun and Jin Young Choi*
	10:20	Principal Axes-based Asymmetry Assessment Methodology for Skin Lesion Image Analysis *Maria João M. Vasconcelos, Luís Rosado and Márcia Ferreira*	One-shot Learning of Sketch Categories with Co-regularized Sparse Coding *Yonggang Qi, Wei-Shi Zheng, Tao Xiang, Yi-Zhe Song, Honggang Zhang, and Jun Guo*
10:40-11:10	*Coffee Break*		
	11:10	Analysis of Biomedical Images based on Automated Methods of Image Registration *João Manuel R. S. Tavares*	Hierarchical Spanning Tree-structured Approximation for Conditional Random Fields: An Empirical Study *Alexei N. Skurikhin*
	11:30	Spatio-Temporal Level-Set based Cell Segmentation in Time-Lapse Image Sequences *Fatima Boukari and Sokratis Makrogiannis*	Thresholding a Random Forest Classifier *Florian Baumann, Fangda Li, Arne Ehlers, Bodo Rosenhahn*
	11:50		Texture retrieval using Cauchy-Schwarz divergence and generalized Gaussian mixtures *Hassan Rami, Ahmed Drissi El Maliani, Mohammed El Hassouni, and Driss Aboutajdine*
9:40-12:10	**3D Computer Vision** Chair: Vijayan Asari (Ballroom 3)		**N/A**
	9:40	Spatial Uncertainty Model of a Three-View RGB-D Camera System *Chen Zhu, Simon Bilgeri, and Christoph Gunther*	
	10:00	3D Estimation of Isometric Surfaces Using a ToF-Based Approach *S. Jafar Hosseini and Helder Araujo*	
	10:20	3D Microscopy Vision Using Multiple View Geometry and Differential Evolutionary Approaches *A. Pahlavan Tafti, A. B. Kirkpatrick, H. A. Owen, and Z. Yu*	.
10:40-11:10	*Coffee Break*		
	11:10	Shape from Refocus *R. Huber-Mork, S. Stolc, D. Soukup, B. Hollander*	
	11:30	Ultrasound Surface Extraction Using Radial Basis Functions *Rickard Englund and Timo Ropinski*	
	11:50	Sphere Packing Aided Surface Reconstruction for Multi-View Data *Kun Liu, Patricio A. Galindo, Rhaleb Zayer*	
12:10-1:30	*Lunch* (on your own)		

1:30-2:30	*Keynote:* **Luc Vincent, Google, USA** (Ballroom 5)		
	Parallel Sessions		
2:40-5:10	**Applications** Chair: Yoshinori Kuno (Ballroom 5)		**Face Processing and Recognition** Chair: Dah-Jye Lee (Ballroom 4)
	2:40	A new coin segmentation and graph-based identication method for numismatic application *Xingyu Pan, Kitti Puritat, Laure Tougne*	Bayesian Framework For Accurate Eye Center Localization *Zhou Liu, Heng Yang, Ming Dong, and Jing Hua*
	3:00	Evaluating Depth-Based Computer Vision Methods for Fall Detection Under Occlusions *Zhong Zhang, Christopher Conly, and Vassilis Athitsos*	Facial Point Localization using Combination Method under Occlusion *Jongju Shin, Jieun Kim, and Daijin Kim*
	3:20	A novel modeling for video summarization using constraint satisfaction programming *Haykel Boukadida, Sid-Ahmed Berrani, and Patrick Gros*	Personalized Modeling of Facial Action Unit Intensity *Shuang Yang, Ognjen Rudovic, Vladimir Pavlovic and Maja Pantic*
3:40-4:10	*Coffee Break*		
	4:10	Automated Bird Plumage Coloration Quanti fication in Digital Images *Tejas S. Borkar and Lina J. Karam*	Automatic Facial Expression Recognition using Evolution-COnstructed Features *Meng Zhang, Dah-Jye Lee, Alok Desai, Kirt D. Lillywhite, Beau J. Tippetts*
	4:30	Which phoneme-to-viseme maps best improve visual-only computer lip-reading? *Helen L. Bear, Richard W. Harvey, Barry-John Theobald and Yuxuan Lan*	View-constrained Latent Variable Model for Multi-view Facial Expression Classication *Stefanos Eleftheriadis, Ognjen Rudovic and Maja Pantic*
	4:50	Iris and Pupil Measurement on Low Resolution Images for Driver Observation *Emin Tarayan, Matthias Hoffken, Andra Stefania Herta and Ulrich Kresse*	Pyramid Mean Representation of Image Sequences for Fast Face Retrieval in Unconstrained Video Data *Christian Herrmann and Jurgen Beyerer*
2:40-5:10	**Virtual Reality** Chair: Jiri Jara (Ballroom 3)		**N/A**
	2:40	Evaluation of Image Feature Descriptors for Marker-less AR Applications *Hiroshi Koyasu, Kotaro Nozaki, and Hitoshi Maekawa*	
	3:00	Study of 2D Vibration Summing for Improved Intensity Control in Vibrotactile Array Rendering Undergraduates *Nicholas G. Lipari and Christoph W. Borst*	
	3:20	AR-based Hologram Detection on Security Documents using a Mobile Phone *Andreas Hartl, Clemens Arth, and Dieter Schmalstieg*	
3:40-4:10	*Coffee Break*		
	4:10	Markerless Planar Tracking in Augmented Reality Using Geometric Structure *Chunling Fan, Yonggang Zhao, and Liangbing Feng*	
	4:30	A Haptic-based Application for Active Exploration of Facial Expressions by the Visually Impaired *Shamima Yasmin, Troy McDaniel and Sethuraman Panchanathan*	

Poster Session (Ballrooms 2-5)

Tuesday, December 9th (1:30pm-3:30pm)

Affine Invariant Harris-Bessel Interest Point Detector *Sasan Mahmoodi, Nasim Saba*
Layered Depth Image Based HEVC Multi-view Codec *Kirshanthan S., Lajanugen L., Panagoda P.N.D., Wijesinghe L.P., De Silva D.V.S.X., and Pasqual A. A.*
On Detectability of Moroccan Coastal Upwelling in Sea Surface Temperature Satellite Images *Ayoub Tamim, Khalid Minaoui, Khalid Daoudi, Abderrahman Atillah, and Driss Aboutajdine*
High-Order Diffusion Tensor Connectivity Mapping on the GPU *Tim McGraw and Donald Herring*
A Sequential 3D Curve-Thinning Algorithm Based on Isthmuses *Kalman Palagyi*
Automatic Identication of CAPTCHA Schemes *M. A. Asim K. Jalwana, Muhammad Murtaza Khan, Muhammad U. Ilyas*
Object Detection Based on Multiresolution CoHOG *Sohei Iwata and Shuichi Enokida*
Who Shot the Picture and When? *Gagan Kanojia, Sri Raghu Malireddi, Sai Chowdary Gullapally, and Shanmuganathan Raman*
Matching Affine Features with the SYBA Feature Descriptor *Alok Desai, Dah-Jye Lee, and Dan Ventura*
Boosted Fractal Integral Paths for Object Detection *Arne Ehlers, Florian Baumann, Bodo Rosenhahn*
Depth Estimation Within a Multi-Line-Scan Light-Field Framework *D. Soukup, R. Huber-Mork, S. Stolc, B. Hollander*
A Weighted Regional Voting Based Ensemble of Multiple Classifiers for Face Recognition *Jing Cheng and Liang Chen*
DEPTH DATA-DRIVEN REAL-TIME ARTICULATED HAND POSE RECOGNITION *Young-Woon Cha, Hwasup Lim, Min-Hyuk Sung, and Sang Chul Ahn*
3-D Model Alignment for Retrieval from Part of Model considering the Rotation, Scaling and Translation with Projections around an Axis *Yohei Kayanuma, Fumiko Umeda, and Akira Kawanaka*
Strokes detection for skeletonisation of characters shapes *Cyrille Berger*
Face Detection and Tracking for Intent Recognition *K.T. Luhandjula, B.J. van Wyk, K. Djouani, Y. Amirat*
Embedded Image Processing System for Automatic Page Segmentation of Open Book Images *Victor Rodrıguez-Osoria, Marco Aurelio Nuno-Maganda, Yahir Hernandez-Mier, and Cesar Torres-Huitzil*

Poster Session (cont'd)

Tuesday, December 9th (1:30pm-3:30pm)

Towards an Embedded Real-Time High Resolution Vision System *Fredrik Ekstrand, Carl Ahlberg, Mikael Ekstrom and Giacomo Spampinato*
Violence Detection in Video by Using 3D Convolutional Neural Networks *Chunhui Ding, Shouke Fan, Ming Zhu, Weiguo Feng and Baozhi Jia*
Modified Adaptive Extended Bilateral Motion Estimation with Scene Change Detection for Motion Compensated Frame Rate Up-Conversion *Daejun Park and Jechang Jeong*
Concealed Target Detection with Fusion of Visible and Infrared *Philip Saponaro, Kelly Sherbondy, and Chandra Kambhamettu*
Enhancement of Hazy Color Images Using a Self-Tunable Transformation Function *Saibabu Arigela and Vijayan K Asari*
Determine Absolute Soccer Ball Location in Broadcast Video Using SYBA Descriptor *Alok Desai, Dah-Jye Lee, and Craig Wilson*
Colour perception graph for characters segmentation *Cyrille Berger*
Initial Closed-Form Solution to Mapping from Unknown Planar Motion of an Omni-directional Vision Sensor *Jae-Hean Kim and Jin Sung Choi*
Multimodal Approach for Natural Biomedical Multi-scale Exploration *Jan Rzepecki, Ricardo Manuel Millan Vaquero, Alexander Vais, Karl-Ingo Friese, Franz-Erich Wolter*
Generating Super-resolved Depth Maps using low-cost sensors and RGB Images *Raposo, Alberto Barbosa, Santos, Leandro Tavares Arag~ao dos Fernandez, Manuel Eduardo Loaiza*
Learning and Association of Features for Action Recognition in Streaming Video *Binu M Nair and Vijayan K Asari*
Cell Classification in 3D Phase-Contrast Microscopy Images via Self-Organizing Maps *Mi-Sun Kang, Hye-Ryun Kim and Myoung-Hee Kim*
Pose-Aware Smoothing Filter for Depth Images *Seungpyo Hong and Jinwook Kim*
Scene Understanding for Auto-Calibration of Surveillance Cameras *Lucas Teixeira, Fabiola Maffra, and Atta Badii*
A Multi-View Profilometry System Using RGB Channel Separated Fringe Patterns And Unscented Kalman Filter *Stuart Woolford, Ian. S. Burnett*
A 3D Tracker for Ground-Moving Objects *M. Rogez, L. Robinault, and L.Tougne*
Counting the Crowd at a Carnival *J.B. Pedersen, J.B. Markussen, M.P. Philipsen, M.B. Jensen and T.B. Moeslund*
Image Retrieval Based on Statistical and Geometry Features *Yu Liu, Liangbing Feng, Xing Wang, Ning Guo*
PixSearcher: Searching Similar Images in Large Image Collections through Pixel Descriptors *Tuan Nhon Dang and Leland Wilkinson*

Poster Session (cont'd)

Tuesday, December 9th (1:30pm-3:30pm)

Shortest enclosing walks with a non-zero winding number in directed weighted planar graphs: a technique for image segmentation *Alexey Malistov*
Intuitive Alignment of Point-Clouds with Painting-based Feature Correspondence *Shane Transue and Min-Hyung Choi*
Precise 3D measurements for tracked objects from synchronized stereo-video sequences *Panagiotis Agrafiotis, Andreas Georgopoulos, Anastasios D. Doulamis, Nikolaos D. Doulamis*
Articial Intelligence Gaming Assistant for Google Glass *Scott Bouloutian, Edward Kim*
Adding Color Sensitivity to the Shape Adaptive Image Ray Transform *Ah-Reum Oh and Mark S. Nixon*
A Fast Algorithm for Reconstructing hv-Convex Binary Images from their Horizontal Projection *Norbert Hantos and Peter Balazs*
Gaussian Process Dynamical Models for Emotion Recognition *Hernan F. Garcia, Mauricio A. Alvarez and Alvaro Orozco*
Evaluation of Perceptual Biases in Facial Expression Recognition by Humans and Machines *Xing Zhang, Lijun Yin, Daniel Hipp, and Peter Gerhardstein*
Handwritten Signature Verication based on Enhanced Direction and Grid Features *Serestina Viriri*
Improving Human Gait Recognition Using Feature Selection *Faezeh Tafazzoli, George Bebis, Sushil Louis and Muhammad Hussain*
Automatic Recognition of Microcalcifications in Mammography Images through Fractal Texture Analysis *Hernan Dario, Vargas Cardona, Alvaro A. Orozco and Mauricio A. Alvarez*
Bayesian Shape Models With Shape Priors for MRI Brain Segmentation *Hernan F. Garcia, Mauricio A. Alvarez and Alvaro Orozco*
Disocclusion Mitigation for Image Based Point Cloud Imposters *Chad Mourning, Scott Nykl, and David Chelberg*
Adaptive Visualization of Linked-Data *Kawa Nazemi, Dirk Burkhardt, Reimond Retz, Arjan Kuijper, and Jorn Kohlhammer*
Parkinson Data Analysis and Interpretation with Data Visualization Methods *Mehdi Ghayoumi and Ye Zhao*
IntelliViz- A Tool for Visualizing Social Networks with Hashtags *Jesse Tran, Quang Vinh Nguyen and Simeon Simoff*
3D Previsualization using a Computational Photography Camera *Clifford Lindsay and Emmanuel Agu*
Formation Control of Multiple Rectangular Agents with Limited Communication Ranges *Thang Nguyen and Hung Manh La*
Extrinsic Calibration Between 2D Laser Range Finder and Fisheye Camera *Yong Fang, Cindy Cappelle, Yassine Ruichek*
Hardware/Software Co-Design of Embedded Real-Time KD-Tree Based Feature Matching Systems *Saad Shoaib, Rehan Hafiz, and Muhammad Shafique*

KEYNOTE TALK
Monday, December 8, 2014
8:30 AM – 9:30 AM / Ballroom 5

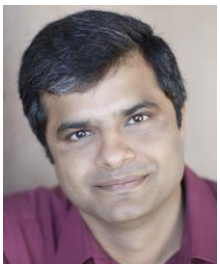
ISVC 2014: 10th International Symposium on Visual Computing
Monte Carlo Resort & Casino
Las Vegas, NV, USA

Graphs in Graphics: An Undirected Trip through the Algorithmic Forest

Gopi Meenakshisundaram (M. Gopi)
University of California, Irvine

Abstract

Graph algorithms are fundamental to many fields including operations research, physically based simulation, mechanics, logistics management, and sensor networks. In this talk, we will celebrate a few graph algorithms that have helped us make significant progress in geometry processing for graphics applications. Since the time graphs were used only for representations such as the tree representation of traced rays in ray tracing and scene graph representation of environments in interactive rendering, the uses of graph and graph algorithms in graphics have become more and more sophisticated. Various graph algorithms such as spanning trees, bi-partite graph matching, graph isomorphisms, 1-factor and 2-factor computations, etc., have been used to process the geometry and topology in order to compress this information, linearly order the primitives for rendering and storage, simplify the geometry for rendering, efficiently represent the geometry for in-core cache coherency, compute topological features such as fundamental cycles, and so on. In this talk we will take a trip through these graph algorithms and their impact on geometry and topological processing in graphics.



Speaker Bio-Sketch: Gopi Meenakshisundaram is a Professor of Computer Science in the Department of Computer Science at University of California, Irvine. He received his BE from Thiagarajar College of Engineering, Madurai, MS from Indian Institute of Science, Bangalore, and PhD from University of North Carolina at Chapel Hill. His research interests include geometry and topology in computer graphics, massive geometry data management for interactive rendering, and biomedical sensors, data processing, and visualization. His work on representation of manifolds using single triangle strip, hierarchy-less simplification of triangulated manifolds, use of redundant representation for big data for interactive rendering, and biomedical image processing have received critical acclaim including best paper awards in two Eurographics conferences and in ICVGIP. He is a gold medalist for academic excellence at Thiagarajar College of Engineering, a recipient of the Excellence in Teaching Award at UCI and a Link Foundation Fellow. He served as the program co-chair and papers co-chair of ACM Interactive 3D Graphics conference in 2012 and 2013 respectively, area chair for ICVGIP in 2010 and 2012, program co-chair for International Symposium on Visual Computing 2006, an associate editor of the Journal of Graphical Models, and a guest editor of IEEE Transactions on Visualization and Computer Graphics.

KEYNOTE TALK
Monday, December 8, 2014
1:30 PM – 2:30 PM / Ballroom 5

ISVC 2014: 10th International Symposium on Visual Computing
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Collaboration in Multi-User Virtual Reality

Bernd Froehlich
Professor of Virtual Reality Systems

Computer Science and Media, Faculty of Media
Bauhaus-Universität Weimar, Weimar
Germany

Abstract

Immersive telepresence allows distributed groups of users to meet in a shared virtual 3D world. Our approach uses two coupled projection-based multi-user setups, each providing multiple users with perspectively correct stereoscopic images. At each site, the users and their local interaction space are continuously captured using a cluster of registered depth and color cameras. The captured 3D information is transferred to the respective other location, where the remote participants are virtually reconstructed in life-size. Local and remote users can jointly or independently explore virtual environments and virtually meet face-to-face for discussions. We structure collaborative activities of collocated and remote users using Photoportals. Virtual photos and videos serve as three-dimensional references to objects, places, moments in time and activities of users. They can be shared among users and serve as portals to the captured information. Our Photoportals also provide access to intermediate or alternative versions of a scenario and allow the review of recorded task sequences that include life-size representations of captured users.

Speaker Bio-Sketch: Bernd Froehlich is a full professor of Computer Science at Bauhaus-Universität Weimar. He is chair of the Virtual Reality and Visualization Re-search Group. He focuses on basic and applied research in multi-user virtual reality and 3D user interfaces, visualization and rendering algorithms for very large datasets as well as information visualization. After completing his PhD in computer science at the Technical University of Braunschweig, he worked at the German National Research Center for Information Technology (GMD) and was a research associate with the computer science department at Stanford University. He is a cofounder and member of the steering committee of the IEEE Symposium on 3D User Interfaces, chair of the steering committee of the IEEE Virtual Reality conference and received the 2008 Virtual Reality Technical Achievement Award. Froehlich serves as an associate editor of the journals IEEE Computer Graphics and Applications and Frontiers in Virtual Environments.

KEYNOTE TALK
Tuesday, December 9, 2014
8:30 AM – 9:30 AM / Ballroom 5

ISVC 2014: 10th International Symposium on Visual Computing
Monte Carlo Resort & Casino
Las Vegas, NV, USA

Visualization and Visual Analytics in Personal Life

Melanie Tory
Associate Professor of Computer Science

Department of Computer Science
University of Victoria, Victoria, BC
Canada

Abstract

For each and every one of us as individuals, "big data" impinges on our personal lives as well as our professional lives. This includes managing our social networks, our music libraries, and our photo collections, and tracking our fitness, health, and sustainability behaviour. Using Visualization and Visual Analytics tools within our personal context offers substantial opportunity for us as individuals to gain insight and knowledge about ourselves and our communities. However, designing tools to support the analysis of data in one's non-professional life brings a unique set of research and design challenges. Personal Visualization and Personal Visual Analytics extend research in visualization and visual analytics to the personal domain and aim to empower individuals to develop insights and discover knowledge relevant to their personal lives. In this talk, I will explore some of the new research challenges that arise when we consider visualization and visual analytics in a personal context.

Speaker Bio-Sketch: Melanie Tory is an Associate Professor of Computer Science at the University of Victoria, where she conducts research in visualization and visual analytics. Tory received the Ph.D. degree in Computing Science from Simon Fraser University in 2004 and held an NSERC PDF at the University of British Columbia from 2004-2006. Her research applies to a wide variety of areas spanning natural sciences and engineering, business, and personal informatics; for example, recent projects have focused on the domains of Business Intelligence and Building Design Engineering. Tory actively contributes to the visualization research community. She is Papers Co-chair for IEEE InfoVis 2014-15.

BANQUET KEYNOTE TALK
Tuesday, December 9, 2014
8 PM – 9 PM / Ballroom 5

ISVC 2014: 10th International Symposium on Visual Computing
Monte Carlo Resort & Casino
Las Vegas, NV, USA

Is Computer Vision Pattern Recognition by a Different Name?

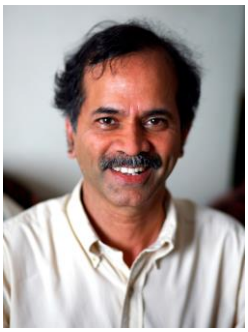
Rama Chellapa
Minta Martin Professor of Engineering

Department of Electrical and Computer Engineering
University of Maryland, College Park, MD
USA

Abstract

As someone who has been working in computer vision and pattern recognition for over three decades, I have watched with interest and some discomfort as much of the work in the field has become a straightforward application of pattern recognition methodology. More often than not, contemporary techniques follow the same "data-feature-SVM" paradigm. This approach has generated several successful algorithms for object detection, face verification, etc. More recently, deep learning has produced state-of-the-art results on datasets such as ImageNet and LFW.

While I am a devoted student of pattern recognition from Purdue, I would argue that this formula can only take us so far. In order to be robust to domain shifts due to factors such as occlusion and variation in pose, illumination, blur, and resolution, appropriate models of these effects must be properly utilized. That is, in order to reap long-term gains in computer vision, one should adopt a more balanced approach that effectively combines imaging and geometric models with the available training data. Supporting examples from iris, face, object, and event recognition will be presented.



Speaker Bio-Sketch: Rama Chellappa is a Minta Martin Professor of Engineering and the Chair of the ECE department at the University of Maryland. Prof. Chellappa received the K.S. Fu Prize from the International Association of Pattern Recognition (IAPR). He is a recipient of the Society, Technical Achievement and Meritorious Service Awards from the IEEE Signal Processing Society. He also received the Technical Achievement and Meritorious Service Awards from the IEEE Computer Society. At UMD, he received college and university level recognitions for research, teaching, innovation and mentoring of undergraduate students. In 2010, he was recognized as an Outstanding ECE by Purdue University. Prof. Chellappa served as the Editor-in-Chief of PAMI. He is a Golden Core Member of the IEEE Computer Society, served as a Distinguished Lecturer of the IEEE Signal Processing Society and as the President of IEEE Biometrics Council. He is a Fellow of IEEE, IAPR, OSA, AAAS and ACM and holds four patents

KEYNOTE TALK
Wednesday, December 10, 2014
8:30 PM – 9:30 PM / Ballroom 5

ISVC 2014: 10th International Symposium on Visual Computing
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Facial Cosmetics, Spoof Attacks, Data Privacy: Biometrics in the Real World

Arun Ross
Associate Professor
Department of Computer Science and Engineering
Michigan State University, USA

Abstract

Biometrics is the science of recognizing individuals based on their physical and behavioral attributes such as fingerprints, face, iris, voice and signature. The past decade has witnessed tremendous progress in this field, including the deployment of biometric solutions in diverse applications such as border security, national ID cards, amusement parks, access control, and smartphones. Despite these advancements, biometric systems have to contend with a number of challenges related to data quality, spoof attacks, and personal privacy. This talk will highlight some of the recent progress made in the field of biometrics; present our lab's work on makeup invariant face recognition, fingerprint spoof detection, and biometric data privacy; and discuss some of the challenges that have to be solved in order to promote the widespread use of this technology.

Speaker Bio-Sketch: Arun Ross is an Associate Professor in the Department of Computer Science and Engineering at Michigan State University (MSU) and the Director of the i-PRoBe Lab. Prior to joining MSU in 2013, he was in the faculty of West Virginia University (WVU) from 2003 to 2012. He also served as the Assistant Site Director of the NSF Center for Identification Technology and Research (CITeR) between 2010 and 2012. Arun received the B.E. (Hons.) degree in Computer Science from the Birla Institute of Technology and Science, Pilani, India, and the M.S. and Ph.D. degrees in Computer Science and Engineering from Michigan State University. He is the coauthor of the textbook "Introduction to Biometrics" and the monograph "Handbook of Multibiometrics," and the co-editor of "Handbook of Biometrics". He is a recipient of the JK Aggarwal Prize, IAPR Young Biometrics Investigator Award (YBIA), the NSF CAREER Award, and was designated a Kavli Frontier Fellow by the National Academy of Sciences in 2006. He was an Associate Editor of IEEE Transactions on Information Forensics and Security (2009 – 2013), and IEEE Transactions on Image Processing (2008 – 2013). He currently serves as Area Editor of the Computer Vision and Image Understanding Journal, Associate Editor of the Image and Vision Computing Journal, Vice President of Education of the IEEE Biometrics Council, and Vice Chair of the IAPR TC4 on Biometrics. URL: http://www.cse.msu.edu/~rossarun/

KEYNOTE TALK
Wednesday, December 10, 2014
1:30 PM – 2:30 PM / Ballroom 5

ISVC 2014: 10th International Symposium on Visual Computing
Monte Carlo Resort & Casino
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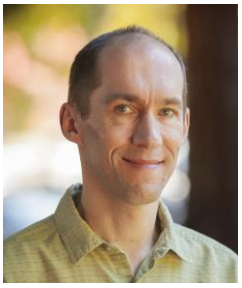
Google Street View: Overview & Computer Vision Challenges

Luc Vincent
Director, Engineering
Google, USA

Abstract

From its humble beginnings in 2007, Google Street View has grown to become a global product available in over 50 countries, and an indispensable feature of Google Maps. It is the result of a massive engineering effort by a team including software engineers, product managers, optical designers, mechanical engineers, UI designers, computer vision scientists, operations experts, and scores of others. The initial vision for Street View was provided by Google co-founder Larry Page: back in 2002, he personally collected street scene videos from his moving car in order to bootstrap a new research initiative focused on making street level imagery useful. Turning this initial vision into a product required developing major new pieces of technology, including robust data collection platforms (vans, cars, tricycles, snowmobiles, "trekkers", etc.), systems for computing accurate pose from imperfect sensors, various software components to stitch, blend, color correct and warp collected imagery, a number of systems to address privacy issues, and a lot more. This presentation will give an overview and brief history of the Street View project, and highlight some of the unique computer vision challenges that are keeping the engineering team busy.



Speaker Bio-Sketch: Luc Vincent joined Google in 2004 to work on the Google Books project. While he was ramping up Google's Optical Character Recognition efforts, he got involved in an early stage project whose goal was to capture a large amount of street level imagery and make it universally accessible and useful. Under Luc's leadership, this project became Google Street View and launched officially in May 2007. Luc is now an engineering director in charge of Street View and other map-related imagery projects. Before Google, Luc was Chief Scientist, and then Vice President of Document Imaging at LizardTech, a developer of advanced image compression software. Prior to this, he led an R&D team at the prestigious Xerox Palo Alto Research Center (PARC). He was also Director of Software Development at Scansoft (now Nuance) and held various technical management and individual contributor positions at Xerox Corporation. Luc has over 60 publications in the area of computer vision, image analysis, and document understanding. He has served as an Associate Editor for the IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), and for the Journal of Electronic Imaging. He has also chaired SPIE's conferences on Document Recognition, the International Symposium on Mathematical Morphology (ISMM), and been in the program committee of numerous conferences and workshops. Luc earned his B.S. from Ecole Polytechnique, M.S. in Computer Science from University of Paris XI, and PhD in Mathematical Morphology from the Ecole des Mines de Paris in 1990.

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Special Tracks

ST1: Computational Bioimaging

Organizers:

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ST2: 3D Mapping, Modeling and Surface Reconstruction

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ST3: Tracking for Human Activity Monitoring

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ST4: Unmanned Autonomous Systems

Organizers:

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ST5: Intelligent Transportation Systems

Organizers:

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ST6: Visual Perception and Robotic Systems

Organizers:

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