

# **2014 IEEE Visual Communications and Image Processing Conference**

**(VCIP 2014)**

**Valletta, Malta  
7-10 December 2014**



**IEEE Catalog Number: CFP1481P-POD  
ISBN: 978-1-4799-6140-5**

## MO1A

### Video Streaming

- (i) [Low Latency DASH based Streaming over LTE](#)""3
- (ii) [Probabilistic Chunk Scheduling Approach in Parallel Multiple-server DASH](#)""7
- (iii) [Towards Simple and Smooth Rate Adaption for VBR Video in DASH](#)"";
- (iv) [Communication-Efficient Multi-view Keyframe Extraction in Distributed Video Sensors](#)""35
- (v) [Re-weighting the Morphological Diversity](#)""39

## MO1B

### Quality of Experience

- (i) [Studying the Added Value of Computational Saliency in Objective Image Quality Assessment](#)""43
- (ii) [Foveation-Based Image Quality Assessment](#)""47
- (iii) [A Novel Objective Quality Assessment Method for Perceptual Video Coding in Conversational Scenarios](#)""4;
- (iv) [Optimized Spatial and Temporal Resolution based on Subjective Quality Estimation without Encoding](#)""55
- (v) [Blind Image Quality Assessment Based on a New Feature of Nature Scene Statistics](#)""59

## MO2A

### Image Processing 1

- (i) [Image Transformation using Limited Reference with Application to Photo-Sketch Synthesis](#)""63

- (ii) [A Novel Metric for Efficient Video Shot Boundary Detection](#)''''67
- (iii) [Hybrid Modeling of Natural Image in Wavelet Domain](#)''''6;
- (iv) [Discriminative Multi-modality Non-negative Sparse Graph Model for Action](#)''''75  
[Recognition](#)
- (v) [Intrinsic Flexibility Exploiting for Scalable Video Streaming over Multi-Channel](#)''''79  
[Wireless Networks](#)

## MO2B

### Multimedia Coding 1

- (i) [Non-separable mode dependent transforms for intra coding in HEVC](#)''''83
- (ii) [Four-step Algorithm for Early Termination in HEVC Inter-frame Prediction based](#)''''87  
[on Decision Trees](#)
- (iii) [Sample Adaptive Offset in AVS2 Video Standard](#)''''8;
- (iv) [Rate-distortion optimised transform competition for intra coding in HEVC](#)''''95
- (v) [Improved disparity vector derivation for inter-view residual prediction in 3D-](#)''''99  
[HEVC](#)

14:30 Poster Session – MP1- Auditorium Foyer

- (i) [Stereo Correspondence Using an Assisted Discrete Cosine Transform Method](#)''''': 3
- (ii) [Robust 3D LUT Estimation Method for SHVC Color Gamut Scalability](#)''''': 7
- (iii) [Variable Length Dominant Gabor Local Binary Pattern \(VLD-GLBP\) for Face](#)''''': ;  
[Recognition](#)
- (iv) [A Refined Object Detection Method Based on HTM](#)''''': 5
- (v) [Ultra High Definition Video Saliency Database](#)''''': 9

- (vi) [Patch-Based Image Deblocking Using Geodesic Distance Weighted Low-Rank Approximation](#)""323
- (vii) [Robust Image Registration using Adaptive Expectation Maximisation based PCA](#) ""327
- (viii) [Full Reference Image Quality Metric for Stereo Images Based on Cyclopean Image Computation and Neural Fusion](#)""32;
- (ix) [Derived Disparity Vector Based NBDV for 3D-AVC](#)""335
- (x) [Tagged Multi-hypothesis Motion Compensation Scheme for Video Coding](#) ""339
- (xi) [Simplified Depth-based Block Partitioning and Prediction Merging in 3D Video Coding](#)""343
- (xii) [Synthesis-Guided Depth Super Resolution](#)""347
- (xiii) [Independent Uniform Prediction Mode for Screen Content Video Coding](#)""34;
- (xiv) [Statistical Metric Fusion for Image Quality Assessment](#)""355
- (xv) [A Complexity Reduction Algorithm for Depth Maps Intra Prediction on the 3D-HEVC](#)""359
- (xvi) [Gradient Based Image/Video SoftCast with Grouped-Patch Collaborative Reconstruction](#)""363

## **MO3A**

### **Systems and Human Interaction**

- (i) [DLP Based Anti-piracy Display System](#)""367
- (ii) [Improving a Vision Indoor Localization System by a Saliency-Guided Detection](#)""36;
- (iii) [Robust Rigid Registration of CT to MRI Volumes using the SCV Similarity Measure](#)""375
- (iv) [Kinship Classification based on Discriminative Facial Patches](#)""379

- (v) [Growcut-based Drusen Segmentation for Age-related Macular Degeneration Detection](#)''''383

## **MO3B**

### **Multiview and FreeView 1**

- (i) [View Synthesis Prediction via Motion Field Synthesis for 3D Video Coding](#)''''387
- (ii) [Depth Inference with Convolutional Neural Network](#)''''38;
- (iii) [Fast and smooth 3D reconstruction using multiple RGB-Depth sensors](#)''''395
- (iv) [Spatio-Temporal Coherence for 3-D View Synthesis with Curve-Based Disparity Warping](#)''''399
- (v) [Subjective Evaluation and Statistical Analysis for Improved Frame-loss Error Concealment of 3D Videos](#)''''3: 3

## **TO1A**

### **Multimedia Coding 2**

- (i) [Intra-frame Coding with Recursive Intra Prediction and Adapted Block Transforms](#)''''3: 7
- (ii) [1-D Dictionary Mode for Screen Content Coding](#)''''3: ;
- (iii) [Optimal Reconstruction for a HEVC Backward Compatible Distributed Scalable Video Codec](#)''''3; 5
- (iv) [An Area-Efficient 4/8/16/32-Point Inverse DCT Architecture For UHDTV HEVC Decoder](#)''''3; 9
- (v) [Improved Weighted Prediction for Color Gamut Scalability in SHVC](#)''''423

10:30 Oral Session – TO1B – Meeting Room 1

### **Embedded Systems**

- (i) [A Hardware-oriented IME Algorithm and Its Implementation for HEVC](#)''''427
- (ii) [A Cost-efficient Hardware Architecture of Deblocking Filter in HEVC](#)''''42;

- (iii) [A Single Octave SIFT Algorithm for Image Feature Extraction in Resource Limited Hardware Systems](#)''''435
- (iv) [Accelerated Hybrid Image Reconstruction for Non-Regular Sampling Color Sensors](#)''''439
- (v) [An embedded real-time hands free control of an electrical wheelchair](#)''''443

## **TO2A**

### **Complexity Control**

- (i) [Complexity Control of HEVC Based on Region-of-Interest Attention Model](#)''''447
- (ii) [Complexity Reduction of Depth Intra Coding for 3D Video Extension of HEVC](#)''''44;
- (iii) [Effective H.264/AVC to HEVC Transcoder based on Prediction Homogeneity](#)''''455
- (iv) [A Fast Background Model Based Surveillance Video Coding in HEVC](#)''''459
- (v) [A Fast Intra Optimization Algorithm for HEVC](#)''''463

## **TO2B**

### **Image Processing 2**

- (i) [Face Image Processing by TV Filter and Super-Resolution](#)''''467
- (ii) [Person Re-Identification via Region-of-Interest based Features](#)''''46;
- (iii) [A Proposed Accelerated Image Copy-Move Forgery Detection](#)''''475
- (iv) [Two-Dimensional Histogram Expansion of Wavelet Coefficient for Reversible Data Hiding](#)''''47:
- (v) [Scalar-quantization-based Multi-layer Data Hiding for Video Coding Applications](#)''''484

## **TP1**

- (i) [Reducing Randomness of Non-Regular Sampling Masks for Image Reconstruction](#)''''488

- (ii) [A Joint 3D Image Semantic Segmentation and Scalable Coding Scheme with ROI](#)<sup>492</sup>  
[Approach](#)
- (iii) [Efficient Depth Propagation in Videos with GPU-acceleration](#)<sup>496</sup>
- (iv) [A case study for tele-immersion communication applications: from 3D capturing](#)<sup>49</sup>:  
[to rendering](#)
- (v) [Flexible CTU-level Parallel Motion Estimation by CPU and GPU Pipeline for](#)<sup>4</sup>: 4  
[HEVC](#)
- (vi) [GPU-Aided Real-Time Image/Video Super Resolution Based on Estimation Error](#)<sup>4</sup>: 8
- (vii) [Depth Estimation by Combining Stereo Matching and Coded Aperture](#)<sup>4</sup>: 3
- (viii) [Multiview Video Representations for Quality-Scalable Navigation](#)<sup>4</sup>: 7
- (ix) [Sample Adaptive Offset Filter Hardware Design for HEVC Encoder](#)<sup>4</sup>; ;
- (x) [End to End Video Distortion Estimation with Advanced Error Concealment](#)<sup>525</sup>  
[Considerations](#)
- (xi) [Accurate stereo 3D point cloud generation suitable for multi-view stereo](#)<sup>529</sup>  
[reconstruction](#)
- (xii) [A Parallel Huffman Coder on the CUDA Architecture](#)<sup>533</sup>
- (xiii) [Intraband Wavelet-Based Coding of Arbitrary Triangular Meshes](#)<sup>537</sup>

## **TD1**

- (i) [A Low-latency Peer-to-Peer Live and VOD Streaming System Based on Scalable](#)<sup>53</sup>;  
[Video Coding](#)
- (ii) [A Novel Distributed Compressive Video Sensing Based on Hybrid Sparse Basis](#)<sup>542</sup>
- (iii) [A Reconfiguration System for Video Decoder](#)<sup>546</sup>
- (iv) [Demo: DLP Based Anti-piracy Display System](#)<sup>547</sup>
- (v) [Real-time Air Quality Estimation Based on Color Image Processing](#)<sup>548</sup>

## TO3A

### Visual Communications 1

- (i) [Tag-Based Social Image Search with Hyperedges Correlation](#)''''552
- (ii) [Improving Deep Neural Networks with Multilayer Maxout Networks](#)''''556
- (iii) [Packet Scheduling in MultiCamera Capture Systems](#)''''55:
- (iv) [Spatial Pyramid VLAD](#) ''''564
- (v) [Online Video Object Classification Using Fast Similarity Network Fusion](#)''''568

## TO3B

### Image Processing 3

- (i) [A New Frame Interpolation Method With Pixel-level Motion Vector Field](#)''''572
- (ii) [An Efficient Framework for Image Interpolation Using Weighted Surface Approximation](#) ''''576
- (iii) [Automatic Denoising Parameter Estimation using Gradient Histograms](#)''''57:
- (iv) [Accurate Image Noise Level Estimation by High Order Polynomial Local Surface Approximation and Statistical Inference](#)''''584
- (v) [Learning Adaptive Filter Banks for Hierarchical Image Representation](#)''''588

## WO1A

### Multiview and FreeView2

- (i) [Solving dense stereo matching via quadratic programming](#)''''592
- (ii) [A Fast Coding Algorithm Based on Inter-View Correlations for 3D-HEVC](#)''''596
- (iii) [Implementation of Fast Free-Viewpoint Video Rendering on Graphics Processing Units](#)''''59:
- (iv) [Adaptive frame level Rate Control in 3D-HEVC](#)''''5: 4



- (v) [Depth Map Super-resolution Via Iterative Joint-Trilateral-Upsampling](#)''''5: 8

## **WO1B**

- (i) [Fast Intra Partition Algorithm for HEVC Screen Content Coding](#)''''5; 2
- (ii) [Fast Mode Decision Method for All Intra Spatial Scalability in SHVC](#)''''5; 6
- (iii) [Efficient Lossless Coding of Highpass Bands from Block-based Motion](#)''''5; :  
[Compensated Wavelet Lifting Using JPEG 2000](#)
- (iv) [Video Compressive Sensing via Structured Laplacian Modelling](#)''''624
- (v) [Insights into the Role of Feedbacks in the Tracking Loop of a Fall-detection](#)''''628  
[Algorithm](#)

## **WO2A**

### **Multiview and FreeView 3**

- (i) [Joint Depth and Texture Filtering Targeting MVD Compression](#)''''632
- (ii) [Fusion Side Information Based on Feature and Motion Extraction for Distributed](#)''''636  
[Multiview Video Coding](#)
- (iii) [Using 3D Structural Tensors in Quality Evaluation of Stereoscopic Video](#)''''63:
- (iv) [Edge-aware Depth Completion for Point-based 3D Scene Visualization on an](#)''''644  
[RGB-D Camera](#)
- (v) [Depth Coding using Depth Discontinuity Prediction and in-loop Boundary](#)''''648  
[Reconstruction Filtering](#)

## **WO2B**

### **Image Processing 4**

- (i) [UDCT Complex Coefficient Statistics Based Rotation Invariant Texture](#)''''652  
[Characterization](#)
- (ii) [Region-of-Unpredictable Determination for Accelerated Full-Frame Feature](#)''''656  
[Generation in Video Sequences](#)
- (iii) [Layer-based Image Completion by Poisson Surface Reconstruction](#)''''65:

- (iv) [A New Framework for Image Impulse Noise Removal with Postprocessing](#)''''664
- (v) [Temporarily Static Object Detection in Surveillance Video Using Double Foregrounds and Superpixels](#)''''668

## WP1

- (i) [Fast CU Splitting and Pruning Method Based on Online Learning for Intra Coding In HEVC](#)''''672
- (ii) [Information Security Display via Uncrowded Window](#)''''676
- (iii) [Fast Algorithm of Coding Unit Depth Decision for HEVC Intra Coding](#)''''67:
- (iv) [Fast Multiple-view Denoising Based on Image Reconstruction by Plane Sweeping](#)''''684
- (v) [D-mago: A Novel Visual Entity for Storing Emotional Feeling with Visual Imprint](#)''''688
- (vi) [Sharpening filter for interlayer prediction](#)''''692
- (vii) [Multispectral demosaicking algorithm based on inter-channel correlation](#)''''696
- (viii) [An Adaptive Symmetry Detection Algorithm Based on Local Features](#)''''69:
- (ix) [Content-adaptive Depth Map Enhancement Based on Motion Distribution](#)''''6: 4
- (x) [Key view selection in distributed multiview coding](#)''''6: 8
- (xi) [Visual Saliency Guided Mode Decision in Video Compression Based on Laplace Distribution of DCT Coefficients](#)''''6; 2
- (xii) [Disocclusion Hole-Filling in DIBR-Synthesized Images using Multi-Scale Template Matching](#)''''6; 6
- (xiii) [Fast hierarchical cost volume aggregation for stereo-matching](#)''''6; :
- (xiv) [Analysis and Optimization of x265 Encoder](#)''''724
- (xv) [Avoiding Weak Parameters in Secret Image Sharing](#)''''728

## WO3A

### Visual Communications 3

- (i) [Fast Intra Mode Decision for HEVC Based on Texture Characteristic from RMD and MPM](#)''''732
- (ii) [Depth-map Driven Planar Surfaces Detection](#)''''736
- (iii) [Dynamic Redundancy Allocation for Video Streaming using Sub-GOP based FEC Code](#)''''73:
- (iv) [Fast and viewpoint robust human detection in uncluttered environments](#) ''''744
- (v) [Adaptive Segmentation-based Filtering of Reference Samples for Intra Prediction](#)''''748

## WO3B

### Multimedia Coding 3

- (i) [A Unified Framework of Hash-based Matching for Screen Content Coding](#)''''752
- (ii) [Statistical Reconstruction for Predictive Video Coding](#) ''''756
- (iii) [Lossless Compression of JPEG Coded Photo Albums](#) ''''75:
- (iv) [Comparative Study of 8 and 10-bit HEVC Encoders](#) ''''764
- (v) [A New Convex Optimization-based Two-pass Rate Control Method for Object Coding in AVS](#) ''''768