MMSP 2010

2010 IEEE International Workshop on Multimedia Signal Processing

Technical Program

Time	Amphi Maupertuis	Espace Lamennais
Monday, October 4		
08:30-09:30	Plen1: *Protected Video Distribution in the Networked Age*	
09:30-10:50	SS1: *Fingerprinting based multimedia content management and security*	P1: *Audio and Speech Processing*
11:10-12:30	L1: *Immersive communications and systems*	
14:00-14:50	Plen2: *Telepresence: from Virtual to Reality*	
14:50-16:10	L2: *Sparse representations and compressed sensing*	P2: *Virtual Reality Signal Processing*
16:30-17:30		D1: *Demo session*
Tuesday, October 5		
08:30-09:30	Plen3: *High Definition Communication - What it takes to implement it and what difference does it make?*	
09:30-10:50	L3: *Audio processing*	P3: *Video coding*
11:10-12:30	SS2: *Virtual Worlds and multisensorial experience*	
14:00-14:50	Plen4: *Signal Processing Based Research Issues in 3DTV*	
14:50-16:10	L4: *Joint source channel coding / error control*	P4: *Distributed Source Coding*
Wednesday, October 6		
08:30-09:30	Plen5: *Interactive Digital Art, a need for authoring tools to orchestrate the multimodal interaction between spectators and Art pieces*	
09:30-10:50	L5: *Virtual Reality*	P5: *Media delivery and quality evaluation*
11:10-12:30	L6: *Scene analysis for immersive telecommunication*	
14:00-14:50	Plen6: *On the sampling and compression of the plenoptic function*	
14:50-16:10	L7: *Multimedia for communication and collaboration*	P6: *Object/pattern detection, classification and recognition*
16:30-17:30	D2: *Panel session: virtual reality for future immersive communications and emerging applications*	

Monday, October 4

Room: Amphi Maupertuis

08:30 - 09:30

Plen1: Protected Video Distribution in the Networked Age

Chair: Beatrice Pesquet-Popescu (Télécom ParisTech, France)

Ton Kalker, IEEE Fellow, HP Labs

The way in which professional music is distributed and consumed has changed dramatically over the last 10 years. For this transitional period, the three key concepts that stand-out are Napster, iPod and Digital Rights Management (DRM). Currently, we have arrived at a stable situation where most of the digital audio distribution is controlled by a

single retailer, and digital music is no longer encumbered by DRM. However, it is unclear that the distribution and consumption of professional digital video will follow the path of digital music. It might very well be that the future of digital video will include a strong DRM component. Why this might be the case, what form distribution of digital video will take, and why the inclusion of DRM might be less controversial than feared, will be the topic of this talk.

09:30 - 10:50

SS1: Fingerprinting based multimedia content management and security

Chairs: Sviatoslav Voloshynovskiy (University of Geneva, Switzerland), Oleksiy Koval (University of Geneva, Switzerland)

9:30 Considering Security and Robustness Constraints for Watermark-based Tardos Fingerprinting
Benjamin Mathon (Gipsa-lab INPG, France); Patrick Bas (GIPSA, France); Francois Cayre (Gipsa-Lab, INP Grenoble, France); Benoit M. Macq (Université catholique de Louvain, Belgium)

9:50 Challenging the Security of Content Based Image Retrieval Systems
Thanh-Toan Do (INRIA Rennes, France); Ewa Kijak (IRISA-Université Rennes 1, France); Teddy Furon (INRIA Rennes - Bretagne Atlantique, France); Laurent Amsaleg (IRISA-CNRS, France)

10:10 Private Content Identification: performance-privacy-complexity trade-off
Sviatoslav Voloshynovskiy (University of Geneva, Switzerland); Oleksiy Koval (University of Geneva, Switzerland); Fokko Beekhof (University of Geneva, Switzerland); Farzad Farhadzadeh (University of Geneva, Switzerland); Taras Holotyak (University of Geneva, Switzerland)

10:30 Identification Based on Digital Fingerprinting: What Can Be Done if ML Decoding Fails?
Farzad Farhadzadeh (University of Geneva, Switzerland); Sviatoslav Voloshynovskiy (University of Geneva, Switzerland); Oleksiy Koval (University of Geneva, Switzerland)

11:10 - 12:30

L1: Immersive communications and systems

Chair: John Apostolopoulos (Hewlett-Packard Labs, USA)

11:10 Fusion of Active and Passive Sensors for Fast 3D Capture
Qingxiong Yang (University of Illinois at Urbana-Champagin, USA); Kar-Han Tan (Hewlett-Packard, USA); Bruce Culbertson (Hewlett-Packard Laboratories, USA); John Apostolopoulos (Hewlett-Packard Labs, USA)

11:30 Robust Foreground Segmentation for GPU Architecture in an Immersive 3D
Jaume Civit (Telefonica Research, Spain); Oscar Divorra Escoda (Telefonica Research, Spain)

11:50 Rate-Distortion Optimized Low-Delay 3D Video Communications
Enrico Masala (Politecnico di Torino, Italy)

12:10 Hierarchical Hole-Filling (HHF): Depth Image Based Rendering without Depth Map Filtering for 3D-TV
Mashhour Solh (Georgia Institute of Technology, USA); Ghassan AlRegib (Georgia Institute of Technology, USA)

Room: Espace Lamennais

09:30 - 10:50

P1: Audio and Speech Processing

Chair: Yves Grenier (Télécom ParisTech, France)

A comparative study between different pre-whitening decorrelation based acoustic feedback cancellers
Kawther Essafi (Ecole Supérieure des Communications, Tunisia); Sofia BenJebara (Ecole Superieure des Communications de Tunis, Tunisia)

Improving Multiple-F0 Estimation by Onset Detection for Polyphonic Music Transcription
Francisco Canadas-Quesada (University of Jaen, Spain); Francisco Jose Rodriguez-Serrano (University of Jaen, Spain); Pedro Vera-Candeas (University of Jaen, Spain); Nicolas Ruiz Reyes (University of Jaen, Spain); Julio Jose Carabias-Orti (University of Jaen, Spain)

Geometric calibration of distributed microphone arrays from acoustic source correspondences
Daniele Valente (Politecnico di Milano, Italy); Marco Tagliasacchi (Politecnico di Milano, Italy); Fabio Antonacci (Politecnico di Milano, Italy); Paolo Bestagini (Politecnico di Milano, Italy); Augusto Sarti (Politecnico di Milano, Italy); Stefano Tubaro (Politecnico di Milano, Italy)

A Weighted Approach of Missing Data Technique in Cepstra Domain Based on S-function
Pei Yi (Tsinghua University, P.R. China)

Integrating a HRTF-based Sound Synthesis System into Mumble
Martin Rothbucher (Technische Universität München, Germany); Tim Habigt (Technische Universität München, Germany); Johannes Feldmaier (Technische Universität München, Germany); Klaus Diepold (Technische Universität München, Germany)

Enhancing Stereophonic Teleconferencing with Microphone Arrays through Sound Field Warping
Wei-Ge Chen (Microsoft Research, USA); Zhengyou Zhang (Microsoft, USA)

Enhancing Loudspeaker-based 3D Audio with Room Modeling
Myung-Suk Song (Yonsei University, Korea); Cha Zhang (Microsoft Research, USA); Dinei Florencio (Microsoft Research, USA); Hong-Goo Kang (Yonsei University, Korea)

Visibility-Based Beam Tracing for Soundfield Rendering
Dejan Markovic (Politecnico di Milano, Italy); Antonio Canclini (Politecnico di Milano, Italy); Fabio Antonacci (Politecnico di Milano, Italy); Augusto Sarti (Politecnico di Milano, Italy); Stefano Tubaro (Politecnico di Milano, Italy)

Room: Amphi Maupertuis

14:00 - 14:50

Plen2: Telepresence: from Virtual to Reality

Chair: Eckehard Steinbach (Munich University of Technology, Germany)

Phil Chou, IEEE Fellow, Microsoft Research

The teleconferencing industry newsletter Wainhouse Report defines Telepresence as "a videoconferencing experience that creates the illusion that the remote participants are in the same room with you." Today Telepresence is embodied in the marketplace by solutions such as HP Halo and Cisco Telepresence, dedicated conference rooms sporting built-in furniture and life-sized high-definition video, costing hundreds of thousands of dollars per room. In the future, Telepresence systems will be more diverse, enabling connections between not only meeting rooms but also offices, hotel rooms, vehicles, and even large unstructured spaces such as conference halls and stadiums. Mixed reality as well as ubiquitous computing - including robotics - will play key roles, because these systems will not only need to immerse the participants in a common world, but will also need to empower the participants in ways that are better than being physically present. In this talk, I will take you on a tour of various component technologies as well as experiences that are being developed in Microsoft Research for the future of Telepresence. Along the way will be evident many opportunities for advances in multimedia signal processing.

14:50 - 16:10

L2: Sparse representations and compressed sensing

Chair: Hayder Radha (Michigan State University, USA)

14:50 The Iteration Tuned Dictionary for Sparse Representations
Joaquin Zepeda (INRIA, France); Christine Guillemot (INRIA, France); Ewa Kijak (IRISA-Université Rennes 1, France)

15:10 Hybrid Compressed Sensing of Images
Abdolreza Abdolhosseini Moghadam (Michigan State University, USA); Hayder Radha (Michigan State University, USA)

15:30 Compressive Demosaicing
Abdolreza Abdolhosseini Moghadam (Michigan State University, USA); Mohammad Aghagolzadeh (Michigan State University, USA); Hayder Radha (Michigan State University, USA); Mrityunjay Kumar (Eastman Kodak Company, USA)

15:50 Multistage Compressed-Sensing Reconstruction of Multiview Images
Maria Trocan (ISEP, France); Thomas Maugey (TELECOM ParisTech, France); Eric Tramel (Mississippi State University, USA); James Fowler (Mississippi State University, USA); Beatrice Pesquet (Telecom Paristech, France)

Room: Espace Lamennais

14:50 - 16:10

P2: Virtual Reality Signal Processing

Chair: Mohamed Daoudi (LIFL (UMR USTL/CNRS 8022), University of Lille, France)

Robust Head Pose Estimation by Fusing Time-of-Flight Depth and Color
Amit Bleiweiss (Hebrew University of Jerusalem, Israel); Michael Werman (Hebrew University of Jerusalem, Israel)

Optimized decomposition basis using Lanczos filters for lossless compression of biomedical images
Jonathan Taquet (INRIA, France); Claude Labit (INRIA/Irisa, France)

A new image projection method for panoramic image stitching
Beom Su Kim (Seoul National University, Korea)

Fast Environment Extraction for Lighting and Occlusion of Virtual Objects in Real Scenes
François Fouquet (University of Lyon, France); Jean-Philippe Farrugia (University of Lyon, France); Brice Michoud (LIRIS - CNRS - Université Lyon 1, France); Sylvain Brandel (University of Lyon, France)

Real-Time Particle Filtering with Heuristics for 3D Motion Capture by Monocular Vision
David Gomez (Telecom SudParis, France)

Bilateral Depth-Discontinuity Filter for Novel View Synthesis
Ismaël Daribo (Keio University, Japan); Hideo Saito (Keio University, Japan)

Spectral EEG Features and Tasks Selection Process: Some Considerations toward BCI Applications
Monica Claudia Dobrea ("Gh. Asachi" Technical University, Romania); Dan Marius Dobrea (Technical University "Gh. Asachi", Romania)

Color Transfer for Complex Content Images Based on Intrinsic Component
Wan-Chien Chiou (National Tsing Hua University, Taiwan); Yi-Lei Chen (National Tsing Hua University, Taiwan); Chiou-Ting Hsu (National Tsing Hua University, Taiwan)

Clickable Augmented Documents
Sandy Martedi (Keio University, Japan); Hideaki Uchiyama (Keio University, Japan); Hideo Saito (Keio University, Japan)

Depth-aided image inpainting for Novel View Synthesis
Ismaël Daribo (Keio University, Japan); Beatrice Pesquet (Telecom Paristech, France)

Robust Background Subtraction Method Based on 3D Model Projections with Likelihood

Hiroshi Sankoh (KDDI R&D Laboratories Inc., Japan); Akio Ishikawa (KDDI R&D Laboratories Inc., Japan); Sei Naito (KDDI R&D Laboratories Inc., Japan); Shigeyuki Sakazawa (KDDI R&D Laboratories, Japan)

16:30 - 17:30

D1: Demo session

Chair: Thomas Guionnet (Envivio, France)

Tuesday, October 5

Room: Amphi Maupertuis

08:30 - 09:30

Plen3: High Definition Communication - What it takes to implement it and what difference does it make?

Chair: Yves Grenier (Télécom ParisTech, France)

Bernhard Grill, Audio Department, Fraunhofer Institute for Integrated Circuits IIS

The audio quality of voice connections has remained virtually unchanged for more than 100 years. In most cases the audio bandwidth is still constrained to 3.5 kHz and nobody should expect to recognize, by listening to the sound, what is going on in the background of a call. With IP connections being used more and more for voice communication several attempts are now made to improve the situation. Some propose to considerably increase the audio bandwidth while others go as far as to promote communication in "CD-Quality" which could even include stereo or multi channel audio to fully transmit the accoustical image of the background of the speaker. What are the benefits to the user and what does it take to implement such services, as far as the audio components are concerned? This talk will try to give an overview about various systems proposed and what difference they can provide in user experience.

09:30 - 10:50

L3: Audio processing

Chair: Marco Tagliasacchi (Politecnico di Milano, Italy)

9:30 Unsupervised Detection of Multimodal Clusters in Edited Recordings
Alfred Dielmann (IDIAP - Research Institute, Switzerland)
9:50 Probabilistic framework for template-based chord recognition
Laurent Oudre (TELECOM ParisTech, France); Cédric Févotte (CNRS LTCI; TELECOM ParisTech, France); Yves Grenier (Télécom ParisTech, France)
10:10 Parametric stereo extension of ITU-T G.722 based on a new downmixing scheme
Thi Minh Nguyet Hoang (Orange Labs, France); Stéphane Ragot (France Télécom R&D, France); Balazs Kövesi (France Télécom R&D, France); Pascal Scalart (University of Rennes, France)
10:30 Fitting Pinna-Related Transfer Functions to Anthropometry for Binaural Sound Rendering
Simone Spagnol (Università di Padova, Italy); Michele Geronazzo (Università di Padova, Italy); Federico Avanzini (University of Padova, Italy)

11:10 - 12:30

SS2: Virtual Worlds and multisensorial experience

Chair: Marius Preda (Télécom SudParis, France)

11:10 Controlling virtual world by the real world devices with an MPEG-V framework
Seungju Han (Samsung Advanced Institute of Technology, Korea); Jae-Joon Han (Samsung Advanced Institute of Technology, Korea); Won-Chul Bang (Samsung Advanced Institute of Technology, Korea); James D. K. Kim (Samsung Advanced Institute of Technology, Korea); Changyeong Kim (Samsung Advanced Institute of Technology, Korea)
11:30 4-D Broadcasting with MPEG-V
Kyoungro Yoon (Konkuk University, Korea); BumSuk Choi (ETRI, Korea); Eun Seo Lee (ETRI, Korea); Tae Beom Lim (KETI, Korea)
11:50 Avatars interoperability in Virtual Worlds
Blagica Jovanova (Institut TELECOM, France); Marius Preda (INT, France)
12:10 Audio-haptic physically based simulation and evaluation of walking sounds
Stefania Serafin (Aalborg University Copenhagen, Denmark)

Room: Espace Lamennais

09:10 - 10:50

P3: Video coding

Chair: Kenneth Rose (University of California, Santa Barbara, USA)

Reference Frame Modification Methods in Scalable Video Coding (SVC)
Amir Naghdinezhad (McGill University, Canada); Fabrice Labeau (McGill University, Canada)

Motion Vector Forecast and Mapping (MV-FMap) Method for Entropy Coding based Video Coders
Julien Le Tanou (Orange Labs, France); Jean-Marc Thiesse (Orange Labs, France); Joel Jung (Orange, France); Marc Antonini (I3S-CNRS-University of Nice Sophia Antipolis, France)

Optimal mode switching for multi-hypothesis motion compensated prediction
Ramdas B Satyan (McGill University, Canada); Fabrice Labeau (McGill University, Canada); Kenneth Rose (University of California, Santa Barbara, USA)

Data hiding of Motion Information in Chroma and Luma Samples for Video Compression
Jean-Marc Thiesse (Orange Labs, France); Joël Jung (France Telecom R&D, France); Marc Antonini (I3S-CNRS-University of Nice Sophia Antipolis, France)

Motion Vector Coding Algorithm Based on Adaptive Template Matching
Wen Yang (The Hong Kong University of Science and Technology, Hong Kong)

Efficient MV Prediction for Zonal Search In Video Transcoding
Sylvain Marcelino (Polytechnic Institute of Leiria / Instituto de Telecomunicacões Leiria, Portugal)

Bit Allocation and Encoded View Selection for Optimal Multiview Image Representation
Gene Cheung (National Institute of Informatics, Japan); Vladan Velisavljevic (Deutsche Telekom Laboratories, Germany)

H.264-Based Multiple Description Coding Using Motion Compensated Temporal Interpolation
Claudio Greco (TELECOM ParisTech, France); Marco Cagnazzo (TELECOM ParisTech, France); Beatrice Pesquet-Popescu (Télécom ParisTech, France)

Optimizing the free distance of Error-Correcting Variable-Length Codes
Amadou Diallo (L2S - CNRS - SUPELEC è Univ Paris-Sud., France); Claudio Weidmann (Vienna University of Technology, Austria); Michel Kieffer (L2S - CNRS - SUPELEC - Univ Paris-Sud, France)

Room: Amphi Maupertuis

14:00 - 14:50

Plen4: Signal Processing Based Research Issues in 3DTV

Chair: Christine Guillemot (INRIA, France)

Levent Onural, IEEE Fellow, Bilkent University

A typical 3DTV chain has capture, representation, compression, transmission, display interface and display stages. Each stage has its own specific nature and problems. And there are many alternative technologies for implementing each of these functional units. Signal processing tools play an important role in each such stage. The capture unit deals with difficult video data fusing problems. The post capture signal processing needs may range from nil in simplest 3DTV operations to demanding time-varying 3D model generation in sophisticated ones. Coding and compression of 3DTV video has its own specific nature and solutions. Probably the most complicated and demanding signal processing is at the display interface stage since 3D displays are quite different than 2D displays, and furthermore, since 3D displays come in many different forms. There are signal processing needs even within the camera and displays units. Among all different 3D modes, true 3D versions whichtarget physical duplication of information carrying light, such asholography and integral imaging, have their own rich signal processing needs. The signal processing problems associated especially with holographic 3DTV are unique and by far more demanding, and therefore, has the potential to trigger a new line of sophisticated signal processing techniques and associated mathematics.

14:50 - 16:10

L4: Joint source channel coding / error control

Chair: Vladimir Stankovic (University of Strathclyde, United Kingdom)

14:50 Recovering the Output of an OFB in the case of Instantaneous Erasures in Sub-band Domain
Mohsen Akbari (McGill University, Canada); Fabrice Labeau (McGill University, Canada)

15:10 Unequal Error Protection Random Linear Coding for Multimedia Communications
Dejan Vukobratovic (University of Strathclyde, United Kingdom); Vladimir Stankovic (University of Strathclyde, United Kingdom)

15:30 Joint Source Channel Coding/Decoding of 3D-Escot bitstreams
Manel Abid (Télécom ParisTech, France); Michel Kieffer (L2S - CNRS - SUPELEC - Univ Paris-Sud, France); Beatrice Pesquet (Telecom Paristech, France)

15:50 Efficient Error Control in 3D Mesh Coding
Dan Cernea (Vrije Universiteit Brussel, Belgium); Adrian Munteanu (Vrije Universiteit Brussel, Belgium); Peter Schelkens (Vrije Universiteit Brussel, Belgium); Francisco Morán Burgos (Universidad Politécnica de Madrid, Spain)

Room: Espace Lamennais

14:50 - 16:10

P4: Distributed Source Coding

Chair: Soren Forchhammer (Technical University of Denmark, Denmark)

Side information enhancement using an adaptive hash-based genetic algorithm in a Wyner-Ziv context
Thomas Maugey (TELECOM ParisTech, France); Charles Yaacoub (Holy-Spirit University of Kaslik, Lebanon); Joumana Farah (Holy-Spirit University of Kaslik, Lebanon); Marco Cagnazzo (TELECOM ParisTech, France); Beatrice Pesquet-Popescu (Télécom ParisTech, France)

On Joint Distribution Modeling in Distributed Video Coding Systems
Yevgeny Priziment (Technion, Israel); David Malah (Technion - Israel Institute of Technology, Israel)

Side Information Refinement for Long Duration GOPs in DVC
Giovanni Petrazzuoli (Télécom ParisTech, France); Thomas Maugey (TELECOM ParisTech, France); Marco Cagnazzo (TELECOM ParisTech, France); Beatrice Pesquet-Popescu (Télécom ParisTech, France)

Reducing DVC Decoder Complexity in a Multicore System
Alberto Corrales-Garcia (University of Castilla-La Mancha, Spain); J L Martínez (University of Castilla La Mancha, Spain); Gerardo Fernandez-Escribano (Instituto de Investigación en Informática de Albacete, Spain)

Toward Realtime Side Information Decoding on Multi-core Processors
Svetislav Momcilovic (INESC-ID/UTLisbon, Portugal); Yige Wang (MERL, USA); Shantanu Rane (Mitsubishi Electric Research Laboratories, USA); Anthony Vetro (Mitsubishi Electic Research Laboratories, USA)

Scalable-to-Lossless Transform Domain Distributed Video Coding
Xin Huang (Technical University of Denmark, Denmark); Anna Ukhanova (Technical University of Denmark, Denmark); Anton Veselov (Saint-Petersburg State University of Aerospace Instrumentation, Russia); Soren Forchhammer (Technical University of Denmark, Denmark); Marat Gilmutdinov (Saint-Petersburg State University of Aerospace Instrumentation, Russia)

Encoder Rate Control for Block-based Distributed Video Coding
Chen Fu (Illinois Institute of Technology, USA); Joohee Kim (Illinois Institute of Technology, USA)

Encoder and Decoder Side Global and Local Motion Estimation for Distributed Video Coding
Frederic Dufaux (Telecom ParisTech and CNRS, France); Touradj Ebrahimi (EPFL, Switzerland)

Spatial intra-prediction based on mixtures of sparse representations
Angelique Dremeau (INRIA, France); Mehmet Turkan (INRIA, France); Cédric Herzet (INRIA Rennes, France); Christine Guillemot (INRIA, France); Jean-Jacques Fuchs (irisa/université de Rennes, France)

Wednesday, October 6

Room: Amphi Maupertuis

08:30 - 09:30

Plen5: Interactive Digital Art, a need for authoring tools to orchestrate the multimodal interaction between spectators and Art pieces

Chair: Christine Guillemot (INRIA, France)

Stéphane Donikian, Inria Rennes Bretagne Atlantique

Interactive poly-artistic works is a type of expression becoming increasingly common nowadays. Consequently, users, specta(c)tors, expect more and more to play an active part in these works. Such creations always require the use of a wide range of techno-logies (3D video and audio display, video and audio synthesis, body trackingÿ), and a large number of computer environments, software and frameworks have been created to fulfill these needs. However, despite this important profusion in terms of technical tools, several issues remain unsolved when realizing such artistic works. First, in the context of collaborative arts, existing frameworks do not provide means for con-ceptualizing art pie-ces for contributors coming from different artistic areas (composition, choreography, video, 3D graphicsÿ). Second, establishing communications between software or hardware components is often complicated. Finally, the communication process and its language have to be redefined from scratch for each new realization. We will introduce ConceptMove which is a unified paradigm for describing interactive poly-artistic works. In the second part of this talk we will focus on Interactive Storytelling, which can be regarded as a new genre, deriving both from interactive media such as video games and from narrative media such as cinema or litterature. Whatever degree of interactivity, free-dom, and non-linearity might be provided, the role that the interactor is assigned to play always has to remain inside the boundaries thus defined by the author, and which convey the essence of the work itself. This brings an extra level of complexity for writers, when tools at their disposal remain limited compared to technological evolutions.

09:30 - 10:50

L5: Virtual Reality

Chair: Marc Antonini (I3S-CNRS-University of Nice Sophia Antipolis, France)

9:30 Adaptive Semi-Regular Remeshing: A Voronoi-Based Approach

Aymen Kammoun (I3S-CNRS-University of Nice Sophia Antipolis, France); Frédéric Payan (I3S-CNRS-University of Nice Sophia Antipolis, France); Marc Antonini (I3S-CNRS-University of Nice Sophia Antipolis, France)

9:50 A subjective experiment for 3D-mesh segmentation evaluation
Halim Benhabiles (University of Lille, France, France); Guillaume Lavoué (LIRIS UMR 5205, Insa-Lyon, France); Mohamed Daoudi (LIFL (UMR USTL/CNRS 8022), University of Lille, France)

10:10 Depth camera based system for auto-stereoscopic displays
François de Sorbier (Keio University, Japan); Yuko Uematsu (Keio University, Japan); Hideo Saito (Keio University, Japan)

10:30 Generalized Multiscale Seam Carving
David D Conger (Michigan State University, USA); Mrityunjay Kumar (Eastman Kodak Company, USA); Hayder Radha (Michigan State University, USA)

11:10 - 12:30

L6: Scene analysis for immersive telecommunication

Chair: Peter Schelkens (Vrige Universiteit, Brussel, Belgium)

11:10 Movement recognition exploiting multi-view information
Alexandros Iosifidis (Aristotle University of Thessaloniki, Greece, Greece); Nikos Nikolaidis (Aristotle University of Thessaloniki, Greece); Ioannis Pitas (ARISTOTLE UNIVERSITY OF THESSALONIKI, Greece)

11:30 Generation of See-Through Baseball Movie from Multi-Camera Views
Takanori Hashimoto (Keio University, Japan); Yuko Uematsu (Keio University, Japan); Hideo Saito (Keio University, Japan)

11:50 Video Super-resolution for Dual-Mode Digital Cameras via Scene-matched Learning
Guangtao Zhai (McMasster University, Canada); Xiaolin Wu (McMaster University, Canada)

12:10 Gaussian Mixture Vector Quantization-Based Video Summarization Using Independent Component Analysis
Junfeng Jiang (Ryerson University, Canada); Xiao-Ping Zhang (Ryerson University, Canada)

Room: Espace Lamennais

09:30 - 10:50

P5: Media delivery and quality evaluation

Chair: Pascal Frossard (Swiss Federal Institute of Technology - EPFL, Switzerland)

An Objective Metric for Assessing Quality of Experience on Stereoscopic Images
Xing (Q2S-NTNU, Norway); Junyong You (Norwegian University of Science and Technology, Norway); Touradj Ebrahimi (EPFL, Switzerland); Andrew Perkis (NTNU, Norway)

Measuring Errors for Massive Triangle Meshes
Anis Meftah (I3S-CNRS-University of Nice Sophia Antipolis, France); Frédéric Payan (I3S-CNRS-University of Nice Sophia Antipolis, France); Marc Antonini (I3S-CNRS-University of Nice Sophia Antipolis, France); Arnaud Roquel (I3S-CNRS-University of Nice Sophia Antipolis, France)

Depth Consistency Testing for Improved View Interpolation
Pravin Kumar Rana (KTH Royal Institute of Technology, Sweden); Markus Flierl (KTH Royal Institute of Technology, Sweden)

Visual Quality of Current Coding Technologies at High Definition IPTV Bitrates
Christian Keimel (Technische Universität München, Germany); Julian Habigt (Technische Universität München, Germany); Tim Habigt (Technische Universität München, Germany); Martin Rothbucher (Technische Universität München, Germany); Klaus Diepold (Technische Universität München, Germany)

Error Concealment Considering Error Propagation inside a Frame
Jun Wang (Waseda University, Japan); Yichun Tang (The Graduate School of Information,Production and Systems,Waseda University, Japan); Hao Sun (Waseda University, Japan); Satoshi Goto (Waseda University, Japan)

A resilient and low-delay P2P streaming system based on network coding with random multicast trees
Marco Toldo (Politecnico di Torino, Italy); Enrico Magli (Politecnico di Torino, Italy)

An Improved Foresighted Resource Reciprocation Strategy for Multimedia Streaming Applications
Ester Gutiérrez (Universitat Politècnica de Catalunya, Spain); Hyunggon Park (Ewha Womans University, Korea); Pascal Frossard (Swiss Federal Institute of Technology - EPFL, Switzerland)

Strategies of Buffering Schedule in P2P VoD Streaming
Zhi Wang (Tsinghua University, P.R. China); Lifeng Sun (Tsinghua University, P.R. China); Shiqiang Yang (Tsinghua University, P.R. China)

QoE Based Adaptation Mechanism for Media Distribution in Connected Home
Jianfeng Chen (Corporate Research, Thomson Beijing, P.R. China); Jun Li (Thomson Inc., USA); Xiaojun Ma (Thomson Broadband R&D (Beijing) Co. Ltd, P.R. China)

Sigmoid Shrinkage for BM3D denoising algorithm
Mariana Poderico (Università Federico II, Italy); Sara Parrilli (University of Napoli, Italy); Giovanni Poggi (Università "Federico II" di Napoli, Italy); Luisa Verdoliva (University of Napoli, Italy)

Room: Amphi Maupertuis

14:00 - 14:50

Plen6: On the sampling and compression of the plenoptic function

Chair: Beatrice Pesquet-Popescu (Télécom ParisTech, France)

Pier Luigi Dragotti, Electrical and Electronic Engineering Department at Imperial College, London

Image based rendering (IBR) is a promising way to produce arbitrary views of a scene using images instead of object models. In IBR, new views are rendered by interpolating available nearby images. The plenoptic function, which describes the light intensity passing through every viewpoint in every directions and at all times, is a powerful tool to study the IBR problem. In fact, image based rendering can be seen as the problem of sampling and interpolating the plenoptic function.We therefore first briefly review some classical results on the spectral properties of the plenoptic function and then provide a closed-form expression for its bandwidth under the finite-field-of-view contraint. This naturally leads to an adaptive sampling strategy where the local geometrical complexity of the scene is used to adapt the sampling density of the plenoptic function. In this context, we also present an adaptive images-based-rendering algorithm based around an adaptive extraction of depth layers, where the rendering system automatically adapts the minimum number of depth layers according to the scene observed and to the spacing of the sample cameras. Finally, we discuss the problem of compressing the multiple images acquired for image-based rendering and present competitive centralized and distributed compression algorithms.This talk is based on work done with a number of collaborators, in particular, M. Brookes (ICL), C. Gilliam (ICL), A. Gelman (ICL), V. Velisavlievic (Deutsche Telekom) and J. Berent (Google inc.).

14:50 - 16:10

L7: Multimedia for communication and collaboration

Chair: Shantanu Rane (Mitsubishi Electric Research Laboratories, USA)

14:50 Face Hallucination Using Bayesian Global Estimation and Local Basis Selection
Chih-Chung Hsu (National Tsing Hua University, Taiwan); Chia-Wen Lin (National Tsing Hua University, Taiwan); Chiou-Ting Hsu (National Tsing Hua University, Taiwan); Mark Liao (Academia Sinica, Taiwan); Yu Jen-Yu (Industrial Technology Research Institute, Taiwan)

15:10 Real-Time Video Enhancement for High Quality Videoconferencing
Pavel Kisilev (HP Labs, Israel); Sagi Schein (HP Labs, Israel)

15:30 Spatial Synchronization of Audiovisual Objects by 3D Audio Object Coding
Banu Gunel (University of Surrey, United Kingdom); Erhan Ekmekcioglu (University of Surrey, United Kingdom); Ahmet Kondoz (University of Surrey, United Kingdom)

15:50 Overcoming Asynchrony in Audio-Visual Speech Recognition
Virginia Estellers (Ecole Polytechnique Federale de Lausanne, Switzerland); Jean-Philippe Thiran (Swiss Federal Institute of Technology (EPFL), Switzerland)

16:30 - 17:30

D2: Panel session: virtual reality for future immersive communications and emerging applications

Chair: Touradj Ebrahimi (EPFL, Switzerland)

Room: Espace Lamennais

14:50 - 16:10

P6: Object/pattern detection, classification and recognition

Chair: Enis Cetin (Bilkent University, Ankara, Turkey)

Common Spatial Pattern revisited by Riemannian geometry
Alexandre Barachant (Cea, Leti, DTBS/STD/LE2S, France); Stephane Bonnet (CEA-LETI, France); Marco Congedo (GIPSA-lab, France); Christian Jutten (GIPSA-Lab, France)

An N-gram model for unstructured audio signals toward information retrieval
Samuel Kim (University of Southern California, USA); Shiva Sundaram (Deutsche Telekom Laboratories, Germany); Panayiotis Georgiou (University of Southern California, USA); Shrikanth Narayanan (University of Southern California, USA)

An Efficient Framework on Large-scale Video Genre Classification
Ning Zhang (Ryerson University, Canada); Ling Guan (Ryerson University, Canada)

Time-Space Acoustical Feature for Fast Video Copy Detection
Yoshiaki Itoh (Iwate Prefectural University, Japan)

A Hierarchical Statistical Model For Object Classification
Ali Shojaee Bakhtiari (Concordia University, Canada); Nizar Bouguila (Concordia University, Canada)

A Bayesian Image Annotation Framework Integrating Search and Context
Rui Zhang (Ryerson University, Canada); Ling Guan (Ryerson University, Canada)

Human Emotion Recognition Using Real 3D Visual Features from Gabor Library
Yun Tie (Ryerson University, Canada); Ling Guan (Ryerson University, Canada)

Person Recognition using a bag of facial soft biometrics (BoFSB)
Antitza Dantcheva (EURECOM, France); Jean-Luc Dugelay (Institut EURECOM, France); Petros Elia (EURECOM, France)

Multimodal Speech Recognition of a Person with Articulation Disorders Using AAM and MAF
Chikoto Miyamoto (Kobe University, Japan); Yuto Komai (Kobe University, Japan); Tetsuya Takiguchi (Kobe University, Japan); Yasuo Ariki (Kobe University, Japan)

Object Tracking under Illumination Variations using 2D-Cepstrum Characteristics of the Target
Fuat Cogun (Bilkent University, Turkey); A. Enis Cetin (Bilkent University, Turkey)