



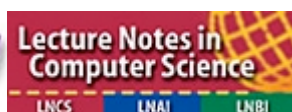
International Conference on Image and Signal Processing

ICISP 2016

May 30 – June 1, 2016

Trois-Rivières, Québec, Canada

CONFERENCE PROGRAM



Preface

ICISP 2016, the International Conference on Image and Signal Processing was the seventh ICISP conference, and was held in Trois-Rivières, Québec, Canada. Historically, ICISP is a conference resulting from the actions of researchers from Canada, France and Morocco. Previous editions of ICISP were held in Cherbourg-Octeville (France, 2014 and 2008), in Trois-Rivières, Québec (Canada, 2010), and in Agadir (Morocco, 2012, 2003 and 2001). ICISP 2016 is sponsored by EURASIP (European Association for Image and Signal Processing) and IAPR (International Association for Pattern Recognition).

The response to the call for papers for ICISP 2016 was encouraging. From 83 recorded submissions, 40 papers were finally accepted. The review process was carried out by the Program Committee members; all are experts in various image and signal processing areas. Each paper was reviewed by at-least two reviewers, and also checked by the conference co-chairs. The quality of the papers in these proceedings is attributed first to the authors, and second to the quality of the reviews provided by the experts. We would like to thank the authors for responding to our call, and we thank the reviewers for their excellent work.

For this edition, ICISP was pleased to host the 18th International Symposium on Multispectral Color Science (MCS 2014) as a special track, as well as a special sessions Digital Cultural Heritage (scientifically supported by the COST action TD 1201 - Color and Space in Cultural Heritage - COSCH).

We were very pleased to be able to include in the conference program keynote talks by three world-renowned experts: Jocelyn CHANUSSOT (University of Grenoble, France and currently Guest Researcher at UCLA, USA), Roland MEMISEVIC (University of Montreal, Canada) and Robert LAGANIERE (University of Ottawa, Canada).

We would also like to thank the members of the local committee for their advice and help. We would like to thank Olivier Lézoray for his advices and all material he provided for preparing this proceedings. The proceeding preparation was also eased thanks to the tools provided by EasyChair platform.

We are also grateful to Springer's editorial staff for supporting this publication in the LNCS series. Finally, we were very pleased to welcome all the participants to this conference. For those who did not attend, we hope this publication provides a good view into the research presented at the conference, and we look forward to meet you at the next edition of ICISP conference.

Alain Chalifour, Fathallah Nouboud, Alamin Mansouri,
Driss Mammass, Abderrahim Elmoataz, and Jean Meunier,

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Conference Program

Schedule	May 30, 2016	Location	Session Chair
08h00-08h30	Registration	4020 Ringuet, UQTR	
08h30-09h00	Opening ceremony	4020 Ringuet, UQTR	F. Nouboud, A. Mansouri & A. Chalifour
09h00-10h00	Keynote: "Smart surveillance systems: trends and approaches" R. Laganière	4020 Ringuet, UQTR	Chair: A. Elmoataz
10h00-10h30	Coffee break		
10h30-12h10	3D&Depth acquisition, processing and applications	4020 Ringuet, UQTR	Chair: G. Maćzkowski
12h10-14h00	Lunch Break		
14h00-16h00	Segmentation, filtering and tracking	4020 Ringuet, UQTR	Chair: R. Laganière
16h00-17h00	Posters and Coffee Break	4020 Ringuet, UQTR	
18:00	Departure for Cabane à Sucre (Chez Dany)	Hall Gilles-Boulet	

Schedule	May 31, 2016	Location	Session Chair
08h30-09h00	Registration	4020 Ringuet, UQTR	
09h00-10h00	Keynote: "Hierarchical Analysis of Multimodal Data", J. Chanussot	4020 Ringuet, UQTR	Chair: A. Mansouri
10h00-10h30	Coffee break		
10h30-12h30	Multispectral and Color Imaging	4020 Ringuet, UQTR	Chair: N. Tsumura
12h30-14h00	Lunch Break		
14h00-16h00	Signal Processing	4020 Ringuet, UQTR	Chair: H. Douzi
16h00-16h30	Coffee break		
16h30-17h50	Watermarking, Authentication and Coding	4020 Ringuet, UQTR	Chair: A. Elmoataz
18:30	Departure for Conference Dinner (Le Poivre Noir)	Hall Gilles-Boulet	

Schedule	June 1, 2016	Location	Session Chair
08h30-09h00	Registration	4020 Ringuet, UQTR	
09h00-10h00	Keynote: "Deep Learning in Image Processing", R. Memisevic	4020 Ringuet, UQTR	Chair: A. Mansouri
10h00-10h30	Coffee break		
10h30-12h30	Biomedical and biological imaging	4020 Ringuet, UQTR	Chair: J. Meunier
12h30-14h00	Lunch and Farwell		

Conference Details

May 30, 2016

Keynote: “Smart surveillance systems: trends and approaches”, Robert Laganière (9h0-10h00)

In the past decades, video surveillance systems have evolved from simple local digital video recorder to large scale cloud-based video monitoring solutions. The large amount of visual data captured by these visual systems calls for the design of more intelligent methods that can extract higher-level understanding of the observed scenes. If the pixel was the fundamental element that gave to computers the sense of sight, object detectors and classifiers are becoming the new fundamental bricks that will give computer the faculty to see and interpret the world. This talk discusses some of the challenges related to the development of the next generation of video surveillance systems.

Session 1: 3D&Depth acquisition, processing and applications (10h30-12h10)

Chair: G. Maczkowski

- “No-reference 3D mesh quality assessment based on dihedral angles model and support vector regression”. Ilyass Abouelaziz, Mohammed El Hassouni and Hocine Cherifi
- “Kinect depth holes filling by similarity and position constrained sparse representation”. Jinhui Hu, Zhongyuan Wang and Ruolin Ruan
- “Color correction in 3D digital documentation. Case study”. Krzysztof Lech, Grzegorz Maczkowski and Eryk Bunsch
- “The Traveling Optical Scanner - Case Study on 3D Shape Models of Ancient Brazilian Skulls”. Camilla Trinderup, Vedrana Dahl, Kristian Gregersen, Ludovic Orlando and Anders Dahl
- “Privacy Preserving Dynamic Room Layout Mapping”. Xinyu Li, Yanyi Zhang, Ivan Marsic and Randall Burd

Session 2: Segmentation, filtering and tracking (14h00-16h00)

Chair: R. Laganière

- “On the benefit of state separation for tracking in image space with an Interacting Multiple Model Filter”. Stefan Becker, Hilke Kieritz, Wolfgang Hubner and Michael Arens
- “Feature Asymmetry of the Conformal Monogenic Signal”. Ahror Belaid
- “Edge detection based on Riesz Transform”. Ahror Belaid, Soraya Aloui and Djamel Boukerroui
- “Defect detection on patterned fabrics using entropy cues”. Maricela Martinez-Leon, Rocio Lizarraga-Morales, Carlos Rodriguez-Donate, Eduardo Cabal-Yepez and Ruth I. Mata-Chavez
- “Curve extraction by geodesics fusion: Application to polymer reptation analysis”. Somia Rahmoun, Fabrice Mairesse, Hiroshi Uji-I, Johan Hofkens and Tadeusz Sliwa
- “Single Image Super-Resolution using Sparse Representation on a K-NN Dictionary”. Ning Liu and Shuang Liang

Posters (16h00-17h00)

- “A Fragile Watermarking Scheme for Image Authentication Using Wavelet Transform”. Assma Azeroual and Afdel Karim
- “Unsupervised Classification of Synthetic aperture radar Imagery using a bootstrap version of the generalized mixture expectation maximization algorithm”. Ahlem Bougarradh
- “Palm trees detection from high spatial resolution satellite imagery using a new Contextual classification method with constraints”. Soufiane Idbraim and Driss Mammass
- “Fast Autonomous Crater Detection—for unmanned landing on unknown terrain”. Payel Sadhukhan and Sarbani Palit
- “Automatic Detection and Classification of Oil Tanks in Optical Satellite Images Based on Convolutional Neural Network”. Qingquan Wang, Jinfang Zhang, Xiaohui Hu and Yang Wang
- “A Chaotic Cryptosystem for Color Image with Dynamic Look-Up Table”. Med Karim Abdmouleh, Ali Khalfallah and Med Salim Bouhlel
- “A New Method for Arabic Text Detection in Natural Scene Image based on the color homogeneity”. Houda Gaddour, Slim Kanoun and Nicole Vincent

May 31, 2016

Keynote: “Hierarchical Analysis of Multimodal Data”, Jocelyn Chanussot (9h0-10h00)

There is a growing interest in the development of adapted processing tools for multimodal images (several images acquired over the same scene with different characteristics). Allowing a more complete description of the scene, multimodal images are of interest in various image-processing fields, but their optimal handling and exploitation raise several issues. In parallel, over the past decade, hierarchical representations have proven themselves extremely useful and powerful tools for data analysis in a variety of contexts. In this talk, we will investigate how hierarchical representations, a powerful tool for classical image analysis and processing, can be extended to multimodal images in order to better exploit the additional information brought by the multimodality and improve classical image processing techniques. The talk focuses on three different multimodalities frequently encountered in the remote sensing field. We first investigate the spectral-spatial information of hyperspectral images. Based on an adapted construction and processing of the hierarchical representation, we derive segmentation, which is optimal with respect to the spectral unmixing operation. We then focus on the temporal multimodality and sequences of hyperspectral images. Using the hierarchical representation of the frames in the sequence, we propose a new method to achieve object tracking and apply it to chemical gas plume tracking in thermal infrared hyperspectral video sequences. Finally, we study the sensorial multimodality, in which images are acquired with different sensors. Relying on the recently introduced concept of braids of partitions, we propose a novel methodology of image segmentation, based on an energetic minimization framework.

Session 3: Multispectral and Color Imaging (10h30-12h30)

Chair: N. Tsumura

- “Nonlinear Estimation of Chromophore Concentrations and Shading from Hyperspectral Images”. Rina Akaho, Misa Hirose and Norimichi Tsumura.
- “A color image database for haze model and methods evaluation”. Jessica El Khoury, Jean-Baptiste Thomas and Alamin Mansouri
- “Computer Vision Color Constancy from Maximal Projections Mean Assumption”. El khamssa Lakehal and Djemel Ziou
- “Demosaicking Method for Multispectral Images Based on Spatial Gradient and Inter-channel Correlation”. Shu Ogawa, Kazuma Shinoda, Madoka Hasegawa, Shigeo Kato, Masahiro Ishikawa, Hideki Komagata and Naoki Kobayashi

- “Collaborative Unmixing Hyperspectral Imagery via Nonnegative Matrix Factorization”. Yaser Esmaeili Salehani and Saeed Gazor
- “Measuring Spectral Reflectance and 3D Shape using Multi-primary Image Projector”. Keita Hirai, Ryosuke Nakahata and Takahiko Horiuchi

Session 4: Signal Processing (14h00-16h00)

Chair: H. Douzi

- “Speaker Classification via Supervised Hierarchical Clustering using ICA Mixture Model”. Muhammad Azam and Nizar Bouguila
- “Speaker discrimination using several classifiers and a relativistic speaker characterization”. Siham Ouamour, Zohra Hamadache and Halim Sayoud
- “Speaker discrimination based on a fusion between neural and statistical classifiers”. Siham Ouamour and Halim Sayoud
- “Multiple-Instance Multiple-Label Learning for the Classification of Frog Calls With Acoustic Event Detection”. Jie Xie, Michael Towsey, Liang Zhang, Kiyomi Yasumiba, Lin Schwarzkopf, Jinglan Zhang and Paul Roe
- “Feature Extraction Based on Bandpass Filtering for Frog Call Classification”. Jie Xie, Michael Towsey, Liang Zhang, Jinglan Zhang and Paul Roe
- “Detection of Activities during Newborn Resuscitation Based on Short-Time Energy of Acceleration Signal”. Huyen Vu, Trygve Eftestøl, Kjersti Engan, Joar Eilevstjønn, Ladislaus Yarrot, Jrgen Linde and Hege Ersdal

Session 5: Watermarking, authentication and coding (16h30-17h50)

Chair: A. Elmoataz

- “Digital Watermarking Scheme Based on Arnold and Anti-Arnold Transforms”. M. Omair Ahmad and M. Abdallah Elayan
- “A JND model using a texture-Edge selector based on Faber-Schauer Wavelet lifting scheme”. Meina Amar, Rachid Harba, Hassan Douzi, Frédéric Ros, Mohamed El Hajji, Rabia Riad and Khadija Gourrame
- “Single-Loop Architecture for JPEG 2000”. David Barina, Ondrej Klima and Pavel Zemcik
- “Robust print-cam image watermarking in Fourier domain”. Khadija Gourrame, Hassan Douzi, Rachid Harba, Frederic Ros, Mohamed El Hajji, Rabia Riad and Meina Amar

June 1, 2016

Keynote: “Deep Learning in Image Processing”, Roland Memisevic (9h0-10h00)

Deep Learning is the latest surge of wide-spread scientific interest in neural networks. Unlike previous waves of interest, this one has produced several astonishing results in various application domains, thanks to the availability of massively parallel hardware and of large labelled datasets. In this talk, I will describe the role of deep learning in image and signal processing, and I will present recent applications in these domains. I will also discuss some of the main challenges ahead, such as the need for further scaling up computation and datasets, and I will present some of the ideas and approaches developed in our own lab to address these challenges.

Session 7: Biomedical and biological imaging (10h30-12h30)

Chair: J. Meunier

- “Otolith recognition system using a normal angles contour”. Youssef El Habouz, Youssef Es-Saady, Mostafa El Yassa, Driss Mam- mass, Fathallah Nouboud, Alain Chalifour and Khalid Manchih

- “A hybrid combination of multiple SVM classifiers for automatic recognition of the damages and symptoms on plant leaves”. Ismail El Massi, Youssef Es-Saady, Mostafa El Yassa, Driss Mammass and Abdeslam Benazoun
- “Leaf Classification using Convexity Measure of Polygons”. Jules Raymond Kala, Serestina Viriri, Deshendran Moodley and Jules- Raymond Tapamo
- “Classification of Eukaryotic Organisms through Cepstral Analysis of Mitochondrial DNA”. Emmanuel Adetiba and Oludayo Olugbara
- “A Novel Geometrical Approach For a Rapid Estimation Of The HARDI Signal in Diffusion MRI”. Ines Ben Alaya, Majdi Jribi, Faouzi Ghorbel and Tarek Kraiem
- “Super-Resolved Enhancement of a Single Image and Its application in Cardiac MRI”. Guang Yang, Xujiang Ye, Greg Slabaugh, Jennifer Keegan, Raad Mo- hiaddin and David Firmin.