

Binocular Vision Modelling for Efficient Coding and Quality Assessment in the Framework of Immersive Technologies

Date: Tuesday 23rd April 2019

Time: 1:30 pm

Location: Building 59, Room 2015

Speaker:

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Abstract:

No doubt that 3D, multiview and immersive technologies are part of our everyday life. The content, composed of 2 or more views, generates an important amount of data requiring adapted compression and transmission strategies. The asymmetric strategies, relying on the binocular suppression, for 3D coding have demonstrated their efficiency in terms of bitrate saving. Unfortunately, these lossy algorithms may affect the 3D quality of experience, that needs to be quantified. Even though there is a broad literature about 2D quality assessment, 3D quality has to be seen as a different process since it relies on very important binocular phenomena, happening in the brain. This talk aims at describing the challenges of 3D asymmetric coding and quality assessment by discussing the most important perceptual phenomena and then reviewing the standard methodologies from the literature. After that, the focus will be put on new approaches for asymmetric coding and also on quality assessment metrics dedicated to stereo pairs containing asymmetric distortions. Finally, this talk will discuss the advent of 360 technologies and show the new challenges brought by such a content type. Preliminary work/results will be discussed especially with a link to MPEG activities.

Speaker Bio:

Chaker Larabi received his PhD from the University of Poitiers in 2002. He is currently Associate Professor at the same university. His actual scientific interests deal with quality of experience and, bio-inspired processing/coding/optimization of images and videos, 2D, 3D, HDR and 360/VR. He is deputy scientific director of the GdR-ISIS (French research group on signal and image processing). He is a member MPEG and JPEG committees. He served as the chair of the JPEG Advanced Image Coding (AIC) and the Test & Quality subgroup. He acted as the French head of delegation (HoD) for several years. Chaker Larabi played several roles in different conferences. He was TPC of EUVIP 2011/2018, Plenary Chair for EUVIP 2013, Chair of the EI Image Quality and System Performance (2014, 2015 and 2016), Short courses co-Chair of EI 2016 – 2018, Technical co-Chair of EUVIP 2018. He was special sessions co-chair for ICIP 2016 and Publicity chair for ICIP 2017. He serves as Area Chair for ICIP and ICASSP. He is regular reviewer for many international conferences and journals. He is associate editor for the IEEE Transactions on Image Processing, Elsevier Journal of Visual Communication and Image Representation (JVCI), Elsevier Signal Processing: Image Communication (SPIC), Springer journal of Signal, Image and Video Processing (SIVP), the SPIE/IS&T Journal of Electronic Imaging (JEI) and IEEE Access. He is senior member of IEEE, member of EURASIP, CIE and IS&T. He has been elected to serve as member of the IEEE SPS IVMS and IEEE SPS MMSP technical committees. He participated to several national and international projects. He supervised more than 18 PhDs and he published over 150 papers. He is currently head of the Electrical and Computing engineering department at the University Institute of Technology of Poitiers.