Research Grants for PhD students from the China Scholarship Council

Information Form (please read the guidelines carefully on the website www-csc.utt.fr)

Supervisor's name : Zhang Given names : Lu

Status (prof., assistant prof., …) : Associate Professor

Laboratory : IETR / Image Team	Website address : www.ietr.fr
Institution : INSA of Rennes	Website address : www.insa-rennes.fr

Scientific competence :
Ass. Prof. Zhang's background is Signal and Image processing. Her expertise is in the field of image/video quality evaluation and modelisation. She is a member of the international Video Quality Experts Group (VQEG). Prof. Morin worked a lot in the computer vision domain. Her research activities deal with 3-D modelization from video sequences and 3D video compression. She is an expert on view synthesis with DIBR (Depth Image Based Rendering) methods.

Two major publications in the field proposed for the PhD :
- S. Tian, L. Zhang, L. Morin, O. Deforges. “NIQSV+: A No Reference Synthesized View Quality Assessment Metric”. IEEE Transactions on Image Processing; December 2017; 27(4), Issue: 99.
-S. Tian, L. Zhang, L. Morin, O. Deforges. “A full-reference Image Quality Assessment metric for 3D Synthesized Views”. Image Quality and System Performance Conference, at IS&T Electronic Imaging 2018,USA

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Description of the research work proposed for a PhD ***Topic # (see list) :*** I-7

Title : 3D Image quality evaluation

Subject :
Recent studies in 3D technology led to a growing development in 3D applications, such as 3D television (3DTV), 3D cinemas and free viewpoint television (FTV). The state of the art coding standards such as H.264/MVC or Multi-Views and 3D HEVC extensions provide efficient ways for video coding, but the objective evaluation of the compressed images quality is still an open issue.
Our previous works proposed new full-reference and no-reference quality assessment metrics which had good performances on the IRCCyN IVC DIBR Images quality database. Then we constructed a new database without “old-fashion” artefacts, on which all the exsiting metrics perform not well (to be published).
The objective of this PhD work is to further explore the features of the distortions in the 3D images to propose new quality metrics with good performance on the new database, as well as to extend the metric to DIBR video quality assessment.

Keywords :
image processing, image quality assesment, perceptual quality metrics, 3D video, DIBR, video coding, video compression
Expected collaborations :
We expect collaboration with LS2N Nantes labs.

Background required from the applicant :
required : Master in computer science or electrical engineering, signal processing, programming in C/C++; optionnal : image processing, video coding

Existence of a PDF file detailing the proposal ("yes" or "no") : Yes
(see guidelines on the website www-csc.utt.fr)