

Call for Proposals and Participation

VQEG-JEG Hybrid Video Quality Metric

Objective

The **Video Quality Experts Group (VQEG)** has significantly advanced the field of subjective and objective testing methodologies for video quality since its birth in 1997 by submitting reports and liaisons to international standardization organizations such as ITU.

The **Joint Effort Group of VQEG (VQEG-JEG)** aims at the collaborative development towards standardization of subjective assessment methodologies and objective metrics for perceived video and multimedia quality. The group unites research partners from industry and academia in regular face-to-face meetings and telephone conferences.

The goal of the **VQEG-JEG-Hybrid group** is to jointly develop a novel objective video quality metric which predicts perceived quality using only client-side information¹. So far, several Full-Reference objective quality metrics have been standardized in ITU-T Recommendations J.144, J.247, and J.341 respectively. However, these algorithms require access to the undistorted reference signal which is not available at the receiving (customer) side. In contrast, a VQEG-JEG-Hybrid model will only use the impaired, decoded video signal and the bitstream.

Mission - Collaborative Approach

The uniqueness of the **VQEG-JEG-Hybrid group** lies in the collection and combination of best-performing industrial and research algorithms for the prediction of specific video artifacts or transmission conditions. In order to facilitate and focus the research, a modular approach is used:

- First, the received bitstream is parsed to an independent XML file which enables easy and standard-independent access to its information.
- Second, individual indicators for isolated video quality degradations are calculated based on the XML file and the decoded video
- Third, the individual indicators are combined in order to provide an overall quality rating.

The VQEG-JEG-Hybrid invites both individuals and companies to contribute to any of the three parts and to participate in our collaborative approach towards the construction of a novel hybrid objective video quality metric.

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An impressive number of research articles target the prediction of perceived video quality. However, each individual publication usually targets a limited view or scope, e.g. H.264/AVC encoding with particular packet loss patterns. As part of its mission, the VQEG-JEG will perform a large scale

¹N. Staelens, I. Sedano, M. Barkowsky, L. Janowski, K. Brunnström, and P. Le Callet, "Standardized Toolchain and Model Development for Video Quality Assessment – The Mission of the Joint Effort Group in VQEG", Proceedings of the Third International Workshop on Quality of Multimedia Experience (QoMEX), September 2011.

evaluation of state-of-the-art algorithms for these individual scopes and the combination of the individual contributions towards a universal end-to-end quality metric.

We encourage participation and proposals concerning:

1. Individual or combined indicators for video quality using information from a packet network, e.g. packet delay, loss, etc.
2. Video Quality prediction using video bitstream information, for examples using XML pre-parsed information from H.264/AVC encoded bitstreams or the captured bitstream itself
3. Analysis and detection algorithms of degradations based on the decoded video, e.g. No-Reference video quality indicators
4. Spatial, temporal or spatiotemporal weighting algorithms, for example using visual attention or saliency estimation
5. Algorithms combining the approaches 1-4
6. Data fusion approaches for individual indicators on pixel, frame or sequence level

Interested parties for contributing to this collaborative approach might include:

- PhD students who are interested in evaluating the impact of their research on an overall end-to-end objective quality metric
- Companies who would like to analyse the performance of their algorithms on different types of degradations in comparison to other state-of-the-art and world-leading algorithms
- Researchers interested in joint collaboration towards creating a novel hybrid objective video quality metric

Schedule

An evaluation of submitted individual indicators will take place in July 2012. The submitted algorithms will be combined using a Generalized Linear Model and by using the contributions from point 6. The performance of the combined models will be evaluated on two video databases in HDTV and CIF format containing more than 5000 video sequences with various typical degradations. The video sequences are evaluated in subjective experiments and/or with full reference models in a transparent way. The impact of individual contributions on the performance of the combined models will be reported with a differentiation of distortion classes.

Submissions until May 31, 2012 are taken into consideration. Training, test and validation data are available. Specific details on the test setup and the submission details can be found on the VQEG-JEG Wiki page (<http://wiki.vqeg-jeg.org>).

 <http://www.vqeg.org>

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