 VQEG Meeting Minutes - Stockholm July 2014

# TUESday PM, July 7

## Something else

### Presentation from Swedish ict – acreo representative

Introduction on Swedish ICT and the environment where the current meeting is hosted.

## JEG

### Logistics

Several persons online:

* Amy Reibman
* Enrico Masala
* Kongfeng Zhu
* Naeem
* Rahul Gaurav

2 Remote presentations planned.

### Introduction (by Marcus Barkowsky)

Introduction on JEG was given:

* similar structure as H.261 🡪 H.265 community.
* Open database

Ongoing work is layed out in the introductory presentation

Q: Dataset: 10 source sequences. Reason not to use existing sources from HD project that has 50 sources? 10 sources is limited for doing subjective tests.

A: work in progress. Now 31 HD sequences (downscaled from UltraHD sources) are being processed. As soon as processing power is available, the 50 sources referred to by Chulhee wil be added.

Q: Why not limit number of PVSes and have more sources instead.

A: We are working on more SRC, but need extended number of PVSes/HRC as well

### No-reference video quality assessment based on artefact measurement and statistical analysis (by Kongfeng Zhu)

Proposed model:

* Kernel-based analysis of images.
* Feature extraction: kurtosis, smoothness, sharpness, historgram noise, Mean Jenson Shannon divergence (MJSD), Blockiness
* Predict video quality: 2 steps
  + Temporal pooling: get 6 features
  + Infeed 6 features into neural network: 6 inputs with 20 hidden nodes, 1 output. (fully connected network)

Used model on 4 databases (selection in slides)

Neural network training:

* Cross-validation strategies based on size of database (k-fold vs. leave-p-fold-out)
* Training models: linear model, support vector machine, multilayer perceptron

Q: (James): colorspace of analysis?

A: luma only in this presentation, included color in other work which has not been published yet.

Q’s: how were the training set and validation set selected.

A: the \*fold\*-approaches were repeated with new selections of traning set amongs the total database.

### Machine learning for quality assessment (By Adriaan Barri)

Subtitle: adopt – adapt – improve

Parameters: Audience, device, content 🡪 optimize quality measures: choose quality indicators + weights

Proposal: use machine learning within the ‘quality network’

Linear regression: too rigid. Weights must adapt to the input. 🡪 neural network with LAF (Locally Adaptive Fusion): fusion with certain targets (indicator values/local optimization). 🡪 then select the best fitted model for the indicator values for the current indicator area you are for the image.

Technical information: [www.locally-adaptive-fusion.com](http://www.locally-adaptive-fusion.com)

How to avoid overfitting?

Q: code we can run?

A: on request you will get the source code..

Q: overfitting issue solved?

A: not solved, but you can easily spot it when it applies to your trained system. (2 dimensional plot: wigly = overfitted, instead of 80 dimensional plot)

### No-reference consumer-oriented image/video quality assessment: from theory to a standard (by Michele saad and Philip corriveau)

CPIQ: Camera Phone Image Quality 🡪 IEEE standards working group. Comparison between camera qualities from (mobile) devices.

Q: Laboratory approach is less good than customer approach? Are other customers more to be trusted than 3th party laboratory

A: Expensiveness of setting up a lab + full reference approach is not perfect too.

Q: Integrator point of view: embedders of cameras on mobile phone

A: DXO – Imatest, AMD, blackberry, huawai, MIT…. and the whole list of about 20 big players.

Q: do we need a standard?

A: objective modelling approach currently: create test plans and labs, industry tailors to model. Now more consumer oriented resulting in a larger database of images that is relatively easy/cheaply obtained.

Other comments: Blurred sections overlay, customer profile dependency

Decision: this topic will be a subject under JEG:

* unanimously,
* indicated co-chairs: Michele Saad, James Goel, Quang (subject to approval by organisation)
* acronym needs to be generated as well as a description of the topic

### HEVC (By glenn van wallendael, nicolas staelens)

Nothing really special

Components can be submitted, integration will be looked at when components become available. (Creating an API is a subject for further work)

### Simulation of robust hevc decoding (By Enrico masala)

Simulate packet loss in the decoder 🡪 avoid expanding the database exponentially by adding one additional impairment

Concept is found very useful by multiple people in the meeting, as it solves a lot of issues:

* Crashing decoders
* Management of difficult types of

### First analysis on the large dataset what we can learn by << only >> comparing objective measurements (by enrico masala)

No particularly questions popped up.

### Equal quality threshold analysis (By Marcus Barkowsky)

*Preliminary results* were presented

Threshold-based comparison of 2 objective metrics. Comparing the false ties (one metric says A = B, other says A < B or B < A; weak error) to false orderings (one metric says A > B, other says B > A; strong error).