



H.264 SETUP

Development of Guidelines for Configuration and Operation of Video Compression Systems (CODECs) in the Ambit of SBTVD
<http://www.lps.ufrj.br/~tvdigital/h264setup/>



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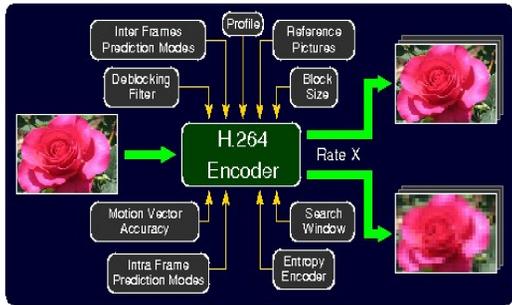
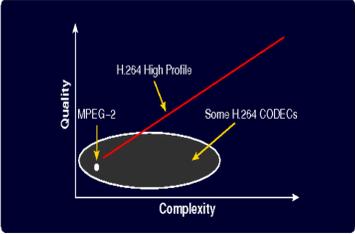
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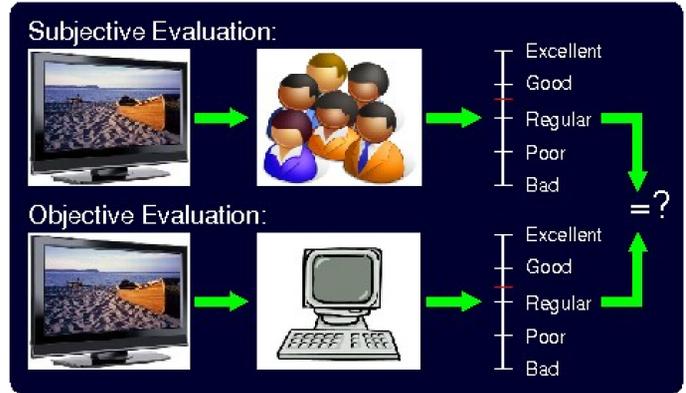


Motivation:

- DTV CODECs still require significant bandwidth for quality videos;
- Contemporary H.264 CODECs provide a Rate X Distortion trade-off far beyond what is achievable with H.264;
- Engineers and Tehcnicians complain about H.264 (some ask if MPEG-2 would not have been a better choice);
- H.264 Encoder parameters influence its performance;

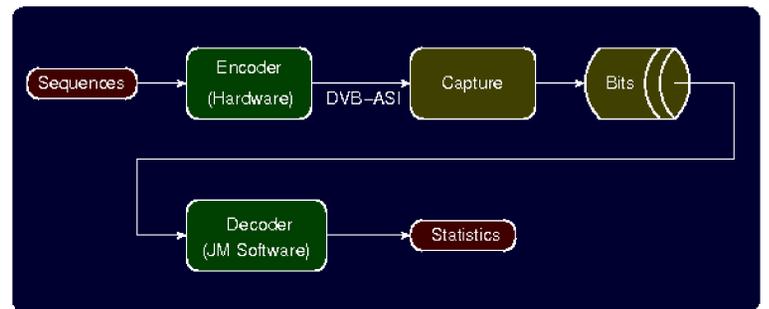


Video Quality Evaluation:



Comercial CODECs Testing:

- Extraction of statistics from coded video sequences (count of I, B, P picture, motion vectors, quantizer control, etc)



Main Objectives of the Project:

- Evaluate the influences of the H.264 CODEC parameters on the perceived video quality in different scenarios:
 - Using both objective and subjective tests.
- Evaluate the performance of commercial CODECs.
- Elaborate and provide master guidelines for:
 - Configuring and developing CODECs for the SBTVD.

Methodology:

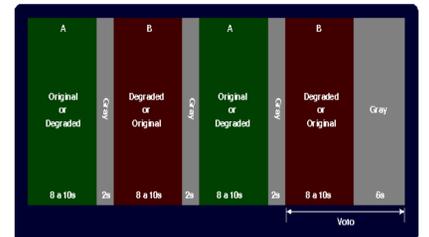
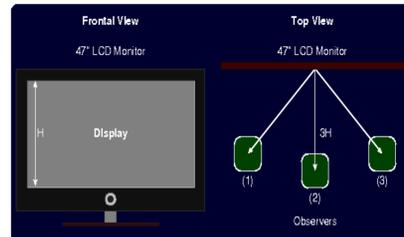
1. Encode-Decode video sequences using different parameters combinations and ranges;
 - The sequences have different types of contents;
2. Evaluate objectively and subjectively the different CODECs configurations;
3. Evaluate the influence of the different CODEC parameters in the perceived video quality;
4. Elaborate guidelines for efficiently tuning the H.264 parameter with respect to rate and video quality.

Tested Parameters and their Ranges:

- Rate (VBR): 10Mbps and 12Mbps;
- GOP (Group of Pictures): 12 and 15;
- AFF (Adaptive Field-Frame Coding): FO (Field Only), PAFF (Picture Adaptive Frame-Field) and MBAFF (Macroblock Adaptive Frame-Field);
- DBF (Deblocking Filter): ON and OFF;
- Motion Estimation: On and Off.
- MEW (Motion Estimation Window Size): 288, 144 and subsampled versions;
- Motion Estimation Block Size: adaptive, restricted to 16 x 16 and restricted to 8 x 8;
- Reference Pictures: 3 and 1 for P pictures.

Subjective Tests:

- Requires a large number of subjects for having statistical value;
- Test procedures follow ITU recommendations.



Sequences:

- 8 natural and 8 artificial sequences;
- Resolution: Full-HD 1080i;
- Frame rates: 25-30 fps;
- Sequence Duration: 10 seconds;
- Some examples:



Conclusions:

- To be included for the poster presentation!



Sponsor for This Project

