



VIDEO COMPRESSION GURU

Elecard StreamEye 4.x

Application Use Cases

How to verify if files were encoded with the same encoder

Introduction

Each encoder has specific encoding parameters, which are applied during the encoding process. Elecard StreamEye allows defining whether the analyzed streams have been encoded with one and the same encoder or with different ones. The more discrepancies in parameters are detected by StreamEye, the higher probability is that different encoders have been used.

Initial Setup

To perform the scenario, you must have two or more video files for comparison (the demo video files are available via [this link](#)) and Elecard StreamEye v.4 installed (click to request the demo for [Windows](#) or [Mac](#)).

Compare files

See the parameters of the files (file01.264 and file02.264) described below:

1. Estimation of stream information available in the Stream panel.

StreamEye Parameter	File01.264	File02.264
profile	Main	High
level	3.0	3.1
resolution	Same values	
frame rate	Same values	
coding mode	CAVLC	CABAC

2. GOP structure is shown in the Bar Chart panel or in the Statistics/Stream/Structure panel as statistics data.

StreamEye Parameter	File01.264	File02.264
I distance	50	75
P distance	2	4
B count	1	3

3. Estimation of macroblocks coding in I-frames.

Hover over an I-frame and open the Statistics/Picture/mb info panel. The resulting statistics clearly shows that the options I_4x4 and I_8x8 have not been used when encoding file01.264. Nevertheless, all available encoding options have been applied for file02.264.

4. Estimation of intra-prediction in I-frames.

Open the Statistics/Picture/pred type intra/luma panel. It shows that the encoder used only four intra-prediction types when encoding file01.264, but for encoding file02.264 all ten types of intra-predictions were used.

5. Estimation of inter-prediction.

Hover over a P-frame and enable motion vectors by pressing Alt+3. When moving a cursor over blocks, the motion vector value is displayed in the block info panel (e.g. mv[0]). When analyzing file01.264, you may notice that motion vectors are 2-fold, that corresponds to a half-pixel search applied by the encoder. When a quarter-pixel prediction is used, values of motion vectors are odd.

6. Estimation of quantizer.

Hover over a frame and enable the option Extended/Quant/Quant text (Alt+6). The data shows that the same quantizer is used over the frame file01.264, but quantizer changes within the frame in file02.264.

7. Estimation of the number of reference frames.

To perform prediction, the encoder can point up to 16 frames according to the Standard. The number of reference frames can be calculated based on headers data:

- SPS – max_num_ref_frames

File01.264 is encoded with 2 reference frames, while prediction for file02.264 is based on 16 reference frames.

To see the number of reference frames used for the selected frame, open View – Barchart – Ref markers.

8. Estimation of the number of slices.

To display slices, enable the Slice boundaries option by pressing Alt+1 or selecting menu item in the Headers panel. File01.264 shows only 1 slice, but file02.264 shows 4 slices – [0] slice_headrs/[1] slice_headrs/[2] slice_headrs/[3] slice_headrs.

9. Estimation of vui_parameters.

In addition, the streams can also be compared by parameter values in the Header Vui_parameters. The header contains a number of parameters and it is very likely that at least one value will differ if streams are encoded with different encoders.

Results

This is how we can find out if two files were encoded with the same encoder or not. For the files that underwent smart processing (cutting or adding a piece of data into a stream) the algorithm for analysis is generally the same: visual differences are shown on the Bar Chart and frames from different parts of the stream are compared against each other.

If you have any question or looking to getting more details on your use case, contact Elecard technical support department at tsup@elecard.com

About StreamEye

Elecard StreamEye is a powerful software tool designed for professionals and prosumers in video compression field. Elecard StreamEye enables the user to perform an effective in-depth analysis of video sequences.

Elecard StreamEye provides a visual representation of the encoded video features and a stream structure analysis of MPEG-1/2 or AVC/H.264 Video Elementary Streams (VES), HEVC/H.265

(ISO/IEC 23008-2 MPEG-H Part 2) Video Elementary Stream (VES), MPEG-1 System Streams (SS), MPEG-2 Program Streams (PS) and MPEG-2 Transport Streams (TS).

Automated analysis and standard compliance check is available with the command line tool of the StreamEye program. Configuration via XML-file provides an easy and flexible way to pick specific information from the processed stream and save it into CVS-files.

[Read more about Elecard StreamEye Studio on the product page.](#)