VQ Analyzer 2019

Release Notes

(Version 4.0.0)

Overview

The **VQ Analyzer** is a graphical coded video bitstream analysis tool, supporting the following coding standards:

- HEVC: (ISO/IEC 23008-2 MPEG-H Part 2 or ITU-T H.265) , 8/10-bit
- HEVC: RExt extension, 8/10/12-bit, 4:0:0/4:2:0/4:2:2/4:4:4
- HEVC: SCC extension, conform to HM + SCM 8.6 in reference code
- HEVC Scalable/Multiview Extension
- AV1, SHA-1 (Version 1.0.0 Errata.1): add4b15580e410c00c927ee366fa65545045a5d9
- Google's VP9, profiles 0,1,2,3, 4:2:0/4:2:2/4:4:0/4:4:4, 8/10/12-bit
- AVC: (H.264/AVC, ISO/IEC 14496-10, MPEG-4 Part 10), except SVC/MVC
- MPEG2 (ISO/IEC 13818-2 Part 2), 4:2:0/4:2:2, 8-bit
- MKV container
- MP4 container
- MPEG2 TS/PS container
- AVI container
- Mpeg Media Transport container (ARIB STD-B60 1.0)

Once a bitstream is loaded, the tool allows the user to inspect each major step of the decode process visually and numerically, and the structure of the coded image can be explored. This data can be used as a visual reference when learning about HEVC/VP9/AVC/MPEG2/AV1 or when debugging a particular encoder or decoder.

New Features

- AV1:
    - add MP4 container support
    - add syntax elements statistic on picture and stream levels.
    - add checking of level constraints (partially).
    - add Decoder Model info (and Decoder Model visualization at 'Buffer' panel).
    - add source samples view at loop restoration details.
    - add segment's lossless flags at 'Refs' tab.
    - add lossless overlay map.
    - choose best op point for scalable streams.
- YUV: add RGB32/RGB24 support.
- AVC/HEVC/AV1: add console options for dumping headers (vps/sps/pps/sei/slice/metadata).
- HEVC: add DPB panel.
- 'Buffer' panel: get fps value from clip (elementary and container).
- Stats: Add Ctrl+S hot key for changing stats type.

Bug Fixes

- AV1: fix 'Reference frames' stats (L0 compound references were calculated as both single and compound).

System Requirements

Hardware

- 1GB RAM minimum, 4GB recommended when loading 4K pictures.

Software

- Microsoft* Windows* 7, Microsoft* Windows* 8, Microsoft* Windows* 8.1, Microsoft* Windows* 10, 32-bit/64-bit.
- Ubuntu* Linux* 16.04 and higher, SLES* 12 and higher, CentOS* 7.2 and higher
- MacOS* 10.9 and higher

Package Contents

 content: VQ Analyzer Release Notes (this file), VQ Analyzer User Guide, licenses, binary executables, tool's internal and third-party binaries.

Installation

To begin installation:

- Double-click on the executable file to begin installation.

Activation during installation
You must activate the product to finish installation. Use one of these methods:

- Activation using serial number. Internet connection is required;
- Remote activation using serial number. Used when your computer is not connected to the internet. You can use another computer with internet access;
- Activation using license file;
- Activation using license server.
- You can also evaluate the product for trial period.
  If you have problems with installation under MacOS*, please, check System Preferences -> Security & Privacy options under "Allow apps downloaded from:". The option "Mac App Store and identified developers" should be checked.

Known Limitations

The VQ Analyzer has the following known limitations:

- Supported containers for AV1/VP9 are IVF and WebM (MKV) only.
- AVC/HEVC HRD buffer fullness uses only Type II bitstream for visualization.
- Archive yuv files (*.zip, *gz) fully unpacked in memory currently, huge files could require a lot of memory.

- For zip files only first file in archive is considered to be used as compressed yuv file. Only deflate and store compression methods are supported.
- Archived y4m files are not supported yet.
- AVC decoding does not support gaps in frame_num and slice groups currently.
- Dual view mode is in preview implementation now. It can be unstable and buggy.

AV1 limitations:

- Memory consumption can be high on 4K resolutions.
- "Extract selected units" from OBU panel doesn't work properly for raw obu annexb case.

HEVC Conformance checks:

- Bitstream conformance to active profile, tier and level representation and HRD parameters is tested on general representation only. (PTL syntax elements with prefix 'general_')
- Bitstream conformance to HRD parameters is tested using VUI parameters specified in active SPS only.
- For Intra only profiles picture reordering is not tested.
- Common Multilayer HEVC: external base layer configurations are not supported.
- HEVC Slice data errors: bitstream restrictions specified SPS VUI or VPS VUI parameters are not supported.

HEVC Decoder behavior:

- For Range exntensions, Highthroughput and Screen-Extended (SCC) profiles in order to detect sub-profile (e.g. Monochrome, Main 444 12bit, ...) bitstream constraint flags, coded in PTL, must be set according to the tables specified in clause A.3 of the spec.
- For Still Picture profiles test for number of pictures present in bitstream is applied to whole bitstream file.
- For Screen-Extended (SCC) profiles in order to detect these profiles, general_profile_idc must be set to 31 or general_compatibility_flag[31] must be set to 1. (same as of HM16.16+SCC8.5) (Will be changed to 9 (according to spec) in future releases)
- Multilayer bitstreams are decoded with highest available index of Layer Set (TargetOlsIdx is set to NumOutputLayerSets – 1). All available layers will be output.
- Different layers in Multiview HEVC stream must have the same resolution and chroma format for inter-layer prediction. (Configurations with different chroma format or resolution are still decodable, but resampling process for inter-layer prediction will be invoked in that cases)
- SCC extensions presence in bitstream is tested on both position 3 and 6 of sps_extension_bit and pps_extension_bit.

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Zlib

zlib.h -- interface of the 'zlib' general purpose compression library version 1.2.8, April 28th, 2013

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Qwt

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Version 1.0, January 1, 2003
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