Joint Video Experts Team (JVET) of ITU-T SG 16 WP 3 and ISO/IEC JTC 1/SC 29/WG 11
15th Meeting: Gothenburg, SE, 3-12 July 2019

Document: JVET-O0549
MPEG: m48683

Title: **AHG10: Encoder-only GOP-based temporal filter**

Status: Input document to JVET

Purpose: Proposal

Author(s) or Contact(s):
P. Wennersten | per.wennersten@ericsson.com (Ericsson)
Rickard Sjöberg | rickard.sjoberg@ericsson.com (Ericsson)
J. Enhorn | jack.enhorn@ericsson.com (Ericsson)

Source: Ericsson

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Abstract

This contribution proposes an encoder-only temporal filter. The filtering is done at the encoder side as a pre-processing step. Source pictures before and after the original picture to encode are read and an 8x8 block-based motion compensation method relative to the original picture is applied on those source pictures. Samples in the original picture are temporally filtered using source picture sample values after motion compensation. Only pictures at temporal sub layers 0 and 1 are filtered.

A similar method was proposed as JCTVC-AI0023 and adopted to HM at the previous JCT-VC meeting.

The method was reportedly tested under VTM-5.0 RA, LDB and LDP common test configurations. The average Y/U/V BD-rates for the common test conditions (CTC) are reported to be −3.49%/−6.9%/−6.5% (RA), −1.00%/−1.24%/−2.24% (LDB) and −1.47%/−1.95%/−2.78% (LDP). All BDR numbers were computed using unfiltered source sequences. The method is not proposed for AI encoding.

It is proposed to adopt the proposed method into the VTM software but to disable it in the CTC.

Introduction

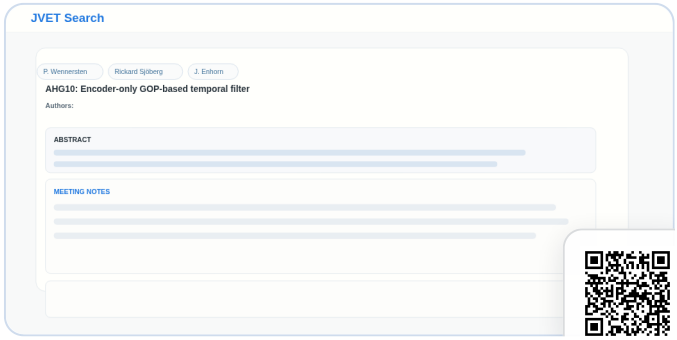
Built from JVET-O0549-v2.docx

LINKS

CARD

JVET-O0549

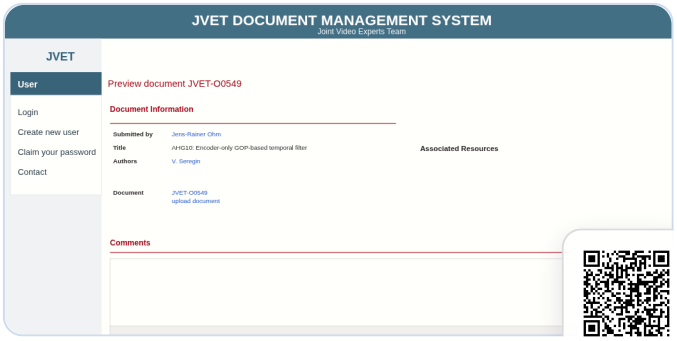
http://vexpertise.stbit.ru/documents/JVET-O0549



SOURCE

external source

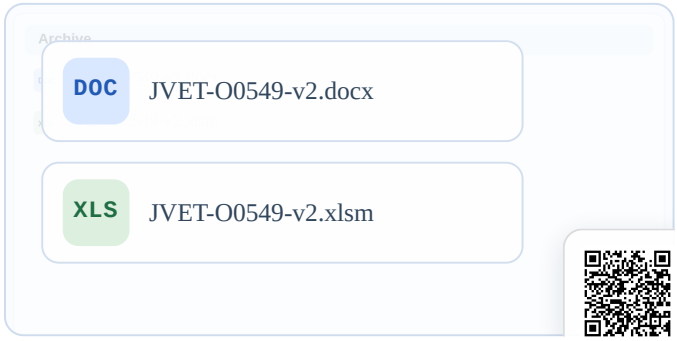
https://jvet-experts.org/doc_end_user/current_document.php?id=7162



ARCHIVE

archive

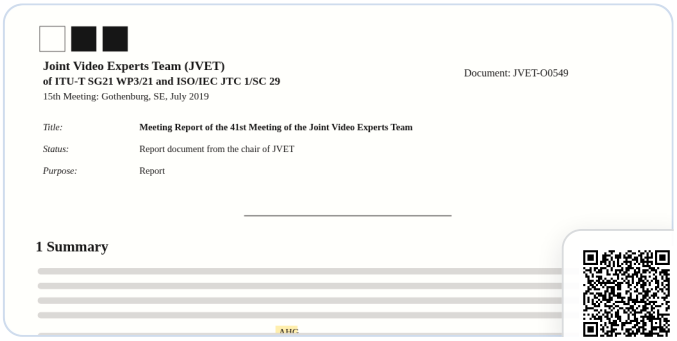
https://jvet-experts.org/doc_end_user/documents/15_Gothenburg/wg11/JVET-O0549-v2.zip



MEETING NOTES

external meeting notes

https://www.itu.int/wftp3/av-arch/jvet-site/2019_07_O_Gothenburg/JVET-O_Notes_dF.docx



MEETING NOTES

JVET-O0549 AHG10: Encoder-only GOP-based temporal filter [P. Wennersten, R. Sjöberg, J. Enhorn (Ericsson)]

This contribution was discussed along with those in section 6.15 on Friday 5 July 1800–2130 in Track B (chaired by JRO).

This contribution proposes an encoder-only temporal filter. The filtering is done at the encoder side as a pre-processing step. Source pictures before and after the original picture to encode are read and an 8x8 block-based motion compensation method relative to the original picture is applied on those source pictures. Samples in the original picture are temporally filtered using source picture sample values after motion compensation. Only pictures at temporal sub layers 0 and 1 are filtered.

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Version 2 of this document contains updated BDR numbers for RA.

It is proposed to adopt the proposed method into the VTM software but to disable it in the CTC.

Filtering strength is QP adaptive.

The proposal received support by several experts expressing interest.

This should not be in CTC (as preprocessing is usually undesirable for comparison), but interesting for experimentation. Could also be used for additional investigation of AHG13 to assess benefit of tools as additional information.

Question: Does it generate visual artefacts in some cases? Could happen. Also problems with fading sequences.

> Decision (SW): Adopt JVET-O0549 (not in the CTC).

CITATION

P. Wennersten, R. Sjöberg, J. Enhorn, "AHG10: Encoder-only GOP-based temporal filter", JVET-O0549, 15th Meeting: Gothenburg, SE, July 2019.