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Title	Using VVC Class-F configuration improves the performance of MIV
Authors	Vinod Kumar Malamal Vadakital (Nokia), Adrian Dziembowski (PUT), Dawid Mieloch (PUT)

Abstract

Based on input in MPEG 130, where it was shown that screen content coding tools improved the performance of MIV, we performed experiments to test the use of class-F configuration of VVC. It is found that in addition to an already significant improvement of VVC over HEVC, the use of class-F configuration provides additional improvements

1 Introduction

At the 130th meeting, a new activity "Exploration Experiments on Coding of Future Immersive Video" was started. The focus of this activity is to explore aspects going beyond what is currently focused in MIV. As the first exploration activity, a simple experiment to evaluate the performance of the MIV test model, but replacing the video coder with VVC, was established. The results of this experiment are collated in m54364.

In MPEG-130, the contribution m53427, also hinted that the screen-content tools of HEVC provided noticeable gains over HEVC-Main10 coders. We suspected that this gain could, at least in part, be attributed to the use of the intra_block_copy tool of Screen Content Coding (SCC). VVC includes this tool as part of the main profile with an additional configuration, Class-F, applied on top of the RA configuration.

2 Experimental results

The attached reporting excel sheet provides the comparative results between VVC-RA and VVC-RA + Class-F configuration. The results clearly indicate that the use of the Class-F configuration improve both coding and rendering performance. Performance of VVC-RA + Class-F was evaluated over 4 lower rates in CTC (QP2 – QP5).

3 Discussion

Nokia, due to limitations on time and compute, could simulate only the NokiaChess sequence. However, PUT has simulated the entire set of sequences. Cross-checking with NokiaChess, there is perfect alignment of the texture coded video. However, there is a slight mismatch in the depth coded video. A similar situation was found when cross-checking the VVC-RA configuration for

the exploration experiments on coding for future immersive video. We are not able to nail down the exact source of the problem.

PUT used VC15 on Windows 10, while Nokia used GCC 9.2.0_1 with CentOS 7.6 on a grid containing Intel(R) Xeon(R) CPU E5-2695 v2 @ 2.40GHz processors.

PUT has evaluated that most of the gain comes from using IBC tool.

	WSPSNR BD-rate	VMAF BD-rate	IVPSNR BD-rate
IBC = 0	-1.8%	-2.5%	-1.6%
IBC = 1	-4.7%	-5.7%	-4.3%

4 Acknowledgement

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5 Conclusion

From the experimental results, we believe that that the use of Class-F configuration improves both coding and rendering performance. We recommend using the RA+Class-F configuration for generating the next set of anchors.