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Source Poznań University of Technology (PUT), Poznań, Poland
Status Input
Title Immersive Video CE2: Pruning and Synthesis – summary report
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Abstract

This document reports the experiments performed within Core Experiments 2 [N19216].

1 Introduction

The goal of the experiment was to study performance of pixel pruning. Given either re-projected or selected source views, pruning operation is performed in order to reduce the number of pixels that is to be finally packed into texture and depth atlases. It is also necessary that the resulting patches have temporal consistency to compress efficiently using a HEVC encoder.

Three participants registered for the experiments:

- 2.1. Philips,
- 2.5. ETRI,
- 2.7. PUT.

2 Summary of the experiments

2.1 m54145: Philips CE-2 related response “basic view allocator”

Instead of using stricter pruning criteria (as in CE2.1 experiment’s description [N19216]), Philips has explored modifications of view labeler. The experiment is out of strict scope of CE2, however it has a significant impact on pruning.

Philips’ experiment was partially crosschecked by PUT:

- A17 (max. 80% basic views), QP2 and QP5: SA, SD, SJ,
- A97 (max. 80% basic views), QP3 and QP4: SC, SE, SL.

All the results obtained by the crosschecker were **the same** as reported by proponent.

2.5 Experiment not finished

ETRI’s experiment has been withdrawn for this meeting cycle.

2.7 m54177: Immersive Video CE2.7: Texture-dependent pruning

In the approach proposed by PUT, two types of information are taken into account during pruning: depth and texture. Depth information is analyzed in the same way as in TMIV5. Color information is analyzed as a pixel-to-block comparison.

PUT's experiment was fully crosschecked (all mandatory content) by Philips.

The results were **similar enough but not exact**.

PUT, VC15, Windows10									
Mandatory content - Proposal vs. Low/High-bitrate Anchors									
Sequence	High-BR BD rate	Low-BR BD rate	Max delta Y-PSNR	High-BR BD rate	Low-BR BD rate	High-BR BD rate	Low-BR BD rate	Pixel rate ratio	
	Y-PSNR	Y-PSNR	Y-PSNR	VMAF	VMAF	IV-PSNR	IV-PSNR		
ClassroomVideo	SA	6.833%	15.419%	3.20	19.589%	20.742%	9.671%	15.261%	0.63
TechnicolorMuseum	SB	0.692%	1.495%	13.93	-0.641%	0.930%	0.180%	1.167%	0.63
InterdigitalHijack	SC	-19.776%	-10.241%	8.16	4.158%	5.190%	-24.871%	-15.859%	0.63
OrangeKitchen	SJ	-33.070%	-8.990%	12.60	7.863%	21.459%	-35.084%	-13.973%	0.62
TechnicolorPainter	SD	1.261%	1.963%	6.94	1.194%	1.960%	1.692%	2.007%	0.63
IntelFrog	SE	-32.261%	11.461%	10.89	9.744%	35.537%	-23.091%	14.656%	0.62
PoznanFencing	SL	0.000%	0.000%	12.63	0.000%	-51.473%	0.000%	-39.397%	0.52
MIV		-10.903%	1.587%	9.77	5.987%	4.906%	-10.215%	-5.163%	

Philips, GCC 9.1.0:									
Mandatory content - Proposal vs. Low/High-bitrate Anchors									
Sequence	High-BR BD rate	Low-BR BD rate	Max delta Y-PSNR	High-BR BD rate	Low-BR BD rate	High-BR BD rate	Low-BR BD rate	Pixel rate ratio	
	Y-PSNR	Y-PSNR	Y-PSNR	VMAF	VMAF	IV-PSNR	IV-PSNR		
ClassroomVideo	SA	6.823%	15.387%	3.20	19.333%	20.739%	9.578%	15.211%	0.63
TechnicolorMuseum	SB	0.692%	1.495%	13.93	-0.642%	0.929%	0.180%	1.167%	0.63
InterdigitalHijack	SC	-19.880%	-10.452%	8.17	3.996%	4.993%	-24.643%	-16.007%	0.63
OrangeKitchen	SJ	-33.041%	-8.744%	12.58	7.935%	21.687%	-35.102%	-13.922%	0.62
TechnicolorPainter	SD	1.260%	1.963%	6.94	1.192%	1.960%	1.692%	2.006%	0.63
IntelFrog	SE	-32.313%	11.418%	10.89	9.756%	35.475%	-23.160%	14.612%	0.62
PoznanFencing	SL	0.000%	0.000%	12.63	0.000%	-51.312%	0.000%	-39.326%	0.52
MIV		-10.923%	1.581%	9.76	5.939%	4.925%	-10.208%	-5.180%	

3 References

- [N19216] “Description of Immersive Video Core Experiments 2: Pruning and Synthesis”
ISO/IEC JTC1/SC29/WG11 MPEG/N19216, May 2020, Alpbach, Austria.
- [M54145] B. Kroon, “[MIV] Philips CE-2 related response “basic view allocator””
ISO/IEC JTC1/SC29/WG11 MPEG/M54145, June 2020, Online.
- [M54177] D. Mieloch, A. Dziembowski, “Immersive Video CE2.7: Texture-dependent pruning”
ISO/IEC JTC1/SC29/WG11 MPEG/M54177, June 2020, Online.