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Abstract

Core experiment 13.10 intends to examine the representation of entropy coded data.

Mandate

The mandate of the core experiment is to evaluate the use of a chunk-based interleaving method [1] for representing sub-streams of arithmetic and bypass coded data to —

- examine the coding efficiency of the proposed method.
- examine the buffering requirements for a decoder.

Participants

Company	Contact	E-mail	Status
Apple	David Flynn	davidflynn@apple.com	Proponent
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Timeline

2019-11-01	Expected release of TMC13v8
2019-11-15	Distribution of CE software and results for verification
2019-12-01	CE verification feedback
2020-01-08	MPEG 129 document upload deadline
2020-01-13	MPEG 129, Brussels

Evaluation

All CTC [2] test conditions for TMC13 will be evaluated using category one and three content. Evaluation will cover use of bitwise and bytewise octree coding modes, under the following conditions:

- octree + LoD attribute coding
- octree + RAHT attribute coding
- trisoup + LoD attribute coding
- trisoup + RAHT attribute coding

Description of proposals

m51024 – Chunk-interleaved coding of entropy sub-streams

This contribution proposes an alternative approach based on a chunk-interleaved representation of the two sub-streams. It aims to balance the benefit of not arithmetically coding bypass bins, the ability to transmit and receive the bitstream as a whole in the forward order, with the chunk signalling overhead. Based on a 256-byte chunk size, the overhead is 0.4% of bitrate.

Each 256 byte chunk is formed of:

- a one byte header that indicates the number of arithmetically coded bytes present in the chunk, n ,
- n bytes of arithmetically coded data, and
- $255 - n$ bytes of (non arithmetically coded) bypass data.

Special handling of the last bypass coded byte in a chunk allows an encoder to flush incomplete chunks in order to permit low latency coding and decoding.

References

- [1] D. Flynn, A. Tourpis, and K. Mammou, “[G-PCC][New proposal] G-PCC low latency bypass bin coding,” ISO/IEC JTC1/SC29/WG11, 128th meeting, Geneva, Tech. Rep. m51024, Oct. 2019.
- [2] 3DG, “Common Test Conditions for PCC,” ISO/IEC JTC1/SC29/WG11, 128th meeting, Geneva, Tech. Rep. w18883, Oct. 2019.