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**INTERNATIONAL ORGANISATION FOR STANDARDISATION
ORGANISATION INTERNATIONALE DE NORMALISATION
ISO/IEC JTC 1/SC 29/WG 11
CODING OF MOVING PICTURES AND AUDIO**

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Brussels, BE – January 2020

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Title: G-PCC CE13.30: Codec optimisations

Abstract

Core experiment 13.30 intends to evaluate and track proposed minor optimisations of the G-PCC design.

Mandate

The mandate of the core experiment is to evaluate proposed optimisations to —

- examine the coding efficiency of each proposed method,
- examine the complexity of each proposed method,
- examine the combined effects of all proposed methods.

Participants

Company	Contact	E-mail	Status
Apple	David Flynn	davidflynn@apple.com	Proponent
BlackBerry	Jonathan Taquet	jtaquet@blackberry.com	Proponent
Sony	Alexandre Zaghetto	Alexandre.Zaghetto@sony.com	Cross-checker

Timeline

2020-01-31 Expected release of TMC13v9
2020-03-20 Distribution of CE software and results for verification
2020-04-03 CE verification feedback
2020-04-15 MPEG 129 document upload deadline
2020-04-20 MPEG 129, Brussels

Evaluation

All CTC [1] test conditions for TMC13 will be evaluated using category one and three content.

Description of proposals

m51011 – Use of L1 instead of L2 distance for neighbour search

This contribution [2] proposes to use the L1 (Manhattan) distance between points for the purpose of level-of-detail construction in attribute coding. This contrasts to the current G-PCC design that uses L2-squared (Euclidean) distances.

m52345 – Planar mode buffer size reduction

The existing planar mode contains a buffer sized proportionally to the range of node positions at a given depth of the octree. For large volumes, the buffer size ($\propto 2^{\text{depth}}$) becomes very large. This contribution [3] proposes to reduce the maximum buffer size by limiting the number of rows per buffer grid, reducing the number of elements per row, and reducing the size of each element stored.

The CE shall evaluate the space vs coding performance trade-off associated with changing the buffer size and recommend a suitable operating point (or points).

References

- [1] 3DG, “Common Test Conditions for PCC,” ISO/IEC JTC1/SC29/WG11, 129th meeting, Brussels, Tech. Rep. w19084, Jan. 2020.
- [2] Z. Gao, D. Flynn, A. Tourapis, and K. Mammou, “[G-PCC][New proposal] Using L1 norm for nearest neighbour search in Prediction and Lifting schemes,” ISO/IEC JTC1/SC29/WG11, 128th meeting, Geneva, Tech. Rep. m51011, Oct. 2019.
- [3] J. Taquet and S. Lasserre, “[G-PCC] [CE13.22 related] Planar mode buffer optimization,” ISO/IEC JTC1/SC29/WG11, 129th meeting, Brussels, Tech. Rep. m52345, Jan. 2020.