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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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Title: CE 13.38 on angular mode for prediction coding

Abstract

Core experiment 13.38 intends to investigate the use of an angular coding mode in the predictive geometry coder.

Mandate

The mandate of the core experiment is to evaluate the proposed angular coding mode [1] to —

- evaluate the compression performance of the proposed method.
- evaluate the benefits and detriments of the proposed method.

Participants

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Timeline

2020-05-15 Expected release of TMC13v10
2020-05-31 Distribution of CE software and results for verification
2020-06-24 MPEG 131 document upload deadline
2020-06-29 MPEG 131, Online

Evaluation

The C2 and CW test conditions [2] for TMC13 will be evaluated using category three frame-based content. Performance comparisons should be performed using the following as references:

- TMC13 v10 CTC anchor results [3].
- TMC13 v10 with predictive geometry coding.
- TMC13 v10 with octree coding configured for cat3-frame content and superfluous tools disabled.

Description of proposals

m53618 – The angular coding mode

The proposed method applies to point clouds acquired using a rotating scanner with one or more capture elements scanning at a constant elevation. Such a model covers, for instance, spinning LiDaR scanners.

The capture element elevation angle (theta) along with the rotation frequency are treated as priors. The theta angles and capture element origins are signalled using the existing high-level syntax already present in the specification.

The location of a point is first signalled as a quantised spherical co-ordinate which may be predicted using the existing prediction methods present in the predictive geometry coder. The spherical co-ordinate is converted to a Cartesian co-ordinate and a secondary quantised residual applied to correct for any modelling error.

The encoder's non-normative tree construction operates by assigning input points in input order to a per-laser sub-tree.

References

- [1] K. Mammou, D. Flynn, and A. Tourapis, "[G-PCC][New proposal] Optimization of the predictive coding scheme for Spinning Lidars," ISO/IEC JTC1/SC29/WG11, 130th meeting, Alpbach, Tech. Rep. m53618, Apr. 2020.
- [2] 3DG, "Common Test Conditions for PCC," ISO/IEC JTC1/SC29/WG11, 130th meeting, Alpbach, Tech. Rep. w19324, Apr. 2020.
- [3] —, "G-PCC performance evaluation and anchor results," ISO/IEC JTC1/SC29/WG11, 130th meeting, Alpbach, Tech. Rep. w19326, Apr. 2020.