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# Abstract

This document provides a description of Core Experiment 13.20 on neighbor’s weight modification on lifting and predicting scheme.

# Introduction

The goal of Core Experiment 13.20 is to evaluate the neighbor’s weight modification for the lifting and predicting scheme on G-PCC.

The performance of the technique [1] will be evaluated by the 3DG/PCC AhG, in terms of RD performance and computational complexity.

# Mandates

The mandates for CE are as follows:

1. To study the coding performance compared to the lifting scheme anchor.
2. To study the coding performance compared to the predicting scheme anchor.
3. To study the complexity (e.g. encoding and decoding time) of the proposed method.

# Participants

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(P=proponent, C=crosss checker)

# Method to be evaluated

## m48894 “[G-PCC]An enhanced prediction scheme for Cat3 point clouds”

In current predicting and lifting schemes of TMC13v6, upon the LoD generation, predictors would be determined after nearest neighbor searching. Let be the position of the current point , be the positions of its 3-nearest neighbors, be the neighbors’ decoded/reconstructed attribute values and be the weights associated with each of the 3-nearest neighbors.

In our scheme, the weight of each neighbor is modified by decreasing the influence of z component. The modified weight of each neighbor is calculated by:

, (1)

where .

The parameter can be determined by statistical analysis of Cat3 point clouds. Accordingly, the predicted attribute value of the current point is derived as:

. (2)

# Proposed tests

There will be two tests to be studied in this CE.

* Test 1: m48894[1] neighbor’s weight modification on G-PCC lifting scheme.
* Test 2: m48894[1] neighbor’s weight modification on G-PCC predicting scheme.

# Test model, anchors and CTC

The latest G-PCC reference software [2] will be used as the anchor for this CE.

All tests are to be performed using the CTC [3] on categories 1 and 3 datasets.

Results shall be reported relative to the CTC anchors.

# Timeline

* 2019-07-12: MPEG #126 meeting ends;
* 2019-08-12: G-PCCv7 software released;
* 2019-09-02 [TMC13v7 + 3 weeks]: G-PCC CE Software and results are released to cross-checkers;
* 2019-09-16 [TMC13v7 + 5 weeks]: Preliminary CE feedback from cross-checkers to proponents;
* 2019-10-02: MPEG document upload deadline
* 2019-10-07: MPEG #128 meeting starts.

# References

1. Qi Zhang, Yiting Shao, Jing Wang, Ge Li and Shan Liu, “[G-PCC][New proposal] An enhanced prediction scheme for Cat3 point clouds,” ISO/IEC JTC1/SC29 WG11 MPEG input document m48894, Goteborg, Sweden, July 2019
2. “G-PCC Test Model 7”, ISO/IEC JTC1/SC29/WG11 MPEG2019 Doc. w18664, Goteborg, Sweden, July 2019
3. “Common Test Conditions for PCC” ISO/IEC JTC1/SC29 WG11 MPEG2018”, ISO/IEC JTC1/SC29/WG11 MPEG2019 Doc. w18665, Goteborg, Sweden, July 2019