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**CODING OF MOVING PICTURES AND AUDIO**

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**Gothenburg, SE – July 2019**

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**Description of Exploration Experiment 13.7 for G-PCC on Interchannel Prediction for Nearlossless Coding**

# Abstract

This document provides a description of G-PCC Exploration Experiment (EE) 13.7 on Interchannel Prediction for Nearlosss Coding.

# Introduction

The goal of EE13.7 is to investigate the inter-channel prediction as proposed in m49605 in terms of its near-lossless coding benefits.

# Information about proposed tools

## m49605: Inter-Channel Prediction for Attribute Coding [1]

In this contribution, it is proposed to use inter-channel prediction for color attributes. Specifically, residual prediction is shown to be effective due to the similarities among prediction residues in RGB-domain coding. For the CW (lossless attribute coding) test, the proposed method shows 15.7% bpp reductions on average compared with the anchor under CTC. For the CY (nearlossless attribute coding) test, it achieves -8.5%, -8.5%, and -8.5% BD-rate savings in Hausdorff metric for R, G, and B channels, respectively, under CTC. Unlike other color transform-based approaches for inter-channel decorrelation such as m49601 and m49606, the proposed method has the advantage that it achieves significant coding gains in Hausdorff metric (CTC for CY) as well while providing comparable lossless bitrate reduction under the CW testing condition.

# Experimental description

In this EE, the proposed inter-channel prediction scheme will be investigated in terms of its near-lossless coding gain benefits with respect to other potential alternative methods.

## Mandates

1. Report the near-lossless coding performance of the proposed method under CY condition
2. Compare, for example, with the prequantization approach where the input is prequantized with a specified maximum error bound and losslessly coded.
3. Report any improvements of the proposed method

2. Explore extensions of the method to different color-spaces or multichannel attributes in general.

## Participants

| **Name** | **Company** | **E-mail address** | **Type** |
| --- | --- | --- | --- |
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### Software

TMC13v7 shall be used for these experiments. The proposed tools shall be implemented on top of TMC13v7.

### Test configurations

Parameters and configurations for TMC13v7 software will be provided by the proponent.

### Evaluation Method

The point cloud test material will be tested under the following conditions of the CTC [3]:

* CY Lossless Geometry – Nearlossless Attributes
* (Optional) CW Lossless Geometry – Lossless Attributes

## EE.13.7 Coordinators

Sehoon Yea (sehoonyea@tencent.com)

# Timeline:

* **2019-08-12**: Expected date for TMC13v7 release;
* **2019-09-10 [TMC13v7 + 4 weeks]**: Deliver source code and results for cross check;
* **2019-09-24**: **[TMC13v7 + 6 weeks]** Report of preliminary cross check results;
* **2019-10-02**: MPEG document upload deadline.

# References

1. Inter-channel Prediction for Attribute Coding, ISO/IEC JTC1/SC29 WG11 m49605, Gothenburg, SE, July 2019

[2] PCC Test Model Category 13 v7, ISO/IEC JTC1/SC29/WG11 w18664, Gothenburg, SE, July 2019.

[3] Common Test Conditions for PCC, ISO/IEC JTC1/SC29 WG11 w18665, Gothenburg, SE, July 2019.