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**CODING OF MOVING PICTURES AND AUDIO**

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# Abstract

This document provides a description of Core Experiment 13.31 on nearest neighbour search for spatial scalability.

# Introduction

The goal of Core Experiment 13.31 is to evaluate the nearest neighbour search method for the lifting scheme for the spatial scalability.

The performance of the technique m52314[3] are evaluated in the scope of the CE 13.31, in terms of RD performance, on top of TMC13 release-v9.0[1] with CTC condition [2].

# Mandates

The mandates for CE are as follows:

1. To evaluate the coding performance compared with the anchor scalable lifting algorithm
2. To study how to find the best nearest neighbour range for the contents
3. To study how neighbour weight modification(Section 3.7.8 in [4]) impact on nearest neighbour search for scalable lifting
4. To investigate how to extend the method to apply into non-scalable lifting scheme

# Participants

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# Methods to be evaluated

In contribution m52314[3], the method to select nearest neighgour for spatial scalable lifting scheme was proposed. The proposed method is to add maximum nearest neighbor distance for nearest neighgour search. The distance between the points to select nearest neighbor should be equal or smaller than the maximum nearest neighbor distance.

Maximum nearest neighbor distance at each LoD is calculated with equation below.

Maximum nearest neighbor distance *LoD* = Base distance *LoD* nearest neighbor range

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# Evaluation

## Test condition

Following test conditions will be evaluated under CTC[2] enabling spatial scalability.

* *C1 AI lossless geometry – (lossy attribute)*
* *C2 AI, lossy geometry – (lossy attribute)*

## Test model, anchors and CTC

TMC13v9 shall be used for these experiments. The proposed tools shall be implemented on top of TMC13v9.

All tests are to be performed on categories 1 and 3 datasets.

The configuration are same as the CTC except the following options to set enable spatial scalability.

* aps\_scalable\_enable\_flag=1
* lodDecimation=0 (for CAT3)

Results shall be reported relative to the anchors enabling spatial scalability.

# Timeline

* 2020-0X-XX: Expected date for release of cross-verified TMC13v9 software and anchors
* 2020-03-20: CE Software and results are released to cross-checkers
* 2020-04-03: Preliminary feedback from cross-checkers to proponents
* 2020-04-15: MPEG document upload deadline

# References

1. “G-PCC Test Model v9”, ISO/IEC JTC1/SC29/WG11 MPEG2020 Doc. w1XXXX, Brussels, BE, January 2020
2. “Common Test Conditions for PCC” ISO/IEC JTC1/SC29 WG11 MPEG2020 Doc, w1XXXX, Brussels, BE, January 2020
3. “[G-PCC][New Proposal] on nearest neighbour search for spatial scalability”, ISO/IEC JTC1/SC29 WG11 (MPEG) input document m52314, Brussels, BE, January 2020
4. “G-PCC codec description v5”, ISO/IEC JTC1/SC29 WG11 (MPEG) output document N18891, Geneva, CH, October 2019