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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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**Gothenburg, SE – July 2019**

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**V-PCC Core Experiment 2.12 on Visual Quality**

# Abstract

This document provides a description of Core Experiment 2.12 on Visual Quality.

# Introduction

The goal of CE2.12 is to evaluate the encoding tool that improve point cloud visual reconstruction.

* m49573 [V-PCC] New proposal on high gradient area separation

The experimental results of the CE will be evaluated by the 3DG/PCC AhG. The 3DG/PCC AhG group will make recommendations to the 3DG group for any changes in PCC TMC2.

# Mandates

Mandates for CE2.20 are as follows:

* To study the coding performance of technique [1] compared to the anchor algorithm
* To evaluate the time complexity
* To evaluate the visual quality improvement

# Participants

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| --- | --- | --- | --- |
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# Methods to be evaluated

## M49573: [V-PCC] New proposal on high gradient area separation

To determine points being separated, Sobel filter is applied on the geometry D0 layer for each patch to calculate its gradient. If the gradient of a pixel is larger than a pre-defined threshold , points projected on this 2D location will be regarded as high gradient points as shown in Figure 1. Because it is not desirable to separate single or few points from the existing CC, the number of connected high gradient points is counted, and a pre-defined threshold is used to filter groups with fewer points. These high gradient groups will be removed from the current CC.

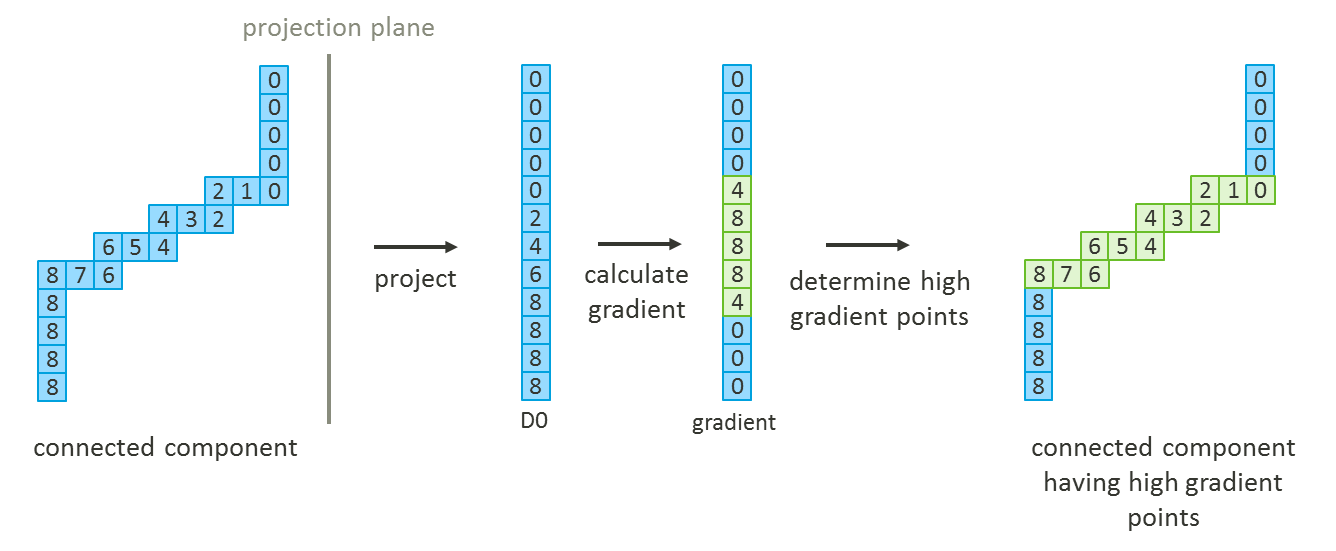


Figure 1 Detect points with high gradient

The high gradient group then join to other CC which has a different orientation, or becomes a new CC if not connecting any CC which has a different orientation. In this case, the new CC has to change its projection plane. First, the bounding box of the new CC is calculated. The shortest boundary, except the boundary along the original orientation, is regarded as its new projection direction. To determine the max or min depth values to be stored, the CC is projected along the positive direction and the negative direction with two layers D0 and D1 for each direction. By counting the number of points stored in D0 and D1 for each direction, the one with more points will be chosen as the new projection plane.

# Proposed tests

Tests will be implemented on top of TMC2-v7.0 following the common test conditions [2]. Lossy Conditions will be evaluated:

* Anchor vs. Anchor with tool m49573 (C2 lossy coding)

# Timeline

2019/07/12 MPEG #127 meeting ends

2019/07/26 Finalized CE, CTC

2019/08/02 V-PCC v7.0 software

2019/09/18 CE Software and results are released to cross-checkers

2019/09/25 Preliminary feedback from cross-checkers to proponents

2019/10/02 MPEG #128 document upload deadline

2019/10/07 MPEG #128 meeting starts

# References

1. “[V-PCC] New proposal on high gradient area separation,” ISO/IEC JTC1/SC29 WG11, m49573, Gothenburg, SE, July 2019
2. Common Test Conditions for PCC, ISO/IEC JTC1/SC29/WG11, w18665, Gothenburg, SE, July 2019