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Information technology — Coded representation of immersive media —

Part 29: Video-based dynamic mesh coding (V-DMC)

Technologies de l'information — Représentation codée de média immersifs —

Partie 29: Codage dynamique de maillages basé vidéo (V-DMC)

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Contents

Page

Foreword

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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology, Subcommittee* SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

A list of all parts in the ISO/IEC 23090 series can be found on the ISO website.

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Introduction

The advances in 3D capture, modelling, and rendering have promoted the ubiquitous presence of 3D content across several platforms and devices.

3D meshes, along with point clouds and immersive video, are widely used to represent such immersive content. A mesh is composed of several polygons that describe the boundary surface of a volumetric object. Each polygon is defined by its vertices in 3D space and the information on how the vertices are connected, referred to as connectivity information. Optionally, vertex attributes, such as colours, normal, etc., can be associated with the mesh vertices. Attributes can also be associated with the surface of the mesh by exploiting mapping information that describes a parameterization of the mesh onto 2D regions of the plane. Such mapping is usually described by a set of parametric coordinates, referred to as UV coordinates or texture coordinates. 2D attribute maps are used to store high resolution attribute information such as texture, normal, material ID etc. Such information can be used for various purposes such as texture mapping and shading.

To achieve a realistic representation of an object or scene, 3D meshes are becoming increasingly sophisticated, and a significant amount of data is generated for the creation and consumption of those meshes. When uncompressed, these data can be costly in terms of storage and transmission. Furthermore, dynamic mesh sequences may require even larger amounts of data, since it may consist of a significant quantity of information changing over time. A visual volumetric video-based coding (V3C) standard has been created to support the distribution of volumetric data, currently addressing point clouds (ISO/IEC 23090-5) and immersive video content (ISO/IEC 23090-12). Therefore, this document was developed to support compression of 3D video-based mesh coding utilizing the ISO/IEC V3C standard (ISO/IEC 23090-5).

Information technology — Coded representation of immersive media —

Part 29:
Video-based dynamic mesh coding (V-DMC)

1 Scope

This document specifies syntax, semantics, and decoding for video based dynamic mesh coding (V-DMC), basemesh coding, MPEG edgebreaker static mesh coding, and arithmetic coded displacement. Furthermore, this document specifies processes that can be used for reconstruction of visual volumetric media and also include additional processes such as post-decoding, pre-reconstruction, post-reconstruction, and adaptation.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO /IEC 23090-5:2026, *Information technology — Coded Representation of Immersive Media — Part 5: Visual volumetric video-based coding (V3C) and video-based point cloud compression (V-PCC)*

Bibliography

[1] SMPTE VC-2, *Society of Motion Picture and Television Engineers ST 2042-1 (2017), VC-2 Video Compression*

[2] ISO/IEC 14496-10, *Information technology — Coding of audio-visual objects — Part 10: Advanced video coding*