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Australian STANDARD®

STANDARDS Australia

Information technology — Plenoptic image coding system (JPEG Pleno)

Part 6: Learning-based point cloud coding



AS ISO/IEC 21794.6:2026

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Structure of Standards

A Standard always has the following parts:

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(ii) The Scope states what the Standard is about, what it covers and what it does not cover.

(iii) The Normative references clause lists other documents that are referenced in the Standard as part of requirements.

(iv) The Terms and definitions clause defines important terms to help with understanding the Standard.

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(2) An informative appendix provides additional information or guidance. They usually do not contain requirements. If an informative appendix does contain requirements, the Standard will explain when those requirements apply.

(3) A Bibliography lists documents referenced in the Standard but not as part of requirements.

Many Standards include notes. Notes provide recommendations and/or guidance only. They never contain requirements.

Preface

This Standard was prepared by the Standards Australia Committee IT-029, Coding of audio, picture, multimedia and hypermedia information.

The objective of this document is to define the JPEG Pleno framework for learning-based point cloud coding.

This document is applicable to interactive human visualization, with competitive compression efficiency compared to state of the art point cloud coding solutions in common use, and effective performance for 3D processing and machine-related computer vision tasks and has the goal of supporting a royalty-free baseline.

This document specifies a coded codestream format for storage of point clouds. It provides information on the encoding tools. It also defines extensions to the JPEG Pleno File Format and associated metadata descriptors that are specific to point cloud modalities.

This document is identical to and has been reproduced from ISO/IEC 21794-6:2025, *Information technology — Plenoptic image coding system (JPEG Pleno) — Part 6: Learning-based point cloud coding.*

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The terms “normative” and “informative” are used in Standards to define the application of the appendices or annexes to which they apply. A “normative” appendix or annex is an integral part of a Standard, whereas an “informative” appendix or annex is only for information and guidance.

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives or www.iec.ch/members_experts/refdocs).

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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 21794 series can be found on the ISO and IEC websites.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

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Introduction

This document is part of a series of standards for a system known as JPEG Pleno. This set of standards facilitates the capture, representation, exchange and visualization of plenoptic imaging modalities. A plenoptic image modality can be a light field, point cloud or hologram, which are sampled representations of the plenoptic function in the form of, respectively, a vector function that represents the radiance of a discretized set of light rays, a collection of points with position and attribute information, or a complex wavefront. The plenoptic function describes the radiance in time and in space obtained by positioning a pinhole camera at every viewpoint in 3D spatial coordinates, every viewing angle and every wavelength, resulting in a 7D function.

JPEG Pleno specifies tools for coding these modalities while providing advanced functionality at system level, such as support for data and metadata manipulation, editing, random access and interaction, protection of privacy and ownership rights.

The scope of this document is the specification of a learning-based coding standard for point clouds and associated attributes, offering a single-stream, compact compressed domain representation, supporting advanced flexible data access functionalities. In this context, learning-based refers to the use of machine learning technologies to learn an optimal compressed domain representation from supplied training data.

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Australian Standard®

Information technology — Plenoptic image coding system (JPEG Pleno)

Part 6: Learning-based point cloud coding

1 Scope

This document defines the JPEG Pleno framework for learning-based point cloud coding.

This document is applicable to interactive human visualization, with competitive compression efficiency compared to state of the art point cloud coding solutions in common use, and effective performance for 3D processing and machine-related computer vision tasks, and has the goal of supporting a royalty-free baseline.

This document specifies a coded codestream format for storage of point clouds. It provides information on the encoding tools. It also defines extensions to the JPEG Pleno File Format and associated metadata descriptors that are specific to point cloud modalities.

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 6048-1:—, [1] *Information technology — JPEG AI learning-based image coding system — Part 1: Core coding system*

ISO/IEC 15444-1, [2] *Information technology — JPEG 2000 image coding system — Part 1: Core coding system*

ISO/IEC 15444-2, [3] *Information technology — JPEG 2000 image coding system — Part 2: Extensions*

ISO/IEC 21794-1, *Information technology — Plenoptic image coding system (JPEG Pleno) — Part 1: Framework*

ISO/IEC 21794-2, *Information technology — Plenoptic image coding system (JPEG Pleno) — Part 2: Light field coding*

ISO/IEC 21794-3, *Information technology — Plenoptic image coding system (JPEG Pleno) — Part 3: Conformance testing*

ISO/IEC 21794-4, *Information technology — Plenoptic image coding system (JPEG Pleno) — Part 4: Reference software*

ISO/IEC 21794-5, *Information technology — Plenoptic image coding system (JPEG Pleno) — Part 5: Holography*

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

ISO/IEC 23090-9, *Information technology — Coded representation of immersive media — Part 9: Geometry-based point cloud compression*

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1 Under preparation. Stage at the time of publication: ISO/IEC PRF 6048-1:2025.

2 Similar to Rec. ITU-T T.800 | ISO/IEC 15444-1

3 Similar to Rec. ITU-T T.801 | ISO/IEC 15444-2

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