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Information technology — Computer graphics, image processing and environment data representation — Object/environmental representation for image-based rendering in virtual/mixed and augmented reality (VR/MAR)

Technologies de l'information — Infographie, traitement d'images et représentation des données environnementales — Représentation d'objets/environnements pour l'habillage à partir d'images réelles dans la réalité virtuelle/mixte et augmentée (VR/MAR)

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Foreword

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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 24, *Computer graphics, image processing and environmental data representation*.

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Introduction

As virtual reality (VR) and augmented reality (AR) expand to applications in entertainment and education industries, many methods of augmenting reality to virtual space have been developed. Because of this expansion, the technology of capturing and representing objects in real environments is in high demand.

One of the proposed methods of capturing the real world is image-based representation. Image-based representation is a technique that can be used in various applications that require 3D model rendering at an arbitrary viewpoint, including virtual reality, augmented reality and video stabilization. Since image-based representation is a predominant alternative to using 3D models in the growing VR/MAR market, due to its realism, scalability, accuracy and efficiency, creating a standard for image-based representation is required.

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1 Scope

This document specifies an image-based representation model that represents target objects/environments using a set of images and optionally the underlying 3D model for accurate and efficient objects/environments representation at an arbitrary viewpoint. It is applicable to a wide range of graphic, virtual reality and mixed reality applications which require the method of representing a scene with various objects and environments.

This document:

— defines terms for image-based representation and 3D reconstruction techniques;

— specifies the required elements for image-based representation;

— specifies a method of representing the real world in the virtual space based on image-based representation;

— specifies how visible image patches can be integrated with the underlying 3D model for more accurate and rich objects/environments representation from arbitrary viewpoints;

— specifies how the proposed model allows multi-object representation;

— provides an XML based specification of the proposed representation model and an actual implementation example (see Annex A).

2 Normative references

There are no normative references in this document.