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Information technology — Computer graphics, image processing and environmental representation — Constructs for visual positioning systems in mixed and augmented reality (MAR)

Technologies de l'information — Infographie, traitement de l'image et représentation des données environnementales — Constructions pour les systèmes de positionnement visuel en réalité mixte et augmentée

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Foreword

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Introduction

Mixed and augmented reality (MAR) refers to the contents and the underlying technology that can overlay/insert (or augment) and display information over/in the real world. The augmentation means certain "virtual" or "artificial" information is spatially registered in a proper position and orientation within the 3D real world. To realize this "spatial" registration, the MAR system includes a functionality, called "positioning", that can recognize and understand the real world in 3D, track the position and orientation of the user so that the mixed reality scene can be composed and displayed to the user in the right way. When the positioning function implementation is based primarily on the camera images, it is referred to as the "Visual" positioning system (VPS).

This document outlines the basic reference MAR architecture, especially the detailed system components for the VPS and relevant informational constructs. Such a reference model can serve as a basis for discovering opportunities for future MAR standardization.

The focus is given to the system components and information constructs for image (visual) based scene recognition and tracking. The document also provides definitions for terms as related to pertaining domains, and illustrate typical VPS/MAR use cases. Note that the detailed processes or algorithms for different system components are out of scope.

Information technology — Computer graphics, image processing and environmental representation — Constructs for visual positioning systems in mixed and augmented reality (MAR)

1 Scope

This document specifies the concept of visual positioning system (VPS) in the context of mixed and augmented reality (MAR) and describes a reference model for it in terms of the essential system components and information constructs.

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 18039:2019, *Information technology — Computer graphics, image processing and environmental data representation — Mixed and augmented reality (MAR) reference model*