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Information technology — Computer graphics, image processing and environmental data representation — Benchmarking of vision-based spatial registration and tracking methods for mixed and augmented reality (MAR)

Technologies de l'information — Infographie, traitement d'images et représentation des données environnementales — Étalonnage des méthodes d'enregistrement géométriques et de suivi basées sur la vision pour le MAR



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Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms, definitions, acronyms and abbreviated terms	1
3.1 Terms and definitions.....	1
3.2 Acronyms and abbreviated terms.....	3
4 Overview of the framework	3
5 Benchmarking processes	4
5.1 Overview.....	4
5.2 Process and process flow.....	5
5.3 Stakeholders.....	6
6 Benchmark indicators	7
6.1 Overview.....	7
6.2 Reliability indicators.....	8
6.3 Temporality indicators.....	8
6.4 Variety indicators.....	9
7 Trial set for benchmarking	10
7.1 Overview.....	10
7.2 Dataset for on- and off-site benchmarking.....	10
7.3 Physical object instances for on- and off-site benchmarking.....	11
8 Conformance	12
Annex A (informative) Benchmarking activities	14
Annex B (informative) Usage examples of conformance checklists	39
Annex C (informative) Conceptual relationship between this document and other standards	59
Bibliography	61

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

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Introduction

In the development of mixed and augmented reality (MAR) applications, one of the most important technologies involves spatial registration and spatial tracking methods, especially vision-based methods. The research and development on registration and tracking based on computer vision technologies is flourishing and many new algorithms have been proposed every year.

Therefore, this document aims at fostering objective evaluation and comparison of diverse registration and tracking methods, in order to facilitate fairer competition among small and major companies/institutes involved in MAR technologies, applications and services.

Moreover, this document can be the baseline to standardize spatial registration and tracking methods which not only utilize a video camera but combine a video camera with other sensors such as another video camera, a depth camera, inertial sensors and infrastructure-based positioning technologies, and which utilize technologies such as IoT (Internet of Things) and GNSS (Global Navigation Satellite System).

The target audience of this document includes stakeholders of benchmarking activities. The following are examples of how this document can be used directly or indirectly:

- by a benchmarking service provider, a benchmark provider or a benchmarking competition organizer who wishes to align their benchmarking activities including self-benchmarking and open/closed competitions to be consistent with this document;
- by a technology developer/supplier who wishes to estimate and evaluate the performance of a vision-based spatial registration and tracking (vSRT) method for MAR appropriately with a benchmarking service provider, a benchmark provider or a benchmarking competition organizer who aligns their benchmarking activities to be consistent with this document; or
- by a technology user who wishes to obtain benchmarking results based on a benchmarking activity, which is consistent with this document, or to compare the existing vSRT methods for MAR in terms of their performance.