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Artificial intelligence — Testing of AI —

Part 2: Overview of testing AI systems

Intelligence artificielle — Test des IA —

Partie 2: Vue d'ensemble du test de systèmes d'IA

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Foreword

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This document was prepared jointly by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittees SC 7 *Software and systems engineering* and SC 42, *Artificial intelligence*.

A list of all parts in the ISO/IEC 42119 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.

Introduction

This document facilitates understanding of how ISO/IEC/IEEE 29119-1, ISO/IEC/IEEE 29119-2, ISO/IEC/IEEE 29119-3, ISO/IEC/IEEE 29119-4 and ISO/IEC 20246 apply to the testing of AI systems.

The purpose of ISO/IEC/IEEE 29119 (all parts) is to define an internationally agreed set of standards for software testing that can be used by any organization when performing any form of software testing.

ISO/IEC/IEEE 29119-1 introduces software testing concepts, which can be applied to any AI system.

ISO/IEC/IEEE 29119-2 comprises test process descriptions that define the software test processes at the organizational level, test management level and dynamic test levels. It supports dynamic testing, functional and non-functional testing, manual and automated testing and scripted and unscripted testing, and can be utilized for the testing of any software-based system, including AI systems.

ISO/IEC/IEEE 29119-3 defines software test documentation. The requirements specified for templates and examples of test documentation defined in ISO/IEC/IEEE 29119-3 can be met in the test documentation for any AI system.

ISO/IEC/IEEE 29119-4 defines test design techniques, which can be utilized for the testing of AI systems and their components.

ISO/IEC 20246 defines processes and templates for work product reviews, including inspections, walkthroughs and technical reviews.

This document explains how ISO/IEC/IEEE 29119-2 can be adopted for the testing of AI systems and their components and how the test documentation templates defined in ISO/IEC/IEEE 29119-3 can be implemented when testing AI systems and their components. This document also explains how ISO/IEC 20246 can be adopted for the review of AI systems and related documentation. This document is structured as follows:

— Clauses 1 to 4 define the scope, normative references, terms and definitions and abbreviated terms;

— Clause 5 defines concepts of AI system architectures, the AI system life cycle and testing processes and documentation;

— Clause 6 explains how risk is identified for AI systems;

— Clause 7 defines test approaches suitable for testing AI systems and components;

— Annexes A to C provide supporting details and examples.

The aim of the ISO/IEC 42119 series is to provide requirements and guidance on the testing of AI components and systems.

Other parts of the ISO/IEC 42119 series include:

— ISO/IEC TS 42119-3 describes approaches and provides guidance on processes for the verification and validation analysis of AI systems;

— ISO/IEC TS 42119-7 provides technology-agnostic guidance for conducting red teaming assessments on AI systems;

— ISO/IEC TS 42119-8 provides definitions, concepts, requirements and guidance related to assessing prompt-based text-to-text AI systems that utilize generative AI.

Artificial intelligence — Testing of AI —

Part 2:
Overview of testing AI systems

1 Scope

This document provides requirements and guidance on the application of the ISO/IEC/IEEE 29119 series to the testing of AI systems. This document follows a risk-based approach and uses risks associated with AI systems, and their development and maintenance, to identify suitable test practices, approaches and techniques applicable to AI systems and their components. When the test practices, approaches and techniques are already specified in the ISO/IEC/IEEE 29119 series, this document provides additional detail and describes their application in the context of AI systems.

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/IEEE 29119-2, *Software and systems engineering — Software testing — Part 2: Test processes*

ISO/IEC/IEEE 29119-3, *Software and systems engineering — Software testing — Part 3: Test documentation*