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Information technology — Biometric performance testing and reporting —

Part 5: Access control scenario and grading scheme

Technologies de l'information — Essais et rapports de performance biométriques —

Partie 5: Plan de classement pour évaluation de scénario de contrôle d'accès

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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. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC 19795-5 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 37, *Biometrics*.

ISO/IEC 19795 consists of the following parts, under the general title *Information technology — Biometric performance testing and reporting*:

— *Part 1: Principles and framework*

— *Part 2: Testing methodologies for technology and scenario evaluation*

— *Part 3: Modality-specific testing* [Technical report]

— *Part 4: Interoperability performance testing*

— *Part 5: Access control scenario and grading scheme*

— *Part 6: Testing methodologies for operational evaluation*

— *Part 7: Testing of on-card biometric comparison algorithms*

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Introduction

This part of ISO/IEC 19795 is concerned solely with the scientific “technical performance testing” of biometric systems and subsystems to be used for access control. Technical performance testing seeks to determine error rates and transaction times with the goal of understanding and predicting the real-world error and transaction times of a biometric system. The error rates include false accept rate, and false reject rate, as well as failure to enrol (FTE) and failure to acquire (FTA) rates across the test population. These measures are generally applicable to all access control systems that contain a biometric verification subsystem.

This part of ISO/IEC 19795 defines a testing framework with the following fundamental aspects.

— This part of ISO/IEC 19795 was conceived to be a framework for a general- or multi-purpose test: “one size fits many (but not all)”. The focus is limited to access control applications.

— The framework is suitable as both a requirements statement and an evaluation report.

— The general-purpose nature of this part of ISO/IEC 19795 is centred on the common access control application requirements, and acknowledges the fact that this framework will not be suitable for specialized applications (very high levels of protection, specialized user populations like the elderly, students, etc.). Specialized applications will warrant specialized testing processes.

— The perceived benefit of the general- or multi-purpose test is economy. The supplier can submit to one testing process, and many potential customers can utilize the results, interpreting the suitability of the device (based on the results) for their application.

This testing framework assigns grades representing the tested level of performance, and these grades include a statistical confidence taking the conservative approach, that is, the performance of the system is at least as good as the grade indicated (at the 90% confidence level). Using the grading scheme to specify a required performance level of a system needs to take into account this conservative approach.

It is acknowledged that technical performance testing is only one form of biometric testing. Other types of testing not considered in this part of ISO/IEC 19795 include the following:

— reliability, availability and maintainability;

— security, including vulnerability;

— human factors, including user acceptance;

— environmental;

— safety;

— cost/benefit;

— privacy regulation compliance.

Methods and philosophies for these other types of tests are currently being considered internationally by a broad range of groups.

The purpose of this part of ISO/IEC 19795 is to capture the current understanding by the biometrics community of requirements and best scientific practices for conducting performance testing towards the end of providing consistent, structured evaluations of biometric systems intended for use in access control applications. The framework defined in this part of ISO/IEC 19795 has utility as a method for defining user requirements, for specifying the extent of performance evaluation, for conducting and for reporting.

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Information technology — Biometric performance testing and reporting —

Part 5:
Access control scenario and grading scheme

1 Scope

This part of ISO/IEC 19795:

— defines a common biometric access control scenario for use in scenario evaluation of biometric verification systems;

— provides a grading scheme for expressing quantitative biometric system requirements and performance levels;

— provides a common basis for conducting scenario evaluations to demonstrate that specified performance grades are being achieved which is adaptable to particular testing facilities and to specific biometric systems.

This part of ISO/IEC 19795 is applicable to performance testing of biometric systems without detailed knowledge of the comparison algorithms or of the underlying distribution of biometric characteristics in the population of interest.

The minimum false accept rate (FAR) tested by this part of ISO/IEC 19795 is 0.1%. If a lower FAR is required, customized testing (outside the scope of this part of ISO/IEC 19795) might be appropriate, and needs to be fully compliant with ISO/IEC 19795-2.

This part of ISO/IEC 19795 addresses testing a biometric system for physical access control, and the suitability of the testing for logical access devices needs to be determined on a case-by-case basis.

Not within the scope of this part of ISO/IEC 19795 is the measurement of error and throughput rates for people deliberately trying to circumvent correct recognition by the biometric system (i.e. active impostors). In addition, this part of ISO/IEC 19795 does not assess the following:

— reliability, availability and maintainability;

— security, including vulnerability;

— human factors, including user acceptance;

— environmental impacts;

— safety;

— cost/benefit/suitability;

— privacy regulation compliance.

These assessments are the responsibility of the procuring authority.

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2 Conformance

A test conforms to this part of ISO/IEC 19795 if the scenario used (including test crew demographics, environmental controls, time separation between enrolment and revisit, numbers of attempts and transactions), test conduct, and test reporting all conform to the mandatory requirements in Clauses 5 through 7.

3 Normative references

The following referenced documents are indispensable for the application 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 19795-1:2006, *Information technology — Biometric performance testing and reporting — Part 1: Principles and framework*

ISO/IEC 19795-2:2007, *Information technology — Biometric performance testing and reporting — Part 2: Testing methodologies for technology and scenario evaluation*

ISO/IEC TR 19795-3, *Information technology — Biometric performance testing and reporting — Part 3: Modality-specific testing*

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