
**Information technology — Biometric data
interchange formats —**

Part 11:
Signature/sign processed dynamic data

*Technologies de l'information — Formats d'échange de données
biométriques —*

Partie 11: Données dynamiques traitées de signature/signé



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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 19794-11 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 37, *Biometrics*.

ISO/IEC 19794 consists of the following parts, under the general title *Information technology — Biometric data interchange formats*:

- *Part 1: Framework*
- *Part 2: Finger minutiae data*
- *Part 3: Finger pattern spectral data*
- *Part 4: Finger image data*
- *Part 5: Face image data*
- *Part 6: Iris image data*
- *Part 7: Signature/sign time series data*
- *Part 8: Finger pattern skeletal data*
- *Part 9: Vascular image data*
- *Part 10: Hand geometry silhouette data*
- *Part 11: Signature/sign processed dynamic data*
- *Part 13: Voice data*
- *Part 14: DNA data*

Introduction

There are several commercial implementations of signature/sign verification based on the analysis of the dynamic features of signing. This part of ISO/IEC 19794 specifies an interchange format using signature/sign dynamic features that can be used to provide signature/sign verification. This data format enables interoperability without compromising any developers' Intellectual Property Rights.

A group of features are identified that are mandatory across all compliant implementations in order to ensure interoperability but the biometric interchange record format also supports proprietary data. The use of proprietary data is regulated in a similar manner to that used in ISO/IEC 19794-7, ensuring that comparable performance is achieved between the mandatory and proprietary features.

The features recorded represent significant dynamic events during the signing process, and thus represent an intelligent compression of the ISO/IEC 19794-7 format. From these other features can be calculated or estimated. Furthermore, using the significant events 19794-7 format can be extrapolated, and therefore other signature/sign feature data can be calculated or estimated.

The biometric interchange record format is a sequence of signature/sign representations, preceded by a general header that is common to all representations. Each signature/sign representation is recorded as a representation header followed by a sequence of Dynamic-event data for each signature/sign dynamic event.

In addition to the Dynamic-event data recorded for each signature/sign dynamic event, additional data is recorded representing overall features of the signature/sign representation. It should be noted that all recorded data for the signature/sign representation is recorded before any transformations are applied (e.g. rotation or time warping). The data recorded is either raw data or derived from the raw data.

This part of ISO/IEC 19794 does not specify the analysis to be undertaken by any particular comparison algorithms. The signature/sign features recorded in the data format can be used for analysis by many different comparison algorithms.

The format described is based on features (segmentation based on dynamic events) instead of sample points as described in ISO/IEC 19794-7.

The format defined in this part of ISO/IEC 19794 has the version number 1.0.

Annex A is normative and is intended to specify elements of conformance testing methodology, test assertions, and test procedures as applicable to this part of ISO/IEC 19794.

Annex B is informative and formally specifies the biometric interchange record format using the ASN.1 (see ISO/IEC 8824) notation and the ASN.1 Packed Encoding Rules (see ISO/IEC 8825-2), enabling the use of ASN.1 tools to assist implementation.

Annex C is informative. It gives guidance on the suitability of signature/sign for secure comparison purposes using the features recorded in the biometric interchange record format defined in this part of ISO/IEC 19794. Annex C identifies three indicators of signature/sign suitability: quantity of data, complexity of signature/sign, and consistency of signature/sign. Annex C suggests measurements that can be made in accessing these indicators, but does not quantify suitable measurements or provide any structure for recording the indicators.

Information technology — Biometric data interchange formats —

Part 11: Signature/sign processed dynamic data

1 Scope

For the purpose of biometric comparison, this part of ISO/IEC 19794 specifies a data interchange format for processed signature/sign behavioural data extracted from a time series, captured using devices such as digitizing tablets, pen-based computing devices, or advanced pen systems.

The data interchange format is generic, in that it may be applied and used in a wide range of application areas where handwritten signs or signature/signs are involved. No application-specific requirements or features are addressed in this part of ISO/IEC 19794.

This part of ISO/IEC 19794 contains definitions of relevant terms, a description of what data is extracted, and a data format for containing the data, together with advice on whether a set of user's signature/sign is suitable for identification purposes using this part of ISO/IEC 19794.

It is advisable that stored and transmitted biometric data is time-stamped and that cryptographic techniques be used to protect their authenticity, integrity, and confidentiality; however, such provisions are beyond the scope of this part of ISO/IEC 19794.

2 Conformance

A biometric data record conforms to this part of ISO/IEC 19794 if it satisfies all of the normative requirements related to:

- A) Its data structure, data values and the relationships between its data elements, as specified in Clause 8 of this part of ISO/IEC 19794.
- B) The relationship between its data values and the input biometric data from which the biometric data record was generated, as specified in Clause 8 of this part of ISO/IEC 19794.

A system that produces biometric data records is conformant to this part of ISO/IEC 19794 if all biometric data records that it outputs conform to this part of ISO/IEC 19794 (as defined above). A system does not need to be capable of producing biometric data records that cover all possible aspects of this part of ISO/IEC 19794, but only those that are claimed to be supported by the system.

A system that uses biometric data records is conformant to this part of ISO/IEC 19794 if it can read, and use for the purpose intended by that system, all biometric data records that conform to this part of ISO/IEC 19794 (as defined above). A system does not need to be capable of using biometric data records that cover all possible aspects of this part of ISO/IEC 19794, but only those that are claimed to be supported by the system.

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 19785-2, *Information technology — Common Biometric Exchange Formats Framework — Part 2: Procedures for the operation of the Biometric Registration Authority*

ISO/IEC 19794-1, *Information technology — Biometric data interchange formats — Part 1: Framework*