AS ISO/IEC 19794.10:2024
ISO/IEC 19794-10:2007

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STANDARDS Australia

Information technology — Biometric data interchange formats

Part 10: Hand geometry silhouette data

AS ISO/IEC 19794.10:2024

This Australian Standard® was prepared by IT-032, Biometrics and Identification. It was approved on behalf of Standards Australia's Standards Development and Accreditation Committee on 20 November 2024.

This Standard was published on 6 December 2024.

The following are represented on Committee IT-032:

Department of Defence (Australian Government)
Department of Foreign Affairs and Trade (DFAT)
Department of Home Affairs — Digital and Technology Policy Division
Photo Marketing Association
SITA

This Standard was issued in draft form for comment as DR AS ISO/IEC 19794.10:2024.

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ISBN 978 1 76139 950 3

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First published as AS ISO/IEC 19794.10:2024.

Preface

This Standard was prepared by the Standards Australia Committee IT-032, Biometrics and Identification.

The objective of this document is to specify a data record interchange format for storing, recording and transmitting the information from one or more hand silhouettes within a Common Biometric Exchange Formats Framework (CBEFF) data structure. It defines the content, format and units of measurement for the exchange of hand silhouette data that may be used in the verification or identification process of a subject.

The information consists of a variety of mandatory and optional items, including data capture parameters, standardized hand position and vendor-specific information. This information is intended for interchange among organizations that rely on automated devices and systems for identification or verification purposes based on the information from hand geometry measurements.

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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 19794-10 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*

The following part is under preparation:

— *Part 11: Signature/sign processed dynamic data*

Introduction

In the Access Control and Time Management communities, hand geometry has been an option to add biometrics to traditional security systems. While several hand geometry systems have been developed into products, each vendor has traditionally relied on a proprietary algorithm and has stored a proprietary template. This has made it impossible to transfer data from one vendor's system to another's, forcing end users to sole-source their hand geometry solution. To allow integration of hand geometry systems from multiple vendors, a nonproprietary interchange format must be adopted.

This part of ISO/IEC 19794 is intended to provide a data interchange format (a CBEFF biometric data block – BDB) for applications requiring an interoperable hand geometry record. The information consists of a variety of mandatory and optional items including data capture parameters, standardized hand position and vendor-specific information. This information is intended for interchange among organizations that rely on automated devices and systems for identification or verification purposes based on the information from hand geometry. While this part of ISO/IEC 19794 mandates a particular data format, it does not mandate a particular algorithm. For example, a user may be enrolled on a system from one vendor and verified on a system from another.

Because hand geometry products have historically relied on measurements taken from a hand silhouette, this format stores hand silhouette data rather than color or grayscale image data. To increase the flexibility of the data format, provisions have been made to store views of the left and right hands, in addition to multiple views of each hand. Specific implementations of this part of ISO/IEC 19794 that are constrained by storage space (such as smart card applications) may wish to limit the number of views stored for each hand. Such limitations are outside the scope of this part of ISO/IEC 19794, but reduced choices can prejudice interoperability.

It is well known that the presentation of a biometric sample affects algorithm performance. While image acquisition and hand placement requirements are outside the scope of this part of ISO/IEC 19794, Annex B is provided as guidance for those wishing to adhere to industry "best practices".

NOTES

Australian Standard®

Information technology — Biometric data interchange formats

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1 Scope

This part of ISO/IEC 19794 specifies a data interchange format (a CBEFF biometric data block – BDB) that can be used for storing, recording and transmitting the information obtained from a hand silhouette.

This part of ISO/IEC 19794 defines the content, format and units of measurement for the exchange of hand silhouette data in a BDB.

Information formatted in accordance with this part of ISO/IEC 19794 can be recorded on machine-readable media or transmitted by data communication between systems.

2 Conformance

A biometric data block conforms to this part of ISO/IEC 19794 if it satisfies the format requirements specified within the normative clauses of this part of ISO/IEC 19794 and has internal consistency based on capture from an actual hand.

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 19785-1, *Information technology — Common Biometric Exchange Formats Framework — Part 1: Data element specification*

ISO/IEC 19784-1, *Information technology — Biometric application programming interface — BioAPI specification*

4 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

4.1
biometric data block
BDB
block of data with a defined format that contains one or more biometric samples or biometric templates

Note 1 to entry: In the case of this part of ISO/IEC 19794, the BDB contains the hand silhouette of one or both hands, perhaps with multiple views.

4.2
biometric sample
information obtained from a biometric device, either directly or after further processing

Note 1 to entry: The silhouette of a hand is an example of a biometric sample.

4.3
camera point of view
effective location and orientation of a camera that would result in the observed hand silhouette

Note 1 to entry: The effective location is specified rather than the actual location due to the possibility of algorithmic transformations and various hand-scanning technologies such as movable linear arrays, etc.