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Australian Standard®

Information technology—Biometric data interchange formats

Part 4: Finger image data

This Australian Standard® was prepared by Committee IT-032, Biometric and Identification. It was approved on behalf of the Council of Standards Australia on 9 March 2007.
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The following are represented on Committee IT-032:

- AUSTROADS
- Attorney General's Department
- Australian Business Limited
- Australian Electrical and Electronic Manufacturers Association
- Centrelink
- The Biometric Institute

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STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS ISO/IEC 19794.4—2007
Information technology—Biometric data interchange formats
Part 4: Finger image data

RECONFIRMATION NOTICE

Technical Committee IT-032 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

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Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 04 June 2017.

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NSW Business Chamber
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PREFACE

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

The objective of this Standard is to make available to the Australian biometrics community the core ISO SC37 standards published over the last 24 months specifically the biometric data interchange formats finger image data.

This Standard is identical with, and has been reproduced from ISO/IEC 19794-4:2005, *Information technology— Biometric data interchange formats*—Part 4: *Finger image data*.

As this Standard is reproduced from an international standard, the following applies:

(a) Its number appears on the cover and title page while the international standard number appears only on the cover.

(b) In the source text 'this part of ISO/IEC 19794' should read 'this Australian Standard'.

(c) A full point substitutes for a comma when referring to a decimal marker.

Reference to International Standard		*Australian Standard*	
ISO/IEC		AS ISO/IEC	
15444	Information technology—JPEG 2000 image coding system	15444	Information technology—JPEG 2000 image coding system
19785	Information technology—Common Biometric Exchange Formats Framework	19785	Information technology—Common Biometric Exchange Formats Framework
19785-1	Part 1: Data element specification	19785.1	Part 1: Data element specification

The terms 'normative' and 'informative' are used to define the application of the annex to which they apply. A normative annex is an integral part of a standard, whereas an informative annex is only for information and guidance.

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INTRODUCTION

In the forensic community, the capture and transmission of fingerprint images has been a common choice for the exchange of fingerprint information used by Automatic Fingerprint Identification Systems (AFIS) for the identification of individuals. However, little to no fingerprint information is being exchanged between equipment from different vendors in the biometric user verification and access community. This has been due in part to the lack of agreement between vendors on the amount and type of information to capture, the method of capture, and the information to be exchanged.

This part of the ISO/IEC 19794 standard is intended for those applications requiring the exchange of raw or processed fingerprint images that may not necessarily be limited by the amount of resources required for data storage or transmitting time. It can be used for the exchange of scanned fingerprints containing detailed image pixel information. This part of ISO/IEC 19794 can also be used to exchange processed fingerprint image data containing considerably fewer pixels per inch and/or a lesser number of greyscale levels. This is in contrast to other parts of ISO/IEC 19794 used for exchanging lists of fingerprint characteristics such as minutiae, patterns, or other variants. These formats require considerably less storage than a fingerprint image. However, by using any of the other parts of ISO/IEC 19794, information recorded in one standard format cannot be used by algorithms designed to operate with another type of information. In other words, minutiae data cannot be used by pattern matching algorithms and pattern data cannot be used by minutiae matching algorithms.

Although the minutiae, pattern, or other approaches produce different intermediate outputs, all must initially capture a reasonably high quality fingerprint image before reducing the size of the image (in bytes) or developing a list of characteristic data from the image. Use of the captured or processed image can provide interoperability among vendors relying on minutiae-based, pattern-based or other algorithms. As a result, data from the captured finger image offers the developer more freedom in choosing or combining matching algorithm technology. For example, an enrolment image may be stored on a contactless chip located on an identification document. This will allow future verification of the holder of the document with systems that rely on either minutiae based or pattern based algorithms. Establishment of an image-based representation of fingerprint information will not rely on pre-established definitions of minutiae, patterns or other types. It will provide implementers with the flexibility to accommodate images captured from dissimilar devices, varying image sizes, resolutions, and different grayscale depths. Use of the fingerprint image will allow each vendor to implement their own algorithms to determine whether two fingerprint records are from the same finger.

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AUSTRALIAN STANDARD

Information technology — Biometric data interchange formats —

Part 4: Finger image data

1 Scope

This part of the ISO/IEC 19794 standard specifies a data record interchange format for storing, recording, and transmitting the information from one or more finger or palm image areas within an ISO/IEC 19785-1 CBEFF data structure. This can be used for the exchange and comparison of finger image data. It defines the content, format, and units of measurement for the exchange of finger image 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 scanning parameters, compressed or uncompressed images 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 finger image areas. Information compiled and formatted in accordance with this part of the ISO/IEC 19794 standard can be recorded on machine-readable media or may be transmitted by data communication facilities.

2 Conformance

Systems claiming conformance with this part of the ISO/IEC 19794 standard shall be capable of encoding and decoding finger image data and the associated parameter data used in the transmitting and/or receiving of fingerprint images as defined by this part of the ISO/IEC 19794 standard. At a minimum, conformance shall require the ability to capture, exchange, and compare interoperable fingerprint image information.

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.

IAFIS-IC-0110 (V3), WSQ Gray-scale Fingerprint Image Compression Specification 1997

ISO/IEC 19785.1, *Information technology — Common biometric exchange formats framework — Part 1: Data element specification*

ISO/IEC 15444 (all parts), *Information technology — JPEG 2000 image coding system*

MTR 04B0000022 (Mitre Technical Report), Margaret Lepley, Profile for 1000ppi Fingerprint Compression, Version 1.1, April 2004. Available at:
http://www.mitre.org/work/tech_papers/tech_papers_04/lepley_fingerprint/lepley_fingerprint.pdf

4 Terms and definitions

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

4.1
biometric sample
raw data representing a biometric characteristic of an end-user as captured by a biometric system

EXAMPLE The image of a fingerprint.