Australian Standard®

Information technology—Biometric data interchange formats

Part 3: Finger pattern spectral 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 wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through public comment period.

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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 pattern spectral data.

This Standard is identical with, and has been reproduced from ISO/IEC 19794-3:2006, *Information technology— Biometric data interchange formats*—Part 3: *Finger pattern spectral 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/New Zealand 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	
19784	Information technology—Biometric application programming interface	19784	Information technology—Biometric application programming interface
19784-1	Part 1: BioAPI specification	19784.1	Part 1: BioAPI specification
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 term 'informative' has been used in this Standard to define the application of the annex to which it applies. An 'informative' annex is only for information and guidance.

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INTRODUCTION

In the interest of implementing interoperable personal biometric recognition systems, this part of ISO/IEC 19794 establishes a data interchange format for finger pattern spectral data. The goal of this part of ISO/IEC 19794 is to allow the exchange of local or global spectral data derived from a fingerprint image without the exchange of the entire image. This will allow more compact data representations.

This part of ISO/IEC 19794 allows for representation of spectral components, such as Discrete Fourier Transform and (single-scale) Gabor Filter components, extracted from global or stationary (not image dependent and not varying over the image) local overlapping or non-overlapping uniform-sized regions of the original intensity (non-color) image. Some or all of the extracted spectral components will be stored in the data format, depending upon the implementation. This part of ISO/IEC 19794 does not accommodate multi-scale (wavelet) decompositions.

There are fingerprint recognition algorithms that use spectral data directly for pattern matching. Spectral data-based recognition algorithms process "globally" local sections (cells) of biometric images. In contrast to morphological-based algorithms, which extract singularities in the morphological features. At the current time, there is no established mechanism for the interchange of finger pattern spectral information for use with spectral-based fingerprint matching algorithms.

By establishing a standard for spectral-based representation of fingerprints, w

- allow interoperability among fingerprint recognition vendors based on a small data record;
- support the proliferation of low-cost commercial fingerprint sensors with limited coverage, dynamic range, or resolution;
- define a data record that can be used to store biometric information on a variety a storage mediums (including, but not limited to, portable devices and smart cards);
- encourage the adoption of biometrics in applications where interoperability is required.

The International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) draw attention to the fact that it is claimed that compliance with this document may involve the use of patents concerning the quantized co-sinusoidal triplets method of formatting the pattern spectral data. ISO and IEC take no position concerning the evidence, validity and scope of this patent right. The holder of this patent right has assured the ISO and IEC that he/she is willing to negotiate licenses under reasonable and non-discriminatory terms and conditions with applications throughout the world. In this respect, the statement of the holder of this patent right is registered with ISO and IEC. Information may be obtained from:

Bioscrypt Inc.
505 Cochrane Drive
Markham, Ontario, Canada
L3R 8E3

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

NOTES

AUSTRALIAN STANDARD

Information technology — Biometric data interchange formats —

Part 3:
Finger pattern spectral data

1 Scope

This part of ISO/IEC 19794 specifies the interchange format for the exchange of spectral-based fingerprint data.

2 Conformance

A biometric system or algorithm conforms to this part of ISO/IEC 19794 if it satisfies the mandatory requirements for the generation of the finger pattern spectral data as defined in Clause 7 and the generation of the data record as described in Clause 8.

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 19784-1:2006, *Information technology — Biometric application programming interface — Part 1: BioAPI specification*

ISO/IEC 19785-1:2006, *Information technology — Common Biometric Exchange Formats Framework — Part 1: Data element specification*

ANSI/NIST-ITL 1:2000, *Standard Data Format for the Interchange of Fingerprint, Facial, & Scar Mark & Tattoo (SMT) Information*

ANSI/IEEE Std 754-1985, *IEEE Standard for Binary Floating-Point Arithmetic*

4 Terms and definitions

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

4.1
biometric data
biometric sample at any stage of processing, biometric reference, biometric feature or biometric property

NOTE For the purpose of this document, biometric data refers to finger pattern spectral data, quality data, and other data derived from an acquired biometric sample.