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ISO/IEC 19794-5:2005
Reconfirmed 2017

Australian Standard®

Information technology—Biometric data interchange formats

Part 5: Face 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 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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STANDARDS AUSTRALIA

RECONFIRMATION

OF
AS ISO/IEC 19794.5—2007
Information technology—Biometric data interchange formats
Part 5: Face 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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NOTES

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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 face image data.

This Standard is identical with, and has been reproduced from ISO/IEC 19794-5:2005, *Information technology—Biometric data interchange formats*—Part 5: *Face 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
19794	Information technology—Biometric data interchange formats	19794	Information technology—Biometric data interchange formats
19794-1	Part 1: Framework	19794.1	Part 1: Framework

Only international references that have been adopted as Australian or Australian/New Zealand Standards have been listed.

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

Face images, also commonly referred to as displayed portraits, have been used for many decades to verify identity of persons. In recent years, digital face images are used in many applications including human examination as well as computer automated face recognition. Although photographic formats have been standardized in some cases such as passport and driver license, it is also demanded to define a standard data format of digital face images to allow interoperability among vendors.

This part of ISO/IEC 19794 is intended to provide a Face Image Format for face recognition applications requiring exchange of face image data. The typical applications are:

1) human examination of facial images with sufficient resolution to allow a human examiner to ascertain small features such as moles and scars that might be used to verify identity;

2) human verification of identify by comparison of persons against facial images;

3) computer automated face identification (one-to-many searching);

4) computer automated face verification (one-to-one matching).

To enable many applications on variety of devices, including devices that have the limited resources required for data storage, and to improve face recognition accuracy, this part of ISO/IEC 19794 specifies not only a data format, but also scene constraints (lighting, pose, expression etc), photographic properties (positioning, camera focus etc), digital image attributes (image resolution, image size etc).

Several image types are introduced to define categories that satisfy requirements of some applications. Each requirement is specified for each image type.

The record format specified in this part of ISO/IEC 19794 is designed to be embedded in a CBEFF-compliant structure specified in ISO/IEC 19785. The embedment in the CBEFF structure is described in ISO/IEC 19794-1.

AUSTRALIAN STANDARD

Information technology — Biometric data interchange formats —

Part 5: Face image data

1 Scope

This part of ISO/IEC 19794

— specifies a record format for storing, recording, and transmitting the information from one or more facial images within a CBEFF data structure,

— specifies scene constraints of the facial images,

— specifies photographic properties of the facial images,

— specifies digital image attributes of the facial images.

Each requirement is specified for the following Face Image Types, respectively.

— **Basic:** This is the fundamental Face Image Type that specifies a record format including header and image data. All Face Image Types adhere to the properties of this type. No mandatory scene, photographic and digital requirements are specified for this image type.

— **Frontal:** A Basic Face Image Type that adheres to additional requirements appropriate for frontal face recognition and/or human examination. Two types of Frontal Face Image Types are defined in this document, Full Frontal and Token Frontal (or simply Token).

— **Full Frontal:** A Face Image Type that specifies frontal images with sufficient resolution for human examination as well as reliable computer face recognition. This type of Face Image Type includes the full head with all hair in most cases, as well as neck and shoulders. This image type is suitable for permanent storage of the face information, and it is applicable to portraits for passport, driver license, and “mugshot” images.

— **Token Frontal:** A Face Image Type that specifies frontal images with a specific geometric size and eye positioning based on the width and height of the image. This image type is suitable for minimizing the storage requirements for computer face recognition tasks such as verification while still offering vendor independence and human verification (versus human examination which requires more detail) capabilities.

Table 1 shows the relationships between Face Image Types using the notion of inheritance. For example, Frontal inherits properties from Basic, which means that all normative clauses that apply to Basic also apply to Frontal.

Table 1 – Inheritance of Face Image Types

Face Image Type	Inherits from	Normative clauses	Informative clauses
Basic	None	1, 2, 3, 4, 5, 6	A.1
Frontal	Basic	7	A.2
Full Frontal	Frontal	8	A.3
Token	Frontal	9	A.4

Figure 1 gives a general overview of the scene, photographic, digitization, and format requirements for the face image types specified in this part of ISO/IEC 19794.