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Information technology — Extensible biometric data interchange formats —

Part 16: Full body image data

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives or www.iec.ch/members_experts/refdocs).

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

A list of all parts in the ISO/IEC 39794 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

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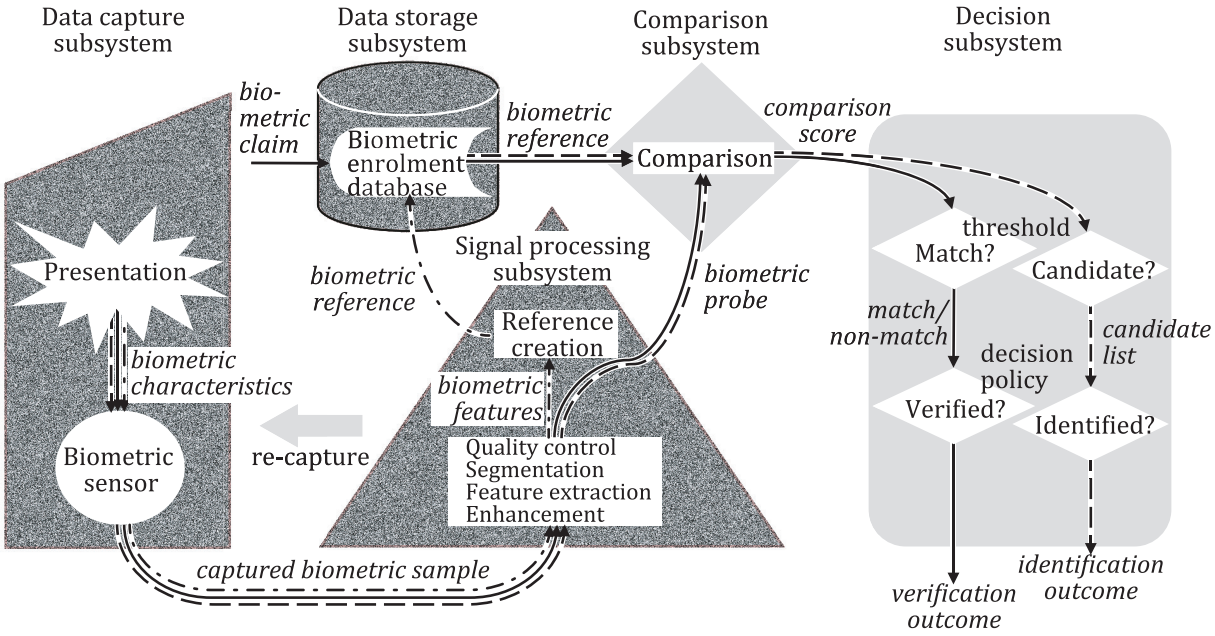
Introduction

Most countries around the world use biometric recognition systems for law enforcement and border control. Many of these systems are not limited to face recognition purposes. To be consistent in such deployments and processes, technical documents, guidelines and best practice recommendations are being developed by different groups. These documents are primarily focused on the issuance and use of identity documents and related border control systems, and the technical and operational issues to be considered when planning and deploying them. "Face" is the biometric mode most suited to the practicalities of travel documents and automated border processing. "Full body" is a biometric mode that can be used in addition to face (for example, in border-crossing watchlist scenarios, crime surveillance, etc.). Full body can also be used in forensic scenarios.

There is very little guidance covering full body imaging for cross-border or law enforcement biometric recognition purposes. There is a need for guidance for the use of high-quality digital cameras and video surveillance devices, as well as guidance on full body data interchange structure semantics, syntax and format for the collection and use of full body image data in biometric recognition scenarios. A specific extensible biometric data interchange format for cross-border interoperability is required for full body images. Full body image data standardization is required to ensure threshold quality for database images for identification and verification using video surveillance and other similar system-generated images.

Figure 1 illustrates components of a full body image biometric system on a checkered background.



Key

enrolment

verification

identification

NOTE Figure 1 shows the information flow within a general biometric system, showing a general biometric system consisting of data capture, signal processing, data storage, comparison and decision subsystems. Each of these subsystems are defined in ISO/IEC 39794-1 in more detail.

Figure 1 — Components of a biometric system

Border personnel, immigration officials and police officers take full body images using local practices where no international standards are available to outline the practices which enable cross-border interoperability. This document can therefore be helpful for the description of the full body biometric characteristics and associated non-biometric information for identification purposes in disaster victim and law enforcement scenarios (e.g. victim identification, unknown bodies and missing individuals).

To enable applications on a wide variety of devices, including devices that have limited data storage, and to improve biometric recognition accuracy, other parts of the ISO/IEC 39794 series address data format, scene constraints (lighting, pose, expression, etc.), photographic properties (positioning, camera focus, etc.), and digital image attributes (image resolution, image size, etc.).

In order to fully understand the requirements implied in this document, it is recommended that the user become acquainted with certain other documents:

— ISO 22311: this document specifies a common output file format that can be extracted from the video-surveillance contents collection systems to perform necessary processing.

— The ISO/IEC 30137 series: this series specifies the use of biometrics in video surveillance systems.

— EN 62676[22]: this document defines video surveillance systems for use in security applications.

This document (ISO/IEC 39794-16) is originally based on CEN/TS 17051.

Information technology — Extensible biometric data interchange formats —

Part 16: Full body image data

1 Scope

This document is intended to provide a generic extensible full body image data format for biometric recognition applications requiring exchange of human full body image data. Typical applications are:

a) automated body biometric verification and identification of an unknown individual or cadaver (one-to-one as well as one-to-many comparison);

b) support for human verification of identity by comparison of individuals against full body images; and

c) support for human examination of full body images with sufficient resolution to allow a human examiner to verify identity or identify a living individual or a cadaver.

This document ensures that full human body images and image sequence data generated by video surveillance and other similar systems are suitable for identification and verification.

The structure of the data format in this document is compatible with ISO/IEC 39794-5. In addition to the data format, this document specifies application-specific profiles including scene constraints, photographic properties and digital image attributes like image spatial sampling rate, image size, etc. These application profiles are contained in a series of annexes.

The 3D encoding types "3D point map" and "range image" are not supported by this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 2382-37, *Information technology — Vocabulary — Part 37: Biometrics*

ISO/IEC 8824-1, *Information technology — Abstract Syntax Notation One (ASN.1) — Part 1: Specification of basic notation*

ISO/IEC 10918-1, *Information technology – Digital compression and coding of continuous-tone still images: Requirements and guidelines*

ISO 12052, *Health informatics — Digital imaging and communication in medicine (DICOM) including workflow and data management*

ISO 12233, *Photography — Electronic still picture imaging — Resolution and spatial frequency responses*

ISO/IEC 14496-2:2004, *Information technology — Coding of audio-visual objects — Part 2: Visual*

ISO/IEC 14496-10, *Information technology — Coding of audio-visual objects — Part 10: Advanced video coding*

ISO/IEC 14496-14, *Information technology — Coding of audio-visual objects — Part 14: MP4 file format*

ISO/IEC 15444-1, *Information technology — JPEG 2000 image coding system — Part 1: Core coding system*

ISO/IEC 15444-3, *Information technology — JPEG 2000 image coding system: Motion JPEG 2000 — Part 3*

ISO/IEC 15948, *Information technology — Computer graphics and image processing — Portable Network Graphics (PNG): Functional specification*

ISO/IEC 39794-1, *Information technology — Extensible biometric data interchange formats — Part 1: Framework*

ISO/IEC 39794-5, *Information technology — Extensible biometric data interchange formats — Part 5: Face image data*

ITU-T Rec. T.81, *Information technology — Digital compression and coding of continuous-tone still images — Requirements and guidelines*

ITU-T Rec. T.802, *Information technology — JPEG 2000 image coding system: Motion JPEG 2000*

XML Schema Part 1: Structures Second Edition, W3C Recommendation, 28 October 2004, http://www.w3.org/TR/xmlschema-1/

XML Schema Part 2: Datatypes Second Edition, W3C Recommendation, 28 October 2004, http://www.w3.org/TR/xmlschema-2/