TECHNICAL REPORT

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Information technology — Biometric sample quality —

Part 4: Finger image data

Technologies de l'information — Qualité d'échantillon biométrique — Partie 4: Données d'image de doigt

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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.

In exceptional circumstances, the joint technical committee may propose the publication of a Technical Report of one of the following types:

— type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;

— type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;

— type 3, when the joint technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

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 TR 29794-4, which is a Technical Report of type 2, was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 37, *Biometrics*.

ISO/IEC 29794 consists of the following parts, under the general title *Information technology — Biometric sample quality*:

— *Part 1: Framework*

— *Part 4: Finger image data* [Technical Report]

— *Part 5: Face image data* [Technical Report]

Introduction

The quality of finger image data is defined to be the predicted behavior of the image in a matching environment. Thus, the quality information is useful in many applications. ISO/IEC 19784-1 and ISO/IEC 19785-1 do allocate a quality field and specify the allowable range for the scores, with the recommendation that the score be divided into four categories with a qualitative interpretation for each category. Image quality fields are also provided in the fingerprint data interchange formats standardized in ISO/IEC 19794-2, ISO/IEC 19794-3, ISO/IEC 19794-4, and ISO/IEC 19794-8. However, there is no standard way to interpret the quality score that facilitates the interpretation and interchange of the finger image quality scores.

The purpose of this part of ISO/IEC 29794 is to provide an informative technical report on methodologies for objective, quantitative quality score expression and interpretation for finger images. It will complement ISO/IEC 29794-1 in developing a reference finger image corpus. Such a reference corpus can be built upon the availability of public finger images, which should then be used for quality score normalization.

Information technology — Biometric sample quality —

Part 4:
Finger image data

1 Scope

For aspects of quality specific to the finger image modality, this part of ISO/IEC 29794:

— specifies terms and definitions that are useful in the specification, use, and test of finger image quality metrics;

— defines the interpretation of finger image quality scores;

— identifies or defines finger image corpora for the purpose of serving as information for algorithm developers and users;

— develops statistical methodologies specific to finger image corpora for characterizing quality metrics to facilitate interpretation of scores and their relation to matching performance.

Performance assessment of quality algorithms and standardization of quality algorithms are outside the scope of this part of ISO/IEC 29794.

2 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 29794-1, *Information technology — Biometric sample quality — Part 1: Framework*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 29794-1 and the following apply.

3.1
foreground region
region of a finger image that contains valid finger image patterns

NOTE The most evident structural characteristic of a valid finger image is a pattern of interleaved ridges and valleys.

3.2
local region
block of *m* x *n* pixels of the foreground of a finger image, where m and n are smaller than the width and the height of the finger image

3.3
finger image quality assessment algorithm
algorithm that reports a quality score for a given finger image sample