International Standard

ISO/IEC 29794-4

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

Second edition
2024-09

Reference number
ISO/IEC 29794-4:2024(en)

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Published in Switzerland

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Foreword

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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*.

This second edition cancels and replaces the first edition (ISO/IEC 29794-4:2017), which has been technically revised.

The main changes are as follows:

— algorithms for normalization of finger image quality components have been added, along with new quality algorithm identifiers for the unique identification of the quality measures defined in this document;

— Annex A has been technically revised to reflect a new conformance test set.

A list of all parts in the ISO/IEC 29794 series can be found on the ISO and IEC websites.

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

This document specifies finger image quality measures. A reference implementation of the normative measures — NFIQ 2 — is available at Reference [16], which is described in more detail by the developers in Reference [1].

The quality of finger image data is determined by the degree to which the finger image data fulfils specified requirements for the targeted application. Information on quality is therefore useful in many applications. ISO/IEC 19784-1 allocates a quality field and specifies the allowable range for the scores, with a recommendation that the score be divided into four categories with a qualitative interpretation for each category. Finger image quality fields are provided in the finger image data interchange formats standardized in ISO/IEC 19794-4 and ISO/IEC 39794-4. Finger feature data interchange formats standardized in ISO/IEC 19794-2, ISO/IEC 19794-3, ISO/IEC 19794-8 and ISO/IEC 39794-2 provide finger image quality fields for the source image. To facilitate the interpretation and interchange of finger image quality scores, this document specifies how to calculate the finger image quality score of plain finger images with a spatial sampling rate of 196,85 px/cm and a bit depth of 8 bit for the greyscale pixel intensity values scanned from inked fingerprint cards or captured using optical area sensors based on frustrated total internal reflection.

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Information technology — Biometric sample quality —

Part 4:
Finger image data

1 Scope

This document establishes:

— terms and definitions for quantifying finger image quality;

— methods used to quantify the quality of finger images; and

— standardized encoding of finger image quality;

for finger images at 196,85 px/cm spatial sampling rate and a bit depth of 8 bit for the greyscale pixel intensity values scanned or captured using optical area sensors in direct contact with friction ridges.

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

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 2382-37, ISO/IEC 29794-1 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
foreground region
set of all pixels of a finger image that form valid finger image patterns

Note 1 to entry: The most evident structural characteristic of a valid finger image is a pattern of interleaved ridges and valleys.

3.2
local region
block of $m \times n$ pixels of the foreground region, where m and n are smaller than or equal to the width and the height of the foreground region respectively

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