ISO/IEC 39794-16:2021 (E)

Information technology — Extensible biometric data interchange formats — Part 16: Full body image data

Contents

Foreword

Introduction

1 Scope

2 Normative references

3 Terms and definitions

4 Abbreviated terms

5 Conformance

6 Modality specific information

6.1 Purpose
6.2 Digital image encoding
6.3 Photographic requirements and recommendations for white light imaging
6.3.1 General
6.3.2 Contrast and saturation
6.3.3 Focus and depth of field
6.3.4 Greyscale density
6.3.5 Colour
6.3.6 Radial distortion of the camera lens
6.4 Digital requirements and recommendations for images
6.4.1 General
6.4.2 Geometry
6.4.3 Colour
6.4.4 Formatting requirements and recommendations
6.5 Recommendations for full body image data systems
6.5.1 General
6.5.2 Architecture
6.5.3 Usability and accessibility
6.5.4 Practical applications
6.6 Full body imaging technical requirements
6.6.1 General
6.6.2 Optical distortion
6.6.3 Colour fidelity
6.6.4 Example full body photographs
6.7 Full body photography session
6.7.1 General
6.7.2 Typical workflow for full body photography session
6.7.3 Full body photograph content requirements
6.8 Photo studio recommendations for full body photography
6.8.1 General
6.8.2 Recommended camera orientation and margins
6.8.3 Recommended positioning and distance between camera and subject
6.8.4 Recommended focusing settings
6.8.5 Recommended white balance settings for white light imaging
6.8.6 Recommended backdrop design
6.8.7 Example configurations for a photo studio
6.8.8 Basic fidelity image test for white light imaging
6.9 Non-white light or multispectral imaging

6.9.1 General
6.9.2 Infrared imaging
6.9.3 Ultraviolet imaging
6.10 Submillimetre imaging
6.11 Imaging use cases
6.11.1 General
6.11.2 Imaging system baseline use cases

7 Abstract data elements

7.1 Overview
7.1.1 Content and notation
7.1.2 Body tree concept
7.1.3 Anthropometric data models
7.1.4 Structure overview
7.1.5 Data conventions
7.2 Body image data block
7.3 Version block
7.4 Representation block
7.5 Representation ID
7.6 Capture date/time block
7.7 Quality blocks
7.8 PAD data block
7.9 Session identifier
7.10 Derived from
7.11 Capture device block
7.12 Model identifier block
7.13 Certification identifier block
7.14 Body part number
7.15 Pose angle block
7.15.1 Yaw angle, Y
7.15.2 Pitch angle, P
7.15.3 Roll angle, R
7.16 Angle data block
7.17 Angle value
7.18 Angle uncertainty
7.19 Landmark blocks
7.20 Landmark kind
7.21 MPEG-4 feature point
7.22 Eye and nostril centre landmark point
7.23 Anthropometric landmark for face and body
7.23.1 Anthropometric landmark for face
7.23.2 CAESAR anthropometric 3D landmark point
7.23.3 MPEG-4 body point
7.24 Landmark coordinates block
7.25 Image representation block
7.26 2D image representation block
7.27 2D representation data
7.28 2D capture device block
7.29 Capture wavelength range block
7.30 Capture device technology
7.31 2D image information block
7.32 2D image kind
7.33 Post acquisition processing
7.34 Lossy transformation attempts
7.35 Image data format
7.36 Camera to subject distance (CSD)
7.37 Sensor diagonal
7.38 Lens focal length
7.39 Image size block
7.40 Image width
7.41 Image height
7.42 Sampling rate block
7.43 Spatial sampling rate
7.44 Temporal sampling rate

7.45 Image colour space
7.46 Reference colour mapping block
7.47 Reference colour schema
7.48 Reference colour definition and value block
7.49 JPEG EXIF
7.50 Forensic findings block
7.50.1 Forensic observations
7.50.2 Link to reports
7.50.3 Dynamic range low
7.50.4 Dynamic range high
7.50.5 Dynamic range notes
7.50.6 Colour fidelity CIELAB a*
7.50.7 Colour fidelity CIELAB b*
7.50.8 Colour fidelity notes
7.50.9 Image sharpness
7.50.10 Image sharpness notes
7.51 3D shape representation block

8 Encoding

8.1 Data encoding models
8.2 Tagged binary encoding

9 Registered BDB format identifiers

Annex A (normative) Formal definitions

A.1 ASN.1 module tagged binary encoding
A.2 XML schema definition for XML encoding

Annex B (informative) Encoding examples

B.1 Binary encoding example
B.1.1 General
B.1.2 Binary encoding example using mandatory data fields
B.1.3 Binary encoding example using most common data entry fields
B.1.4 Binary encoding for submillimetre camera example
B.1.5 ASN.1 extensibility
B.2 XML encoding example
B.2.1 General
B.2.2 XML encoding example using mandatory data fields
B.2.3 XML encoding example using most common data entry fields
B.2.4 XML encoding for submillimetre camera example
B.2.5 XML extensibility
B.3 Examples of using RDF to obtain biometric and non-biometric data
B.3.1 General
B.3.2 Using RDF to obtain DVI-related data
B.3.3 RDF example from the State of Washington

Annex C (normative) Conformance testing methodology

C.1 General
C.2 Requirements and options
C.3 Conformance test assertions
C.4 Conformance testing for profiles given in Annex D

Annex D (informative) Application profiles

D.1 Basic body image 2D
D.1.1 General
D.1.2 Capture profiles
D.1.2.1 Camera images taken in white light
D.1.2.2 Body recognition images
D.1.2.3 Gait recognition images
D.2 Post-processed body image 2D
D.2.1 General
D.2.2 Post-processing
D.3 Basic body 2D image from 3D shape
D.3.1 General

D.3.2 3D rendering
D.4 Interrogation and surveillance images 2D
D.4.1 General
D.4.2 Metadata, encoding and annotation
D.5 Scars, marks and tattoos images 2D
D.5.1 General
D.5.2 Best practices
D.6 Gait image sequence 2D
D.7 Upper body motion image sequence 2D

Annex E (informative) Image acquisition measurements

E.1 General
E.2 Standard test chart setup
E.2.1 Test chart selection
E.2.2 The ISO 12233 test chart
E.2.3 Greyscale, colour checking and IEC 61966-8 test charts
E.3 Measurement preparations
E.3.1 General
E.3.2 Preparations
E.4 Measurements
E.4.1 General
E.4.2 Lighting checking
E.4.3 Background checking
E.4.4 Exposure metering at various points on a subject
E.4.5 Measurement target photography
E.5 Analysis
E.5.1 General
E.5.2 Dynamic range
E.5.3 Gamma correction
E.5.4 Image resolution
E.5.5 Colour fidelity
E.5.5.1 Coordinate calculation for colour fidelity
E.5.5.2 Coordinate calculation for colour fidelity
E.5.6 Optical distortion
E.5.6.1 Barrell, pincushion and moustache distortion
E.6 Technical considerations
E.6.1 Focus and depth-of-field (DOF)
E.6.2 Example of exposure metering at various spots on a subject
E.7 Measurements for submillimetre cameras
E.7.1 General
E.7.2 Test targets for submillimetre imaging
E.7.3 Reflective targets
E.7.4 Absorbent targets
E.7.5 Analysis of submillimetre images

Page count: 138