
**Information technology — Biometrics
tutorial**

Technologies de l'information — Tutoriel biométrique

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Published in Switzerland

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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 Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

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ISO/IEC TR 24741, which is a Technical Report of type 3, was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 37, *Biometrics*.

Introduction

“Biometric authentication” is the automatic recognition of individual persons based on distinguishing biological and behavioural traits. The field is a subset of the broader field of human identification science. Example technologies include fingerprinting, face recognition, hand geometry, speaker recognition and iris recognition.

At the current level of technology, DNA analysis is a laboratory technique not fully automated and requiring human processing, so it is not considered “biometric authentication” under this definition (it is not currently automatic and fast, but may become so in the near future).

Some techniques (such as iris recognition) are more biologically based and some (such as signature recognition) are more behaviourally based, but all techniques are influenced by both behavioural and biological elements. There are no purely “behavioural” or “biological” biometric systems.

Biometric authentication is frequently referred to as simply “biometrics”, although this latter word has historically been associated with the statistical analysis of general biological data. The word “biometrics”, like “genetics”, is usually treated as singular. It first appeared in the vocabulary of physical and information security around 1980 as a substitute for the earlier descriptor “automatic personal identification”, in use in the 1970s. Biometric systems recognize “persons” by recognizing “bodies”. The distinction between person and body is subtle, but is of key importance in understanding the inherent capabilities and limitations of these technologies. In our context, biometrics deals with computer recognition of patterns created by human behaviours and biological structures, and is usually associated more with the field of computer engineering and statistical pattern analysis than with the behavioural or biological sciences.

Today, biometrics is being used to recognize individuals in a wide variety of contexts, such as computer and physical access control, law enforcement, voting, border crossing, social benefit programs and driver licensing.

Information technology — Biometrics tutorial

1 Scope

This Technical Report provides a tutorial on biometrics.

It contains a description of the architecture of biometric processes and of the processes themselves.

An annex provides further details of International Standards' activity in the field of biometrics.

A further annex provides terms and definitions that are in use in these International Standards.