Accessibility of Unsupervised Biometric Systems

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Although biometric systems have been in use for many years, it is only now that they are being introduced for use by the general pubic. The general public includes children, older people, people with disabilities as well as those not familiar with the local language. Some people will be first time users but many are likely to be occasional users. Therefore it is important that unsupervised systems can be used easily by such users.

Biometric systems are being introduced to check whether:

- The individual is the same person as the one to whom the card (or token) was issued.
- The individual is on a 'hot list'.
- The individual is on a large database (possibly containing the whole population).

These three different scenarios impose different constraints on the design of the systems. If a significant number of users cannot operate the system then alternative arrangements have to be made for them to have access to the services; frequently this is going to involve a less secure process. Therefore it is important to minimize the number of people who have to be treated as exceptional cases.

In the United Kingdom, it is estimated that people with special needs (relating to the use of biometric systems) are:

Children (< 16 years)	20%
Older people (>65 years)	16%
People with disabilities	10%
Primary language not English	5%
Left-handed	10%

However these figures do not indicate the variation between individuals in these groups. For instance, people with disabilities include:

Wheelchair users	0.4%
Cannot walk without an aid	5%
Reduced strength	2.8%
Reduced co-ordination	1.4%
Speech impaired	0.25%

B. Schouten et al. (Eds.): BIOID 2008, LNCS 5372, pp. 245–246, 2008.

Language impaired	0.6%
Dyslexic	1%
Intellectually impaired	3%
Deaf	0.1%
Hard of hearing	6%
Blind	0.4%
Partially sighted	1.5%

More than half of people with disabilities have more than one impairment, and this is particularly prevalent among the older population.

The user needs to be able to locate and access the biometric terminal. This will require appropriate clear signage, suitable lighting as well as access for wheelchair users.

The instructions on the terminal must be positioned so that they can be easily read which also requires appropriate lighting and the use of a clear typeface. The use of icons could help people who have problems in reading or understanding the language, but as yet there are no standard icons for this application area.

With each biometric modality, there are different problems for some group of users. For instance, fingerprint readers require the user to have fingers, but there are other groups who may have problems (eg those who work with cement). Sometimes it is simply poor design of the terminal which causes problems. For instance, some iris scanners require the user to look at a red dot - red can be problematic for some partially sighted users and a dot can be difficult for those lacking central vision - a white cross as a target would have been usable by more users.

In general, users will find it easier if there is a consistent user interface, and that adequate training has been provided in the use of the system. For users with an intellectual impairment this may require multiple training sessions.

Biometric systems offer significant potential advantages to many people with disabilities such as not requiring the user to remember or keep secret a personal identification number. Good design of biometric terminals for people with disabilities will frequently be good design for all users.

References

1. Guidelines for the Accessible Design of Biometric Systems, `http://www.tiresias.org/research/guidelines/biometric_systems.htm`
2. Guidelines for the Accessible Design of Information and Communication Technology Systems, `http://www.tiresias.org/research/guidelines`