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complete identification verification resource

Facial Recognition - Guides and Articles

## Personalizing Smart Environments: Face Recognition for Human Interaction

A smart environment is one that is able to identify people, interpret their actions, and react appropriately. Thus, one of the most important building blocks of smart environments is a person identification system. Face recognition devices are ideal for such systems, since they have recently become fast, cheap, unobtrusive, and, when combined with voice-recognition, are very robust against changes in the environment. Moreover, since humans primarily recognize each other by their faces and voices, they feel comfortable interacting with an environment that does the same.

### Why Face Recognition?

Given the requirement for determining people's identity, the obvious question is what technology is best suited to supply this information? There are many different identification technologies available, many of which have been in wide-spread commercial use for years. The most common person verification and identification methods today are Password/PIN (Personal Identification Number) systems, and Token systems (such as your driver's license). Because such systems have trouble with forgery, theft, and lapses in users' memory, there has developed considerable interest in biometric identification systems, which use pattern recognition techniques to identify people using their physiological characteristics. Fingerprints are a classic example of a biometric; newer technologies include retina and iris recognition.

While appropriate for bank transactions and entry into secure areas, such technologies have the disadvantage that they are intrusive both physically and socially. They require the user to position their body relative to the sensor, and then pause for a second to 'declare' themselves. This 'pause and declare' interaction is unlikely to change because of the fine-grain spatial sensing required. Moreover, there is a 'oracle-like' aspect to the interaction: since people can't recognize other people using this sort of data, these types of identification do not have a place in normal human interactions and social structures.

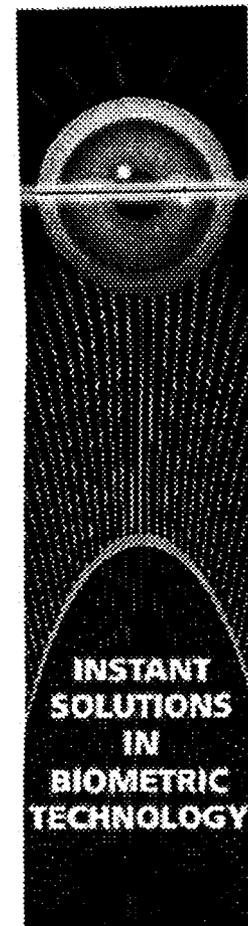
While the 'pause and present' interaction and the oracle-like perception are useful in high-security applications (they make the systems look more accurate), they are exactly the opposite of what is required when building a store that recognizes its best customers, or an information kiosk that remembers you, or a house that knows the people who live there.

Face recognition from video and voice recognition have a natural place in these next-generation smart environments -- they are unobtrusive (able to recognize at a distance without requiring a

Facial Recognition  
Hand & Finger  
Iris Recognition  
Voice/Spoken

### Showcases

Fingerprint  
Iris Recognition  
Hand & Finger  
Facial Recognition  
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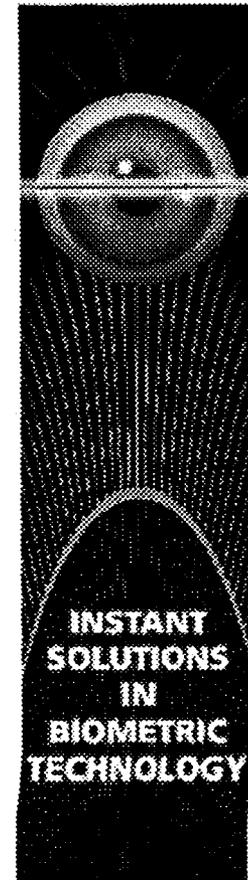
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'pause and present' interaction), are usually passive (do not require generating special electro-magnetic illumination), do not restrict user movement, and are now both low-power and inexpensive. Perhaps most important, however, is that humans identify other people by their face and voice, therefore are likely to be comfortable with systems that use face and voice recognition

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authentication using fingerprints. The solutions replace keys, PINs and passwords in three areas: IT security, physical access and embedded solutions.

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