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Contactless Palm Vein Authentication Technology

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Abstract

Identity verification has become increasingly important in many areas of modern life, such as electronic government, medical administration systems, access control systems for secure areas, passenger ticketing, home office, and home study environments. However, traditional methods for identity verification, such as code numbers, passwords, and smart cards carry the risk of loss, theft, forgery, or unauthorized use. Biometric authentication technology, which authenticates physiological data, is a nontransferable way to supplement or serve as an alternative to other systems.

Although biometric authentication had been used to some extent by companies and government authorities, it has become less intrusive and more hygienic for it to gain wider acceptance.

Technology

- The world's first-ever "Contactless Palm Vein Authentication technology"
- In terms of authentication precision, the system had a false rejection rate of 0.01% and a false acceptance rate of less than 0.00008% out of the 150,000 palm profiles tested (Mar., 2006).(Notice 1)

Fujitsu Laboratories' technology uses a device that distinguishes blood vein patterns in the palm with no need for physical contact. As the hand is held over the sensor device, infrared light is used to capture an image of the palm. The software then extracts the vein pattern and compares it against patterns already stored in the database in order to verify the identity.

Since the palm floats in mid-air when using the contactless systems, there are no height or palm positioning restrictions in relation to the sensor device. We developed technology that can detect palm position, and reliably verify palm vein patterns at high speeds even if a sensor device is installed in several different locations. We also developed technology that can optimally control the environmental lighting in order to capture a variety of palm positions.

The sensor device used in this system can be embedded in a wide variety of equipment. Embedded in a wall, it could be used for access control to secure areas. Integrated into electrical equipment, such as a personal digital device, it could be used to authorize user access. In public spaces or medical facilities, where hygiene is a particular concern, the contactless feature of this system makes it especially appropriate.

Palm vein authentication technology was launched by Fujitsu Limited in 2004. Currently Fujitsu is launching its palm vein authentication device globally and targets *de facto* standardization of this technology in high security biometric markets worldwide. Starting in July 2005, Fujitsu coordinated with global group companies such as Fujitsu Computer Products of America, Inc., Fujitsu Europe Limited, Fujitsu Asia Pte. Ltd., etc., in order to launch its palm vein authentication device business in their regions with plans to expand into other regions.

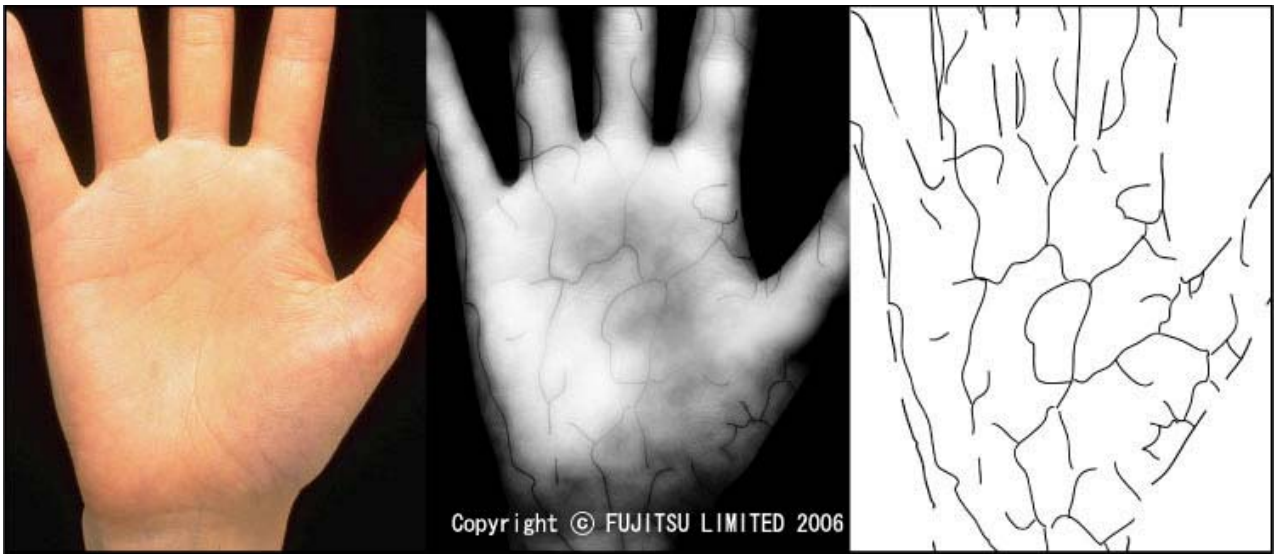
Notice 1: Three palm profiles are used in registration, and one extra retry is allowed in verification.

Application Examples

- Door security systems
- PC login management systems
- Financial services security systems
- Hospital patient confirmation systems
- Time attendance systems

References

- Watanabe, M., Endoh, T., Shiohara, M., and Sasaki, S.: Palm vein authentication technology and its applications, Proceedings of Biometrics Symposium (2005) 37–38.
- Watanabe, M.: Palm Vein Authentication, Advances in Biometrics, Springer-Verlag London Limited (2008) 75-88.
- R&D Fujitsu Palm Vein Technology
  http://www.fujitsu.com/global/about/rd/200506palm-vein.html
- PalmSecure™
  http://www.fujitsu.com/global/services/solutions/biometrics/
- [PRESS RELEASE October 25, 2005] Fujitsu Palm Vein Authentication Technology Wins The Wall Street Journal 2005 Innovation Award for Security in Networks
  http://www.fujitsu.com/global/news/pr/archives/month/2005/20051025-01.html
- [PRESS RELEASE December 18, 2006] Fujitsu PalmSecure™ Technology Receives Certification From International Biometric Group
  http://www.fujitsu.com/us/news/pr/fcpa_20061218-01.html



Visible-ray image　　Infrared-ray image　　Extracted vein pattern

Palm vein sensor PalmSecure™
(35mmW×35mmD×27mmH)

PalmSecure™ PC Login Kit (mouse model)