TECHNOLOGY

Method of Using Fingerprint Patterns for Biometric Authentication

OVERVIEW

Biometrics involves measuring, analyzing, and using human physiological or behavioral traits to identify individuals with a high level of certainty. As such, it has the potential to certify the connection between people and the systems they are authorized to use. However, biometric data has a number of drawbacks. For example, it has a low level of secrecy and can be counterfeited, and it is "noisy"—it cannot be reproduced exactly from one measurement to the next. Because of this, a fingerprint scanner cannot convert biometric data from a finger tip into a digital image without imperfections.

To address these challenges, researchers at the University of Maryland have developed a novel method for estimating a scanner pattern (imperfections in a scanner that do not vary over time) based solely on digital images. This technique can also verify if a digital image has been acquired by a specific fingerprint scanner, adding an extra level of biometric authentication for an individual user. Furthermore, by combining biometric data and the scanner pattern, the researchers are able to create a "cryptographic key," making it easy to establish if a device is in the possession of a legitimate user and adding a third layer of protection. A user must be in possession of biometric data, a specific device, and the cryptographic key all at the same time.

APPLICATIONS

• Fingerprint scanners
• User authentication
• Security systems

ADVANTAGES

• Better measurement of scanner pattern imperfections
• Improved security over methods that employ predetermined numbers stored in devices by manufacturers
• Lower design, manufacturing, and material costs than alternative methods

CONTACT INFO

UM Ventures
0134 Lee Building
7809 Regents Drive
College Park, MD 20742
Email: umdtechtransfer@umd.edu
Phone: (301) 405-3947 | Fax: (301) 314-9502

Additional Information

INSTITUTION

University of Maryland, College Park

LICENSE STATUS

Available for exclusive or non-exclusive license

CATEGORIES

- Microelectronics
- Information Technology

EXTERNAL RESOURCES

- US Patent 8,577,091
- US Patent 8,953,848
- US Patent 9,087,228

IS-2009-023