# Design and Development of Intelligent Fingerprint-Based Security System

**Authors(s):** Suriza Ahmad Zabidi, Momoh-Jimoh E Salami

## Abstract

Traditionally, user authentication is meant to provide an identification number or a password that is unique and well protected to assure the overall system security. This type of security system is very fragile in an area where a higher level of security system is required. Biometrics-based system offers a new and better approach to user authentication. Biometrics authentication is an automated method whereby an individual identity is confirmed by examining a unique physiological trait or behavioural characteristic, such as fingerprint, iris, or signature, since physiological traits have stable physical characteristics. The design and development of a fingerprint-based security system, comprising the scanner, interface system, Boltzmann machine neural network and access control system is discussed in this paper. The integration between the hardware and the software is completed by using Visual Basic 6 programming language. The results obtained both for the simulation studies and testing of the integrated system with real-life physical system have demonstrated the practicality of such system as well as its potential applications in many fields.

**Keywords:** Security System, Biometric System, Fingerprint Image, False Acceptance Rate, False Rejection Rate

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