

# **A Fingerprint-Based Scheme for ATM User Authentication**

**Gabriel B. IWASOKUN**

Dept. of Computer Science, Federal University of Technology, Akure, Nigeria  
gbiwasokun@futa.edu.ng

## **Abstract**

*Presently, ATM users rely on the card-based information for authorization. This approach is confronted with challenges of card swallowing, misplacement, damage and expiration as well as Personal Identification Number (PIN) forgetfulness and theft. With a view to addressing these challenges, a fingerprint-based scheme for ATM user authentication is proposed in this paper. The scheme comprises of different components for fingerprint enrollment, database and verification. The verification component handles fingerprint enhancement, feature extraction and matching (based on suitable mathematical models). Validation experiments based on False Rejection Rate (FRR), False Acceptance Rate (FAR), Average Matching Time (AMT), Receiver Operating Characteristic (ROC) curve and Equal Error Rate (ERR) were conducted using FVC2000, FVC2002 and FVC2004 standard fingerprint databases. Comparative analysis of the experimental results with those obtained from three other schemes shows the superiority, adequacy and practicality of the proposed scheme.*

**Index terms:** Fingerprint matching, ATM user authentication, FRR, FAR, ATM

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