

Cardless ATM Transaction Using Face and Fingerprint

Rakshitha P K¹ and Prof. Sandeep N K²

Student, Department of MCA¹

Assistant Professor, Department of MCA²

Vidya Vikas Institute of Engineering and Technology, Mysore

Abstract: *The conventional ATM (Automated Teller Machine) system primarily relies on ATM cards and a Personal Identification Number (PIN) for user authentication. While widely used, this approach has significant security vulnerabilities, including card theft, skimming, and fraudulent techniques such as the Lebanese loop. These threats not only compromise user privacy but also result in financial losses, making it increasingly necessary to adopt more secure alternatives. Moreover, the dependency on physical cards creates additional inconveniences such as card loss, the risk of damage, or the inability to share access in emergency situations. To overcome these drawbacks, this paper proposes a card-less ATM system that integrates fingerprint and face recognition techniques as the primary modes of authentication, supplemented by a PIN for additional security. The process of fingerprint recognition is based on minutiae feature extraction, whereas face recognition applies the Convolutional Neural Network (CNN) models in order to achieve high accuracy. The biometric information is safely stored in a central database and the user can access his or her account at any ATM without the need to carry a physical card. This biometric- authentication system is dual, which increases the level of reliability, risks associated with cards are eliminated and it offers a user-friendly, secure and scabbable solution to the modern banking applications.*

Keywords: Card-less ATM, Biometric Authentication, Fingerprint Recognition, Face Recognition, Convolutional Neural Network (CNN), Minutiae Feature Extraction, Deep Learning, Security, PIN Verification, Financial Technology

