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# Cardless ATM Transaction Using Face and Fingerprint Recognition

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**ABSTRACT:** The current ATM (Automated Teller Machine) system uses ATM card and PIN (Pin Identification Number) for authentication. This system is likely to be harmed by many security issues such as theft of ATM card, skimming, Lebanese loop etc. So in this paper, we propose a system that uses fingerprint and face recognition authentication (not ATM cards) for accessing user account along with PIN which is more secure and reliable than the existing system. Here we are using the CNN model for face recognition and Minutiae feature extraction for fingerprint recognition.

**KEYWORDS:** ATM Authentication, skimming, Lebanese loop, face recognition, minutiae feature extraction fingerprint recognition.

## I. INTRODUCTION

ATM (Automated Teller Machine) is generally used for withdrawal from our Bank account without going to the bank. By way of ATM which is used as an agent through which Our bank account is accessible remotely by providing atm card details with a proper PIN, one can withdraw, deposit or check the account balance. But in today's ATM technology there is always a chance of stealing money. The money can easily be stolen if one gets the access to ATM card and security pin number rather there is always a chance of losing ATM card and during that period withdrawal of money gets difficult. Additionally, to it we always have to carry ATM card everywhere we go and only one person can have access to the card which sometimes can get pretty difficult. When members of the same family want to withdraw cash, who are at different locations.

In addition, if you are a totally new in area or country and the purse you are carrying in which all of your cash and ATM card are kept gets stolen then undoubtedly it will be the worst situation to survive. To overcome such drawbacks the idea of a card-less ATM which uses fingerprint and face recognition for authorization and authentication of user seems quite useful and reliable. For instance, if two members of the same family are at the different location of a country then both of them can have access to the same account anywhere and anytime they want without carrying an ATM card. In this technology, we take user's fingerprint and face-print as a replacement for ATM card of which data is stored in the separate server to provide a common ground for accessing fingerprint through any bank's ATM and with face recognition we add a double layer of security of which data is stored in particular bank's server by providing the data of fingerprint and face id of two members for a particular account a single account can be accessed by two persons .

## II. PROBLEM STATEMENT

The current ATM (Automated Teller Machine) system uses ATM card and PIN (Pin Identification Number) for authentication. This system is most likely be harmed by many security issues such as theft of ATM card, skimming, Lebanese loop etc. Therefore, In this study, we suggest a method that uses fingerprint and face recognition authentication (not ATM cards) for accessing user account along with PIN which is more secure and reliable than the existing system.

### III. RELATED WORK

[1] This paper presents a study on the use of palm vein technology for cardless cash withdrawal. The paper begins by discussing related work in the field includes numerous biometric authentication methods that have been put forth. The authors then explain the working of palm vein technology and the various methods used to obtain the palm vein pattern. The paper goes on to provide a thorough explanation of the proposed system's methodology, including the required registration process, the authentication process, and how the palm vein pattern will be stored. The authors also discuss the advantages of palm vein technology, such as enhanced security and contactless transactions. Finally, but not least, this research provides useful data. about the use of palm vein technology for cardless cash withdrawal and shows the technology's potential for additional uses.

[2] This paper explores the use of biometric and facial recognition technology in card-less ATM transactions. The authors compare different case studies and techniques used in the field and present a flowchart of the working model. They discuss the benefits of using biometric and face recognition technology in ATM transactions, such as increased security and accuracy, as well as the added feature of a one-time password for increased privacy and convenience. However, it offers nothing, any original research or experimentation, as it is solely a literature review.

[3] This paper proposes a biometric authentication system that combines a fingerprint technique with a shuffling keypad method to increase the security level in ATM transactions. The proposed system aims to eliminate the need for carrying any kind of swipe cards and make the transaction process easier, reliable, and secure. The system is easy to implement, comfortable to use, and reliable. The recommended approach has been created to protect user authentication data and prevent security breaches. Overall, this study presents a novel approach to ATM transactions that could potentially improve security and convenience for users. The suggested system could potentially eliminate the need for physical cards and provide a more secure and reliable method of authentication. However, further testing and development may be necessary to fully evaluate the effectiveness and feasibility of this system in real-world scenarios.

[4] This study on the creation of a card-less ATM using face and fingerprint recognition techniques is presented in this publication. By eliminating the need for ATM cards, the proposed solution promises to offer a safer and more dependable method of accessing user accounts. The system uses a Convolutional Neural Network (CNN) model for face recognition and Minutiae feature extraction for fingerprint recognition. The system design, data collection and preprocessing, as well as the training and testing of the CNN model, are all thoroughly described in the article. The study's findings demonstrate that the suggested system has good accuracy rates. for both fingerprint and face recognition, making it a promising solution for the future of ATM authentication. Overall, this study highlights the potential of Deep Learning techniques to build trustworthy and secure ATM authentication systems. The suggested system has various benefits over traditional ATM card-based systems, including increased security, convenience, and accessibility. However, additional study is required to address potential limitations and challenges, such as the need for high-quality images and the potential for false positives or negatives in the recognition process.

### IV. PROPOSED SYSTEM

we propose a system that uses fingerprint and face recognition authentication (not ATM cards) for accessing user account along with PIN which is more secure and reliable than the existing system. Here, for fingerprint recognition we're using Minutiae feature extraction and the CNN model for face recognition.

#### Advantages of proposed system

- **Enhanced security:** With facial and fingerprint recognition, cardless ATMs can ensure greater security for transactions by verifying the identity of the user, making it more difficult for fraudulent activity.
- **Convenience:** Cardless ATMs with facial and fingerprint recognition provide users with a convenient and easy-to-use way of withdrawing cash or performing other transactions with no requirement for carrying an ATM card.
- **Accessibility:** These cardless ATMs might be very helpful for those who are disabled or who may have forgotten or lost their ATM card.
- **Reduced risk of card skimming:** Since there is no need to insert a physical card into the ATM, the risk of card skimming or cloning is reduced.



### V. METHODOLOGY

The System Cardless ATM uses fingerprint recognition and face recognition instead of ATM card for authenticating of the user. While the user opens a bank account, the user's information is saved in the database. A person's name, email address, mobile phone number, fingerprints, and facial print are among the details kept in the database. The cardless ATM uses the fingerprint recognition and faces recognition technique for authentication and authorization. Here we have implemented using the real time database. The face recognition uses CNN model for classification and the fingerprint recognition uses minutiae feature for extraction. Only 4 chances are provided for the user for fingerprint recognition if it doesn't match sends an alert message is sent to the bank server. Then the user needs to visit the bank resolve the issues. Accuracy percentage to be mapped between both the recognition is 70% + for authentication. If the user is valid he/she can withdraw /deposit cash. In contrast to task-specific algorithms, machine learning techniques focused on learning data representations include deep learning. There are three types of learning: supervised, semi-supervised, and unsupervised . Deep learning models have various differences from the structural and functional characteristics of biological brains (especially human brains), It makes them incongruent with the neuroscience data. Deep learning models are only loosely inspired by information processing and communication patterns in biological nervous systems.

#### Deep Learning

Artificial neural networks (ANN) with multiple layers are referred to as deep neural networks or deep learning. Due to its capacity to handle massive volumes of data. It is acknowledged as one of the most useful tools. during the previous few decades and has been quite well-liked in the literature. Deeper hidden layers are now starting to outperform traditional approaches in a variety of applications, including pattern recognition. Convolutional neural networks (CNN) are among the most often used deep neural network topologies. Convolution is a mathematical linear action between matrices that gave rise to the name. Among the numerous layers that make up CNN are convolutional, nonlinear, pooling, and fully connected layers.

Pooling and non-linearity layers lack parameters, but convolutional and fully connected layers do. In machine learning issues, the CNN performs quite well. Particularly the image-related applications, such as the largest image classification data collection (Image Net), computer vision, and natural language processing (NLP), and the outcomes were truly astounding. The components of CNN, their functions, and all other significant problems will be discussed in detail in this essay. We will also list the factors that affect CNN effectiveness. This article makes the assumption that the readers are familiar with artificial neural networks and machine learning.

### VI. RESULTS

#### 1.Registration Page

Cardless ATM

Login Register

Primary Account holder name

mobile

email

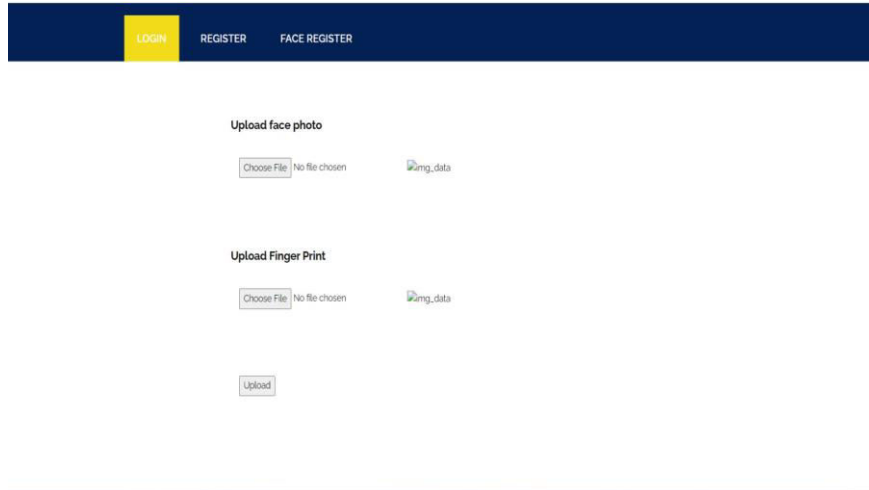
address

password

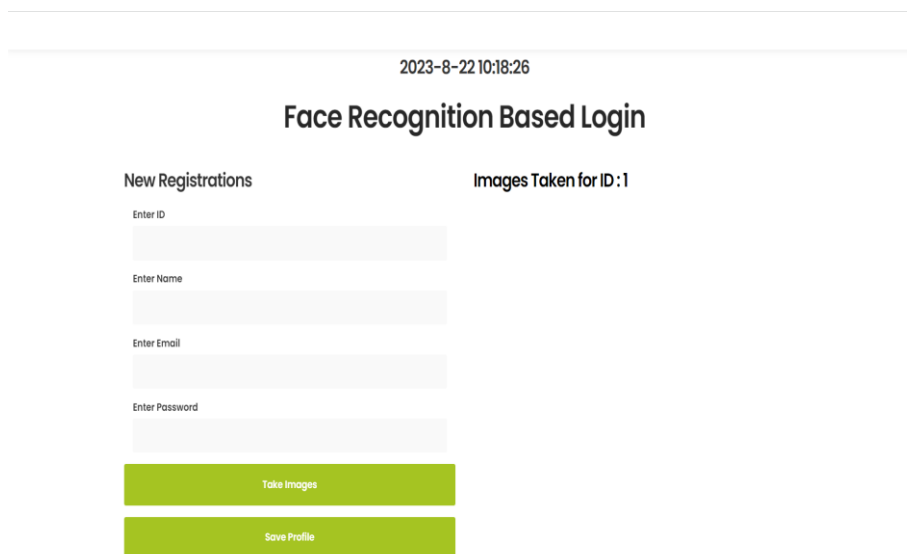
REGISTER



2. Login page



3. Face Based Registration page



VII. CONCLUSION

According to the study's findings, biometric systems should take the role of conventional ATMs so that transactions are more convenient, safe, and require no swipe cards to be carried. One of the various biometrics tools used to recognize people and confirm their identification is the fingerprint. It is based on the fingerprint characteristics of the user, such as stability, dependability, etc. Through quantifiable physiological traits that confirm an individual's identity, fingerprints and face prints enable the recognition of a registered person. This technology would be able to unlock the security features of the suggested biometric ATM systems while still being user-friendly and affordable.

FUTURE ENHANCEMENT:

Through the incorporation of face and fingerprint recognition, cardless ATM transactions will have exciting new potential in the future. As technology continues to evolve, we can anticipate several advancements that will further

elevate the security, efficiency, and user experience of these transactions. Enhanced anti-spoofing measures powered by artificial intelligence and advanced biometric sensors are expected to bolster security, making it even more challenging for unauthorized individuals to mimic legitimate users. Multi-modal biometrics, combining facial, fingerprint, and potentially even voice recognition, will create multifaceted authentication approaches that are harder to breach.

Moreover, the convergence of biometric authentication with other cutting-edge technologies like blockchain could usher in a new era of transparency and tamper-proof record-keeping for ATM transactions. By securely timestamping and recording each interaction, blockchain can bolster trust in the system, which is crucial in the digital transactions globe.

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