FACE AND LIVENESS DETECTION BASED BANK LOCKER

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ABSTRACT

With the increasing theft in banks, the security has become an important aspect in banking region. Most of the Bank lockers are currently protected by key locking, some password-based locks or using some digital locks which is insecure and unreliable. So, in this paper we are implementing bank locker using face recognition system. Face recognition is an effective and successful security technique whose accuracy can be improved by combining other technologies. For facial recognition, this project uses the CNN algorithm. In this project, only authenticated user can access the lockers as faces are stored for the individual identity of a person. Facial recognition alone cannot determine whether the person is real or not. Therefore, liveness detection is implemented. In liveness detection, the system detects if it interacts with a real person or a spoof artefact used by other person such as a face photo. To detect whether the person is live or not the project uses eye blink detection. The project identifies whether the user is authentic or not. If not then, the locker will not open instead it will raise an alert and it will send a text SMS to the admin that somebody is trying to open their locker and immediately the system will capture photograph of that person and that photograph will be emailed to the user. In this way, the system provides high security, theft protection and alert of bank locker.

Keywords: Artificial Intelligence, Face Recognition, Liveness Detection, CNN, Security.

I.   INTRODUCTION

Although the popularity performance of biometric system is nowadays quite satisfactory for many applications, much work continues to be necessary to permit convenient, secure and privacy-friendly systems to be designed. In face recognition, the same old attack methods could also be classified into several categories. The thought of classifying relies on what verification proof is provided to face verification system. In this paper, we have proposed a technique of live face detection to resist the attack employing artefacts like a stolen photo, stolen face photos, recorded video, 3D face models. Liveness detection has been a really active research topic in fingerprint recognition and iris recognition communities in recent years. It is that the act of differentiating the feature space into live and non-living. But in face recognition, approaches are pretty much limited to cope with this problem. Imposters will attempt to introduce an oversized number of spoofed biometrics into system.

II.   PROBLEM DEFINITION

A face recognition based system can used for bank locker security but it can be easily hacked if somebody uses photograph of a person. As a solution, in addition to face recognition, a liveness detecting system is required.

Objective:

1) To study existing bank locker method.
2) To design the system architecture for proposed system.
3) To implement the proposed system using machine learning.
4) To analyze and evaluate the design module.

III.   LITERATURE SURVEY

J. Maatta, A. Hadid, M. Pietikainen have suggested 'Face spoofing detection from single image using microtexture analysis'. The proposed method uses multi-scale local binary patterns to look at the texture of facial images. This approach is strong, computationally fast and doesn't require user-cooperation. Additionally, the texture features that are used for spoofing detection can even be used for face recognition. Viewpoints, occlusions, aging of subjects and complicated outdoor lighting are challenges in face recognition.[1]

A. K. Singh, P. Joshi and G. C. Nandi have proposed 'Face recognition with liveness detection using eye and mouth movement'. The liveness module utilizes face macro features, especially eye and mouth movements so as