



FACE FRAUD DETECTION IN ONLINE EXAM

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Abstract: With the expansion of the Internet and technology over the past decade, Elearning has grown exponentially day by day. Online examination is an integral and vital component of E-learning. Face recognition is widely viewed as an alternative means of authentication to replace traditional password methods in different applications for access control. Despite significant improvements, this form of authentication remains plagued by several vulnerabilities ranging from the use of printed photographs, 3D masks, and video replay attacks. In face recognition systems, replay attacks where a pre-recorded video of the user is played and printed photograph is placed in front of the camera are the two most common ways to do the fraud while attending the examination. So there is a need for the robust face liveness detection method that can be used in detecting spoof attacks for differentiation between legitimate and illegitimate users using machine learning techniques. Using the observation that different materials reflect light differently, we propose a system that uses light reflection getting from the photo while recording a video or taking an image of examinee during an examination.

Keywords: 1. Face Fraud Detection 2. Online Examination 3. Face Recognition 4. Liveness Detection Light Reflection 6. Biometric Authentication 7. Machine Learning 8. Haar Cascade classifier, 9. Support Vector Machine

I. INTRODUCTION

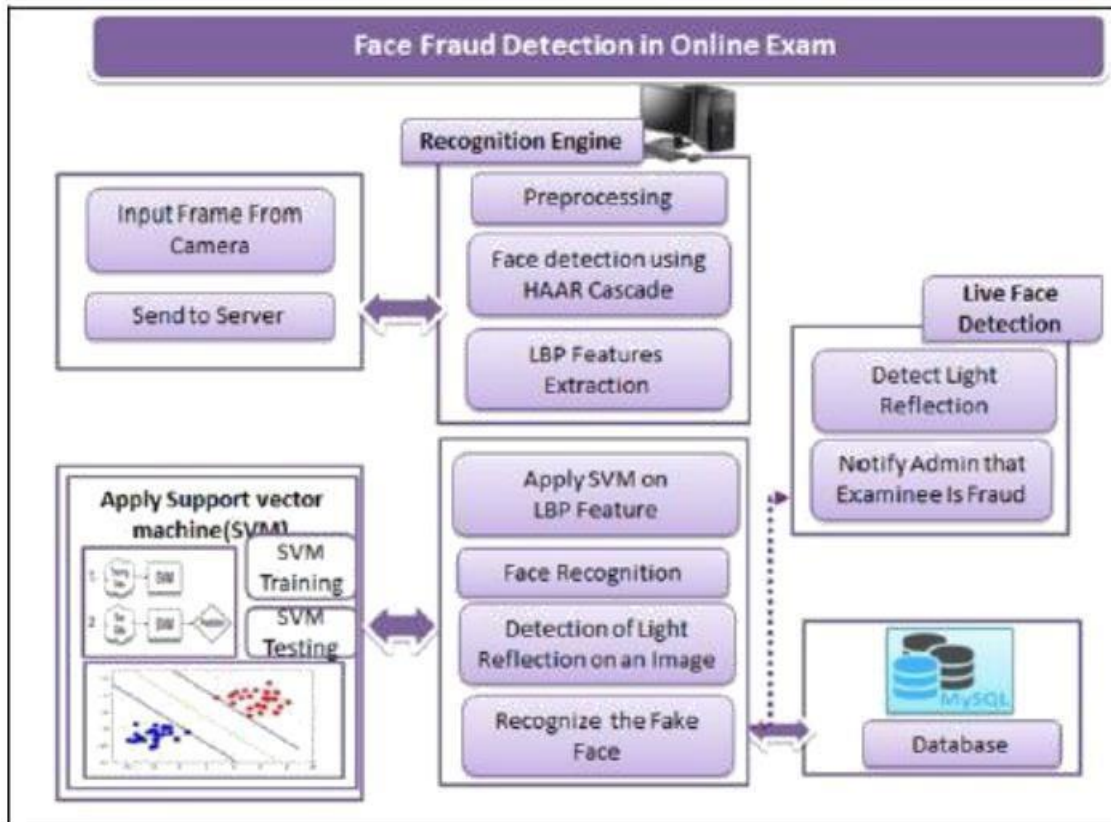
The main intention of the project is to differentiate between legitimate and illegitimate examinee during examination. Now a day's online exam has become one of the prominent and most important aspects of our lives, but there is no guaranty of genuinity of the result in the online examination processes. Many systems are implemented using face detection for the de-tetection of genuine users. But the main trouble of applying face recognition is that such a system is not able to detect spoofing faces. Spoofing detection becomes a major issue for an urgent solution in the security field. Here an attempt is made to differentiate spoof and live face by using some fundamental illumination characteristics. The system uses light reflection getting from the photo while recording a video or taking an image of examinee during an examination.

II. LITERATURE SURVEY

1. Wenlong Gao ; Kai Jia ; Fang Xu ; Fengshan Zou ; Jilai Song "Bimodal Face Recognition Based on Liveness Detection", 2019 IEEE 9th Annual International Conference on CYBER Technology in Automation, Control, and Intelligent Systems (CYBER).
2. Md. Mehedi Hasan ; Md. Salah Uddin Yusuf ; Tanbin Islam Rohan ; Shidhartho Roy , "Efficient two stage approach to detect face liveness : Motion based and Deep learning based
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4. Jingjing Li ; Xinfeng Zhang ; Yongbing Zhang ; Haoqian Wang ; Fang Yang , "Face Liveness Detection Based On Multiple Feature Descriptors", 2019 International Conference on Technologies and Applications of Artificial Intelligence (TAAI).
5. Xu Zhang, Xiyuan Hu*, Mingyang Ma, Chen Chen and Silong Peng , "Face Spoofing Detection based on 3D Lighting Environment Analysis of Image Pair", 2016 23rd International Conference on Pattern Recognition (ICPR) Cancún Center, Cancún, México, December 4-8, 2016

III. PROPOSED SYSTEM

We are using waterfall model for our project estimation. The development process may start with the requirements to the functional part, which can be expanded later. The process is repetitive, allowing to make new versions of the product for every cycle. Every iteration includes the development of a separate component of the system, and after that, this component is added to the functional developed earlier.



• Requirement Gathering and Analysis: All the functional and nonfunctional requirements of the project were identified. Interaction with the users and all other stakeholders of the project was conducted to identify all the requirements starting from im-portant features like maintaining audit trail, security parameters etc. to the very basic features like the look and the feel of user interface.

• System Design: The first step was database design. A complete database required for the implementation of this project was de-signed. The second step was project design. The project was designed based on a framework. The framework uses three lay-ers:

1. Business entities layer: It identifies all the entities used in the project.
2. Business logic layer: This layer operates on the business entity to achieve the goals.
3. Data access layer: This layer serves as an interface between backend and the services.

Implementation:-

- 1 : Literature Survey
- 2 : Applications and Objectives
- 3 : Platform/Technology Selection
- 4 : Internal Presentation – 1
- 5 : Study Of Algorithms
- 6 : Mathematical Model
- 7 : Software Requirements Specification
- 8 : UML Diagrams
- 9 : Problem Definition using NP Hard/ NP Complete
- 10 : System Architecture
- 11 : Testing phase
- 12 : Internal Presentation - 2
- 13 : Report Preparation
- 14 : Installation
- 15 : Overview of Project Model
- 16 : Construction of GUI
- 17 : Module Identification
- 18 : Module 1 - User Authentication



- 19 : Module 2 - Database generation
- 20 : Module 3 - Connection of GUI to Database
- 21 : Module 4 - Testing and Result
- 22 : Test Planning
- 23 : Testing

IV. CONCLUSION

We propose a system that uses light reflection patterns getting from the photo while recording a video or taking an image of the examinee during an examination for detecting a fake face or real face. Spoofing detection becomes a major issue for which an urgent solution is needed in the security field. The system is a strong solution for providing a secure online ex-amination or avoid fraud/ spoof attacks in online exams so that the genuinity of the result is maintained. The system used Haar cascade for detecting a face from a video and an SVM classifier is used for recognizing the face. The Support Vector Classification algorithm is used on the LBP facial features for face recognition. BAed on light reflection pattern system detect fraud faces and send alert notification to the admin. The implemented system is one step towards the ad-vanced identity verification approach and provides genuine results in the online examination.

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