NOVEL APPROACH TO FACE RECOGNITION WHICH CONSIDERS BOTH SHAPE AND TEXTURE INFORMATION TO REPRESENT FACE IMAGES

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ABSTRACT: Most of the frauds often committed in security systems based on knowledge (passwords) or tokens (cards, keys, etc.). However, nowadays criminals are already developing techniques to accurately simulate the biometric characteristics of valid users, such as face, fingerprint and iris, to gain access to places or systems, process known as spoofing attack.Many of them struggle to grasp adequate spoofing cues and generalize poorly. Nowadays criminals are developing techniques to accurately simulate physical, physiological, and behavioral traits of valid users, process known as spoofing attack. we present a novel approach to face recognition which considers both shape and texture information to represent face images. The face area is first divided into small regions from which Local Binary Pattern (LBP) histograms are extracted and concatenated into a single, spatially enhanced feature histogram efficiently representing the face image

INTRODUCTION

Biometric systems are quite common in our everyday life. Face anti-spoofing is crucial to prevent face recognition systems from a security breach. Previous deep learning approaches formulate face antispoofing as a binary classification problem. In this context, robust countermeasure techniques must be developed and integrated into the traditional biometric applications in order to prevent such frauds. Despite face being a promising trait due to its convenience for users, universality and acceptability, traditional face recognition systems can be easily fooled with common printed facial photographs, which nowadays can be obtained by criminals on the worldwide network, especially due to the dissemination of social medias and networks[3][4]. Spatial image information is extremely important in tasks involving faces, such as face detection and face recognition[5][6].

Face ID is the most generally utilized technique in applications, for example, PC/smart phone login, recognizable proof

cards, and outskirt and identification control. Appearance of the face is used in this biometric feature as a key to distinguish a person among group of individuals. Though it has various disadvantages, including variations in illumination and head pose, still it can be utilized with other biometric characteristics like fingerprints, finger-veins, palm-veins, etcetera to guarantee the high accuracy rate of recognition systems.

Firstly, to capture the image of users, they must exhibit their faces in front of capturing devices. In this manner, the face restriction and highlight extraction steps are performed to separate picture highlights from the info face picture. At long last, a matching algorithm is performed to perceive the approved client in the information picture[9][10].

However, a face recognition system can be attacked by various means such as (a) printed photos, (b) displayed image or motion video; (c) plastic surgery; (d) sketch; (e) make-up and accessory wearing; (f)3D mask; or (h) synthetic photograph or video, generated using computer graphics. To take care of this issue, the presentation attack detection (PAD) strategies have been looked into for such systems.

LITERATURE SURVEY

Fake Image Detection Using DCT and Local Binary Pattern

In the technological era, digital images occupy an important position in different life's fields and image tampering has become affordable effortlessly, which results in a widespread of tampered and fake images through the internet and social media specifically. There are many techniques for image manipulation, some of the well-known methods are splicing and copymove. Splicing can be defined as cutting part from an image and pasting it into another picture, while copy-move is about copying part of an image and pasting it into the same picture. This paper challenges splicing and copy-move forgery detection methods on CASIA TIDE databases. The proposed method is based on Local Binary Pattern (LBP), and 2D Discrete Cosine Transform (DCT), which are used for feature extraction. Afterward, a Support Vector Machine (SVM) classifier distinguishes real and manipulated images. Initial performance was increased by applying Local Binary Pattern (LBP) to the whole image rather than in a blockbased fashion.

An eagle-eye view of recent digital image forgery detection methods

In today's modern era, digital images have noteworthy significance because they have become a leading source of information

dissemination. However, the images are being manipulated and tampered. The image manipulation is as old as images itself. The history of modifying images dates back to the 1860s', though it has become very popular in recent times due to the availability of various open source software available freely over the internet. Such software is responsible for eroding our trust on the integrity of the visual imagery. In this paper, a comprehensive survey of various image forgeries, its types and the currently used techniques to detect such forgeries is presented. The review delivers the downsides of various controversial forgeries that have happened in the history. It provides the taxonomy of various forgeries in digital images and a redefined the classification of forgery detection methods. It also highlights the pros and cons of forgery detection methods currently in use and directs path towards challenges for further research.

An integrated method of copy-move and splicing for image forgery detection.

Splicing and copy-move are two well known methods of passive image forgery. In this paper, splicing and copy-move forgery detection are performed simultaneously on the same database CASIA v1.0 and CASIA v2.0. Initially, a suspicious image is taken and features are extracted through BDCT and enhanced threshold method. The proposed technique decides whether the given image is manipulated or not. If it is manipulated then support vector machine (SVM) classify that the given image is gone through splicing forgery or copy-move forgery. For copy-move detection, ZM-polar (Zernike Moment) is used to locate the duplicated regions in image. Experimental results depict the performance of the proposed method.

EXISTING SYSTEM

Biometric systems are useful in recognizing person's identity but criminals change their appearance in behaviour and psychological to deceive recognition system. In this can't solve the problem.

Disadvantages of Existing system

- There is no Deep Texture Features extraction from images and then building train machine learning model using CNN (Convolution Neural Networks) algorithm.

PROPOSEDSYSTEM

Now-a-days biometric systems are useful in recognizing person's identity but criminals change their appearance in behaviour and psychological to deceive recognition system. To overcome from this problem we are using new technique called Deep Texture Features extraction from images and then building train machine learning model using CNN (Convolution Neural Networks) algorithm. This technique refer as LBPNet or NLBPNet as this technique heavily dependent on

features extraction using LBP (Local Binary Pattern) algorithm.

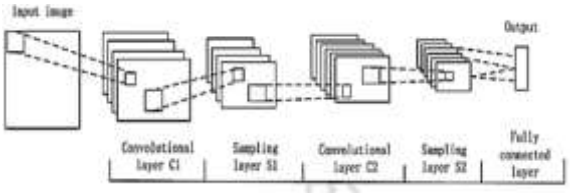
Advantages of Proposed System

- The LBP feature vector, in its simplest form, is created in the following manner:
- Divide the examined window into cells (e.g. 16x16 pixels for each cell).
- For each pixel in a cell, compare the pixel to each of its 8 neighbors (on its left-top, left-middle, left-bottom, right-top, etc.). Follow the pixels along a circle, i.e. clockwise or counter-clockwise.

IMPLEMENTATION

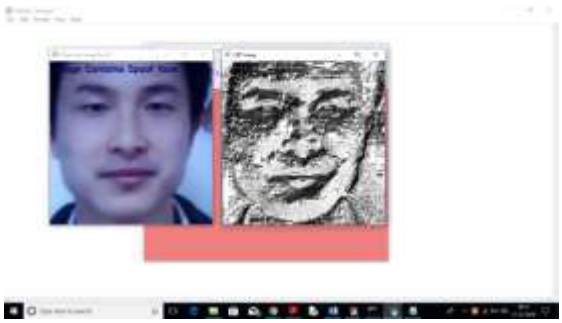
Generate NLBPNet Train & Test Model: in this module we will read all LBP images from LBP folder and then train CNN model with all those images.

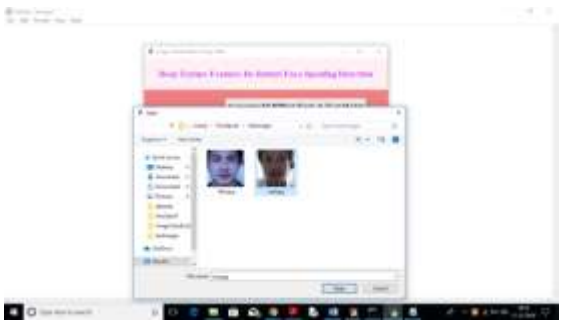
1) Upload Test Image: In this module we will upload test image from 'testimages' folder. Application will read this image and then extract Deep Textures Features from this image using LBP algorithm.
2) Classify Picture In Image: This module apply test image on CNN train model to predict whether test image contains spoof or non-spoof face.

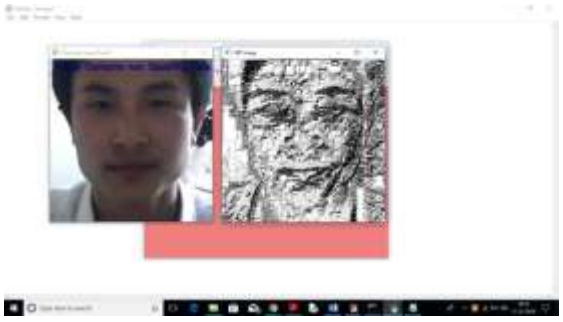


Architecture

SAMPLE RESULTS







CONCLUSION

In this project we are designing LBP Based Convolution Neural Network called LBPNET to detect face spoofing. Here first we will extract LBP from images and then train LBP descriptor images with Convolution Neural Network to generate training model. Whenever we upload new test image then that test image will be applied on training model to detect whether test image contains spoof image or non-spoof image.

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