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A NOVEL APPROACH FOR FACE RECOGNITION USING VIOLA JONES METHOD

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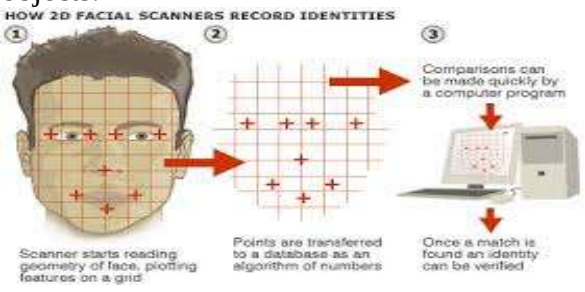
Abstract

Face expression recognition can be defined as identifying the expression of an individual images of the face.The new face recognition technique is based on the gray-level co-occurrence matrix (GLCM). It represents the distributions of intensities from the information about relative positions of neighboring pixels through these image texture.And we present a one-layer recurrent neural network model with a discontinuous hard-limiting activation function for quadratic programming. Image segmentation plays a significant role in image processing as it helps in the extraction of suspicious regions from the medical images And combining these technique based on viola and jackson are combined to based on pixels selected from rectangle-shaped areas enforced over the images are display high understanding to the vertical and the lines of horizontally type towards an image texture.

Key Words: Face recognition, gray-level co-occurrence matrix and viola jones.

1.INTRODUCTION

Feature extraction involves simplifying the amount of resources required to describe a large set of data accurately. While performing analysis of complex data one of the major problems stems from the number of variables involved. Analysis with a large number of variables generally requires a large amount of memory and computation power or a classification algorithm which over fits the training sample and generalizes poorly to new samples. Feature extraction is a general term for methods of constructing combinations of the variables to get around these problems while still describing the data with sufficient accuracy. Texture tactile or visual characteristic of a surface. Texture analysis aims in finding a unique way of representing the underlying characteristics of textures and represent them in some simpler but unique form, so that they can be used for robust, accurate classification and segmentation of objects.



Analysis and pattern recognition, only a few architectures implement on- board textural feature extraction. In this paper Gray level co-occurrence is GLCM. Texture features are

computed from the statistical distribution of observed combinations of intensities at specified positions relative to each other in the image. According to the number of intensity points (pixels) in each combination, statistics are classified into first-order, second- order and higher-order statistics

2. Face Recognition

A facial recognition system is a computer application capable of identifying or verifying a person from a digital image or a video frame from a video source. One of the ways to do this is by comparing to selected facial features from the image and a facial database

It is typically used in security systems and can be compared to other biometricssuch as fingerprint or eye iris recognition systems

3. Haralick features

Decision fusion was also applied for the Haralick features resulting from each matrix. As the system has even number of decisions to fuse, ties were break by selecting the first choice.

Existing face recognition (FR): Systems are fragile to attacks of fake faces, since the detection of liveness of the captured faces has not been a built-in module. A typical FR system can be deceived by printed face pictures, video replays, or mimic masks. In general, fake faces have two main properties:

1) Large variations Although the positive class, namely the genuine face, has limited variation negative class, i.e., the fake faces, can range from photos, videos to masks and so on. When it comes to material level, the variety is even larger: take face mask It's almost impossible to give a complete list. Indistinguishable under visible light. Fake is, by its definition, indistinguishable for human eyes. There- fore, without extra aid, only visual face images are insufficient and impossible for the detection of faces.

4. STUDY OF TECHNIQUES AND ALGORITHM USED FOR FACE RECOGNITION SYSTEM

Adaboost approach for face detection. The problem with this method is that it assumes all of the images in the temporal sequence are independent.

Actually, the neighboring images of blinking are dependent, since the blink is a procedure of eye going from open to close, and back to open. The temporal information is ignored for this method, which may be very helpful for recognition.

4.1 Adaboost approach

Where face recognition does not work well include poor lighting, sunglasses, long hair, or other objects partially covering the subject's face, and low resolution images and less effective through these method.

4.2HIDDEN MARKOV MODEL

HMM makes two independence assumptions to model the joint probability tractably. It assumes that each state depends only on its im mediate predecessor, and that each observation variable de- pends only on the current state,

4.3Local binary pattern

The approach analyzes the texture of the facial images using multi-scale local binary patterns (LBP). Compared to many previous works, our proposed approach is robust, computationally fast and does not require user-cooperation.

In addition, the tex- ture features that are used for spoofing detection can also be used for face recognition. This provides a unique fea- ture space for coupling spoofing detection and f and encodes the micro-texture patterns into an enhanced.

In the original space and the corresponding LBP images (using basic LBP as fea- ture space). We can notice that the printed photo looks quite similar to the image of the live face whereas the LBP images

depictsomedifferences.

4.4 Integral Image

The second contribution of this paper is a simple and efficient classifier that is built by selecting a small numberofimportantfeaturesfromahugelibraryo f potential features using AdaBoost (Freund and Schapire,). With n any image sub-window the total number of Haarlike features is very large, far larger than the number of pixels. In order to ensure fast classification, the learning process must exclude a large majority of the available features, and focus on a small set of critical features. Motivated by the work of Tieu and Viola (2000) feature selection is achieved using the AdaBoost learning algorithm by constraining each weak classifier to depend on only a single feature. As a result each stage of the boosting process, which selects anew weak classifier, can be viewed as a feature selection process.

AdaBoost provides an effective learning algorithm and strong bounds on generalization performance for combining successively more complex classifiers in a cascade structure which dramatically increases the speed of the detector by focusing attention on promising regions of the image. The notion behind focus of attention approaches is that it is often possible to rapidly determine where in an image a face might occur . More complex processing is reserved only for these promising regions. The key measure of such an approach is the "false negative" rate of the attentional process. It must be the case that all, or almost all, face instances are selected by the attentional filter.

The first contribution of this paper is a new image representation called an integral image that allows for does not work directly with image intensities these authors we use a set of features which are reminiscent of Haar Basis functions (though we will also use related filters which are more complex than Haar filters). In order to compute these features very rapidly at many scales we introduce the integral image representation for images (the integral image is very similar to the summed area table used in computer graphics (Crow, 1984) for texture mapping). The integral image can be computed from an image using a few operations per pixel. Once computed, any one of these Haar-like features can be computed at any scale or location in constant time.

4.5 Comparison Of Adaboost And Cascade Algorith

This approach is a simple and efficient classifier number of important features from a huge library of potential features using AdaBoost (Freund and Schapire, 1995). Within any image sub-window the total number of Haar-like features is very large, far larger than the number of pixels. In order to ensure fast classification, the learning process must exclude a large majority of the available features, and focus on a small set of critical features.

Feature selection is achieved using the AdaBoost learning algorithm by constraining each weak classifier to depend on only a single feature. As a result each stage of the boosting process, which selects anew weak classifier, can be viewed as a feature selection process. AdaBoost provides an effective learning algorithm and strong bounds on

generalization perfor- mancefor combining successively more complex classifiers in a cascade structure which dramatically increases the speed of the detector by focusing attention on promising regions of the image. The notion behind focus of attention approaches is that it is often possible to rapidly determine where in an image a face might oc- cur More complex processing is reserved only for these promising regions.

4.6 Histrogram Equalization

Histrogram equalization is a technique for adjusting image intensities to enhance contrast of many images can be better distributed on histrogram.

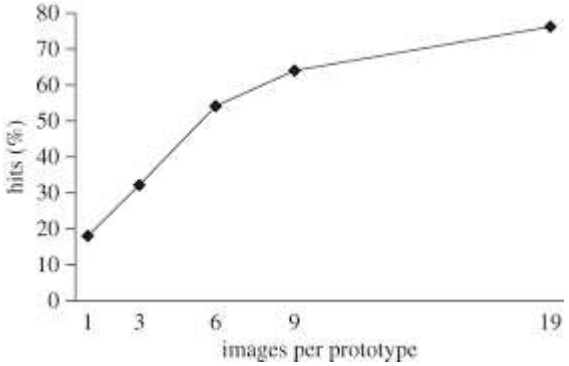
4.7 Gray-level co-occurrence matrix

One of the simplest approaches for describing texture is to use statistical moments of the intensity histogram of an image or region [16]. Using only histograms in calculation will result in measures of texture that carry only information about distribution of intensities, but not about the relative position of pixels with respect to each other in that texture. Using a statistical approach such as co-occurrence matrix will help to provide valuabel e information about the relative position of neighbouring pixels in an image.

The direct GLCM method is very competitive with state of the art face recognition techniques such as PCA, LDA, Gabor wavelets, and LBP. Using smaller number of gray levels (bins) shrinks the size of GLCM which reduces the computational cost of the algorithm and at the same time preserves the high recognition rates..

5. PERFORMANCE MEASURES

A performance comparison with previously published results is also should be noted that the previous approaches. The results confirm that the proposed method successfully performs under various types of spoofing attacks as compared to previous approaches, which are based on binary patterns of pixel intensities. It is noteworthy that temporal information greatly enhances the performance improved.



6. Comparison of GLCM and viola jones method

Compare to other techniques which better performance and efficient method pixel wise very high probability of these method.

7. CONCLUSION

The Viola and Jackson technique is an item recognition criteria providing competitive item recognition rates in real-time. It was mainly designed for experience recognition. The functions used by Viola and Jackson are based on pixels selected from rectangle-shaped areas enforced over the image, and display high understanding to the vertical and the lines of horizontally type. After experience recognition stage, the experience pictures are scaly to the same dimension. Along with principles of experience pictures are then stabilized with respect to RGB principles of the picture. The purpose of shade normalization is to reduce the lighting effect because the normalization procedure is actually lighting removal procedure.

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