

THE COMPREHENSIVE STUDY OF FACE RECOGNITION SYSTEM USING CONVOLUTIONAL NEURAL NETWORK IN VIDEO.

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Abstract: In these apparent need of the electronics world, security is used for the sensitive and personal data. There are three primary components of modern information security system they are-authentication, authorization, and accountability. Biometric is a method of identifying individual uniqueness and biological traits that provides high security to an account which cannot be stolen by the different individuals in absence that account owner .In these biometric ,although there are some unique passwords, that cannot guaranteed because of it can stolen by fraud criminals and here there is a chances to forget the passwords by the owner . Face recognition is used to identify the different individuals by the different expression of the face i.e, skin tone, jaws, cheekbones, eyes, nose, mouth. The main purpose of this research is to develop a complete system of face recognition by using video as the user input.

Index Terms - Face recognition; Convolution neural network; MATLAB; SIFT.

I. INTRODUCTION

In generic face recognition task ,the aim is to forecast the state of image in an video sequence. Compared to Biometric, Face recognition is very special there are number of positive samples are more. In these days, people are using alphabets and number as their secret code with the different combinations for accesing there account.

Firstly in pattern recognition field Neural Network is a machine learning method.It is a one of the multilayer perceptron (MLP) technique .Another technique is CNN which proposed by Yann Lecun in 1998 through LeNet-5 architecture..In this proposed paper, we are trying to find these issues in a different manner by proposing a CNN framework for face recognition.

CNN played an important role in face recognition recently. Convolutional Neural Network is a different method. Here in one process module there will be combination of segmentation,feature extraction and classification. Stochastic Diagonal Levenberg Marquadt (SDLM) is a learning technique that effectively Utilizes LeNet-5 while training the network

The new approach presented in this method is somewhat different from previous method. Instead of searching a logical solution for the regression problem, it tries to obtain a significant resolution through gradient descent (GD) .CNN is able to make complete use of limited training data. The main disadvantage is that it lays in the amount of data you provide to them if it is less CNNs perform poorly,it also have millions of parameters with small dataset which it run into an over-fitting problem.

II. TECHNIQUES USED FOR FACE RECOGNITION

A. Biometric template

In these technology field biometric is rapidly developing, with immense potential, which helps to make our lives easier and safer.In many areas such as security monitoring, database access, border control and immigration, and for verification, identification or recognition biometric are used widely.The target in these is biometric data cancelable biometric generation and protection schemes. By some attempt to survey the existing biometric template generation and protection schemes such as Bio-hashing (Salting), Non-invertible Transformations, Key-binding Biometric systems, Key-generating Biometric Systems and Hybrid approaches. We observed the suitable and robust scheme.

B. Hierarchical Structure Based Convolutional Neural Network

A hierarchical structure based convolutional neural network is used to provide the ability for robust information processing.In these network the weight sharing,ability of convolutional neural network is considered as a level of hierarchy.It reduces the number of free parameters and improves the generalization ability.In these whole input image pixels a small CNN is used to shared between feature extractor.

C. A Convolutional Neural Network Cascade for FaceDetection

Here cascade architecture is built in convolutional neural network with powerful capability, while maintaining high performance for addressing conflicting challenges in face detection, large visual variations like pose expression, and lighting, demand an advanced discriminative model to accurately differentiate faces from the backgrounds. CNN cascade operates at multiple resolution, at fast low resolution stages it rejects quickly in background region and at high resolution stage it evaluates a small number of challenging candidates carefully.

D. Visual Attributes For Face Verification and Image Search

These visual attributes are the labels that can be given to an image to describe its appearance. While focusing on images of faces the attributes used to describe them, whereas the concept also apply to other domains. To show how one can create descriptions at various levels of specificity; they are generalized, as they learned once and then applied to recognize new objects or categories without any further training; and they are efficient, possibly requiring exponentially fewer attributes than naming each category.

Table 1
A Summary of Face Recognition Techniques

Sl. No.	Title	Reference	Method/Algorithm Implemented	Advantages	Disadvantages
1	Cancelable of biometric template generation and protection schemes	Chandra, E., Kanagalakshmi, K.	Biometric/Biometric Systems and Hybrid approaches.	1.Security. 2.easy and safe.	1.If it lost by the owner.
2	Hierarchical Structure Based CNN for Face Recognition	Khalajzadeh, H., Mansouri, M., Teshnehlab, M.	CNN/ Yale and JAFFE face databases	1.In CNN the result using a smaller and modularized trainable network is to solve a large and complicated task.	1.It takes time to solve.
3	A CNN Cascade for FaceDetection.	Li, H., Lin, Z., Shen, X., et al	CNN cascade/14 FPS on a single CPU core for VGA-resolution images and 100 FPS using a GPU	1.It operates at multiple resolution. 2.time efficiency	1.It takes higher resolution for accurate detection 2.less accuracy
4	Describable visual attributes for face verification and image search	Kumar, N., Berg, A.C., Nayar, S.K.,	visual attributes for face verification and image search .	1.They are efficient. 2.They can learn once and then applied to recognize new objects.	1.It is given only to an image to describe its appearance.

III. CONCLUSION

In this paper, the review of framework of Face Recognition has been highlighted and presents a literature survey on the various techniques involved in Face Recognition. These methods are measured on the basis of accuracy and robustness of recognizing the face, which are listed in references and the challenges for all listed above.

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