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Face Liveness Detection Using Euler Method Based On Diffusion Speed Calculation

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ABSTRACT: — It is a common method to spoof face identification system by using photographs. Therefore security is essential factor. Spoofing make security system vulnerable. To address such problem, several authors used number of methods. Here we examine views of numerous authors for identification of face. Diffusion of image is accomplished by using Euler strategy. (LSP) is the local speed patterns, in which diffusion speed values are encoded and it is our component which effectively shows dissimilarities between real and fake image. The goal of image forgeries is to distinguish between original and manipulated image. In this paper, we are focusing on authenticity of images which are based on concept of diffusion speed of an image using Euler method. The classification method does not have any expert knowledge and this is a machine learning approach. By the concept of machine learning require minimum user interaction. For the classification purpose SVM (support vector machine) concept are use.

KEYWORDS: Spoof, Diffusion speed, local speed pattern (LSP), SVM.

I. INTRODUCTION

Nowadays, photographs and videos are the ways for making the security system illiterate. Security is essential in every sector. From decades usually thumb is used for the biometric purpose. Now face is also used for the same. Every day, millions of digital image and document are produced by variety of device and all this information are distributed by news paper, magazines, website and television also. With the advance technology and availability of computing resources. It is not very difficult to manipulate the digital image Face recognition give its relevance in lots of sectors since from few years. It is effective in many areas. Biometric is the technology design to verify the identity of a person used in evidence system In[1] dissimilarities are observed in original that is real and fake images. Addictive operator splitting method was used for diffusion. It increased efficiency. Tan et al introduced a method for spoofing detection. In that method single image is used for diffusion. In [4] for bad illumination condition Liveness could be detected without using any type of extra devices. For the impressive output of Liveness without any extra device, observed when the image is come from camera or smart phones rather than human face. Face Liveness detection scheme concentrate on security of face realization system.. This paper focus the methods proposed earlier about the originality of the face in II. In part III proposed scheme is given and observation of various methods used in past years in IV. Going further conclusion and references are given in V and VI respectively

II. RELATED WORK

Literature review areas of research considered in the past, to be explained the approaches used and the new ideas. It is an assignment of previous task done by some authors and collection of information or data from research papers published in journals to progress our task. It is away through which we can find new ideas, concept. There are lot of literatures published before on the same task; some reference papers are taken into consideration from which idea of the project is taken, the other reference will be discuss later. In non linear diffusion author presented a technique called Addictive operator splitting (AOS) scheme. Implementation of this method is not hard. The numbers of pixels are linear to generate high efficiency. Large applications are become more attractive due to this type of scheme.LTV is a logarithmic total variation model. This model is applied on single image without any requirement of information of the image. This model applies on that image and leaves the very little facial structure. This structure may be the idea for face identification. LTV model is used in different illumination condition. Modification of LTV is done. Various authors are used this LTV model for detection of real and fake images. Logarithm total variation techniques are also used for calculation purpose. For speed calculation it is used In eye movement author identifies difference in the eye regions and finally determined the input face is original or not. Big shape variations were occurred due to continuous eye movements. In the input image first centre point of both the eyes are detected. For input image recognition the threshold are always greater than result for the live faces. For the identification of eye regions filtering of the face image was done due to which a smoothened 3D curve was obtained. After that normalization was done. After normalization, eye regions are determined according to the centre of eyes. Then hamming distance applied to calculate liveness score of each eye region. Finally the result is given as, for live faces average liveness score greater than threshold. Author introduced scenic clues for identification of real and fake image. A method is introduced by combining of three scenic clues. Face-background consistency produced high consistency for fake face images and low consistency for real faces. This consistency is an efficient liveness clue. Non rigid motion identifies movement. In image banding author have used wavelet decomposition for detection. The author fused three clues for efficient liveness detection. Optical Flow Field is speed of continuous movement of objects pixel in the plane. It is use to find time domain change and intensity of images to identify position of each pixel. It is the intensity change by time and movement of object. Continuous changes of intensity rate in the plane is a optical flow vector, includes information of velocity field.

III. PROPOSED ALGORITHM:

In proposed scheme five steps are involved:

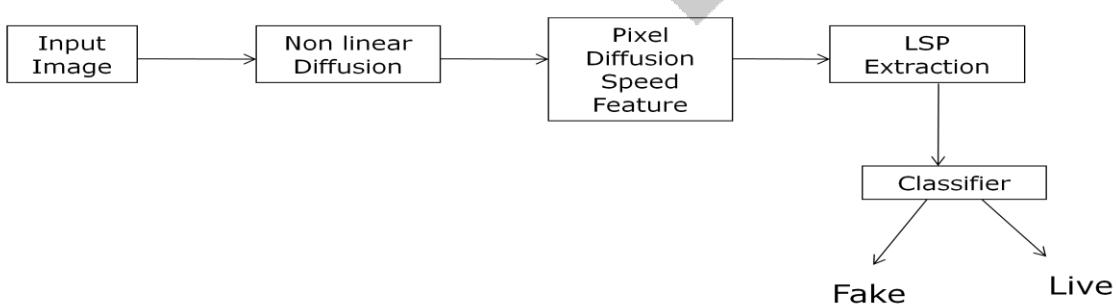
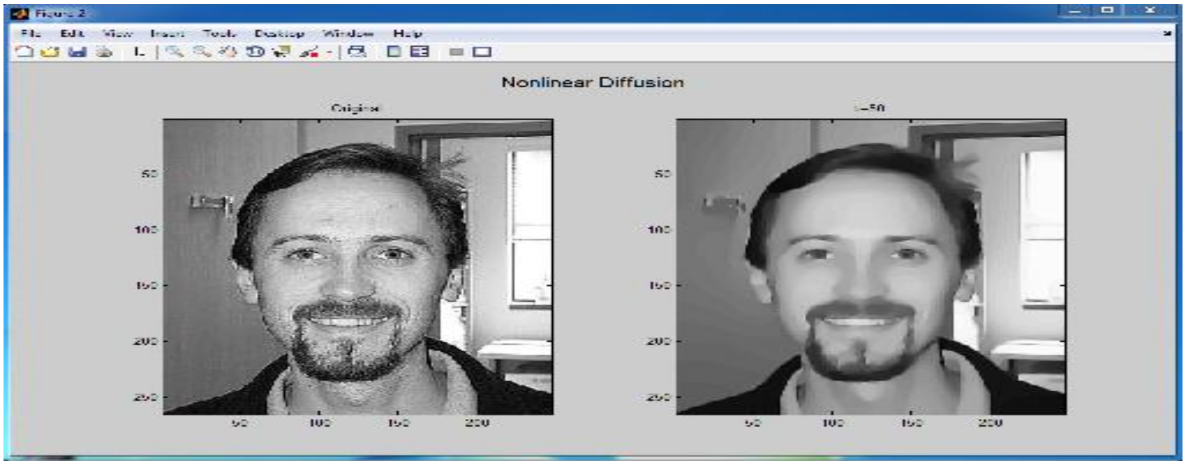
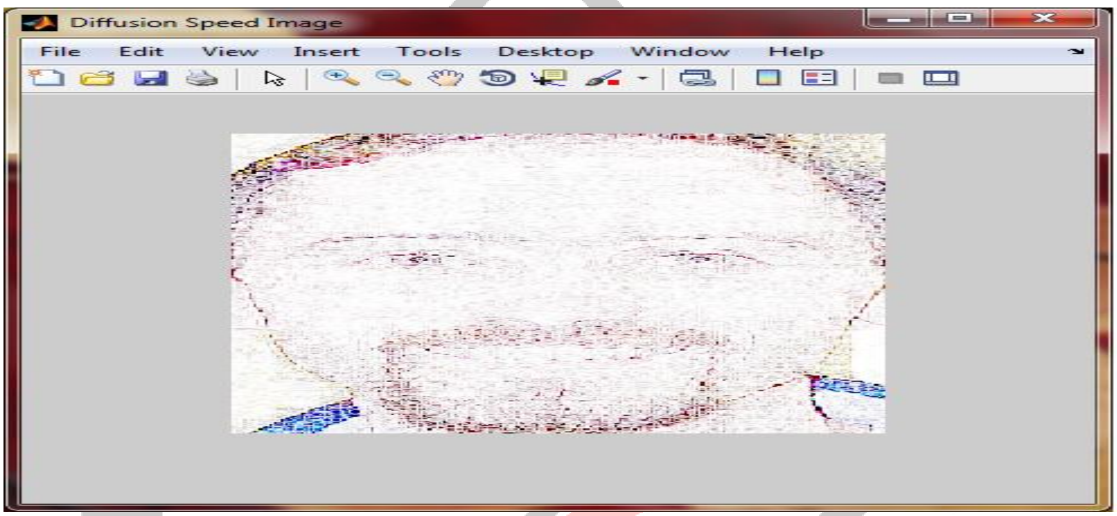


Fig. Proposed system

1) **NON LINEAR DIFFUSION:-** Input image is diffused according to our focus called non linear diffusion.



2) **PIXEL DIFFUSION SPEED FEATURE**: Pixel by pixel diffusion performed and calculation of diffusion speed.



3) **LSP EXTRACTION**:- It is a local speed pattern used to calculate the difference in live and fake face.

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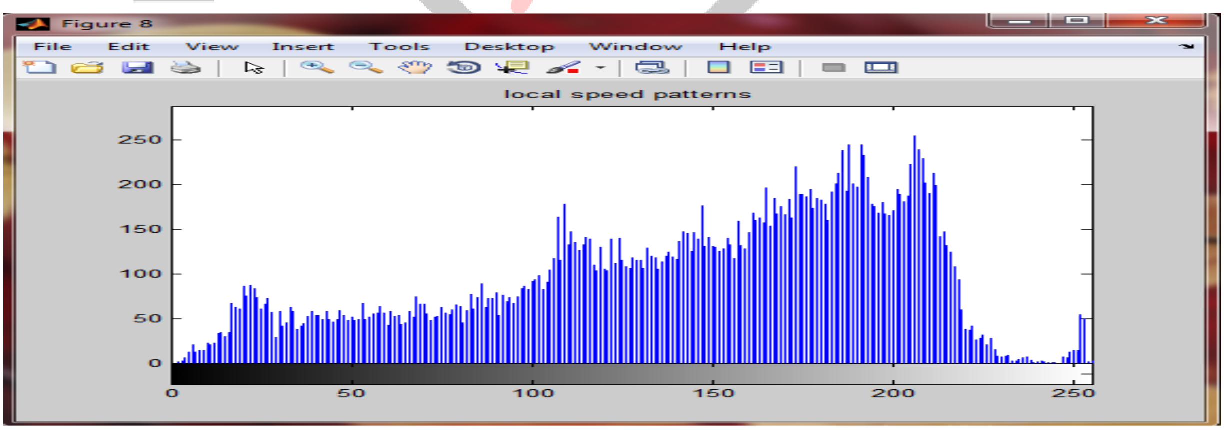
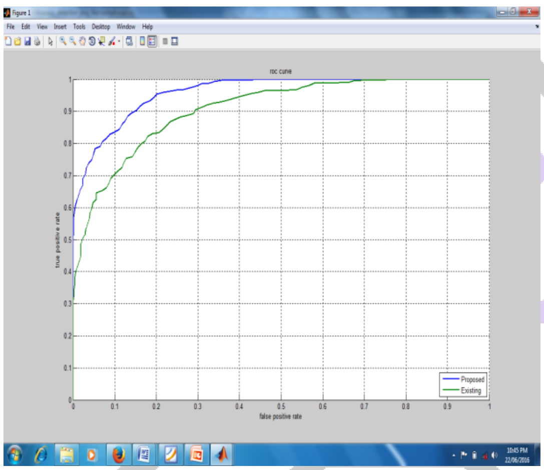


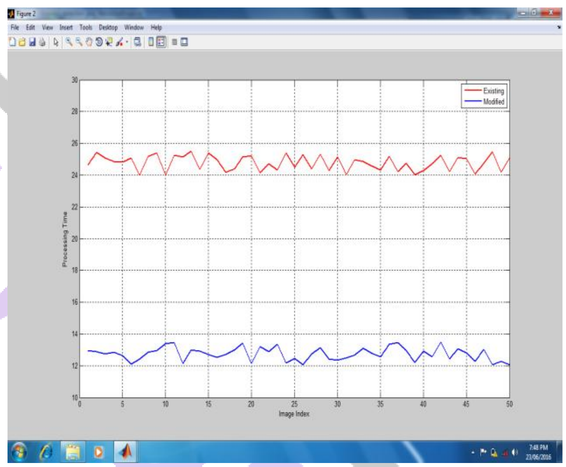
5) Classification:- This process is use matching learning approach to automatically classify the feature vectors. The proposed method requires only a minimum amount of human interaction and provides a crisp statement on the authenticity of the image .classification is done by using svm classifier.

IV. SIMULATION RESULTS:

method	Average time	Average accuracy
Existing	24.25	84%
proposed	12.11	90%

Comparison graph of accuracy and time for existing and proposed method:





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V. CONCLUSION AND FUTURE WORK

In this Paper, we detect wheather image is original or not by illumination classification. We presented a new method for detecting forged images of peopleby calculating diffusion speed of an image. Image diffusion is used for identification the original and fake image. Euler method is used for image diffusion which shows the dissimilarities in real and fake image. This is a effective method for identification of difference in real and fake images is given. Different face realization techniques have been discussed here. Face realization is an important application in the recent years as it will allow the unique identification of human face.

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