

MULTI FACE DETECTION AND RECOGNITION SYSTEM WITH VIDEO STREAMING

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Abstract— Now a day's face acts as a major part in which the identity of each human classification is done mainly using face. Thus on a developing Artificial Intelligent environment detection of the face on multiple person and recognition is the main thing employed. Thus the proposed system focuses on the detection of multi face and recognition over live video streaming on public places. The classification focus on the Dense Bi- Directional Back Propagation Algorithm (DBPNN) which gives a exact classification of the user side identity. Thus the developmental feature classified fields with HAAR cascades and Gaussian functionality helps in the identification of the face matching and classification system. Here the face features are extracted and stored in Viola Jones method which make exact texture pattern identity. The detection and the recognition can be made out with the normal realization point plotting. Thus the classification of DBPNN will plans to give out 99.83% of accuracy on a detection and recognition over multi face in a single video streaming system. The developed system helps in many application system like biometric, public place access, police verifications etc. The term level of the extraction ensures the high probability of the developmental extraction.

Keywords: Dense Bi- Directional Back Propagation Algorithm, HAAR Cascades, Viola Jones, Artificial Intelligence, Gaussian Feature Extraction.

I. INTRODUCTION

Facial Recognition is the wide used technology everywhere. Now a day's smart phone authentication system are completely done using face recognition. Thus these implementation combined with machine learning and AI based identification tends to upgrade our developed application. Among multiple biometric techniques the provided facial recognition will be the most efficient one where the detection of faces can be exactly identified and produced.

Usually a video based analysis is only done which will be done with computer vision domain. Computer vision is nothing but the analysis of the image processing for further identification. Multiple techniques are done with the image based detection called as image processing. These techniques evolve the outcome of the implemented application. A quick search of the suspected person will be done with the generated computer vision techniques. Generated verification of default server connection for the trained features is added. So, the identification of the suspected person matching and classification will be easier.

Multiple dataset facial images are getting trained for the detection of the facial matches and extract the feature points. These trained dataset gives the multiple point analysis over these filtered images. Furthermore techniques enhance for the exact and accurate analysis of the proposed system.

Geometric photo pattern extraction is done with the generated extraction system where the exact plotting of the face extraction can be done. The facial features can be related with the eyes, nose, and mouth will be first located. The location differentiation is done using the geometrical distance and the angles between the features are known for the classification purpose. The recovered object is done with the gradient mapping on different lighting conditions. The face detection makes on a separating image windows on the basis of two classifications. The first classification is done with the background called clutter. And the foreground execution is done with the ideal face factor detector.

The classification of the arbitrary image values are given as an input and the remaining process are carried out as an output. The output value classification is done with the binary value extraction which will be good on the detection of the face plotting system. The face extraction feature with every condition are also taken as the developmental extraction and the training features added in it. Cameras Surveillance is the real time application in the current real world where each and every process are get monitored by the CCTV. Secured analysis is the main source of these upcoming systems based on the computer vision analysis. Security event is based on capturing each and every moment which are going on in public.

II. LITERATURE SURVEY

In [1] a syntactic presentation of the facial matching features has been added with the developed system. Here Weiping Chen; Yongsheng Gao has presented a string identification of the matrix feature with face recognition. The demonstration of each image with the matrix sequence will be stored in an array called string values. These array features are then tends to be matched with the higher feature value which all tends to give out a good level of the recognition system. A Face sketch is provided in order to tick out the exact facial features which are meant to be. The sketch face generated with the hyper feature point which are stored in the string format. The background study tends to find out the higher level of the identified points with its matching frequencies. Here matching mechanism of the string face extraction and eigen face extraction are compared and studied.

In [2] Jun-Yong Zhu; Wei-Shi Zheng; Jian-Huang Lai; Stan Z. Li has developed transduction face matching with IR cameras. Multiple effective databases will be generated with the base of the detected faces. The effective identification from the

user side will be more effective compared with the functional differences. Existing classifiers will have many counterparts and the classification of these counterparts is learned with the ensemble analysis.

Renliang Weng; Jiwen Lu; Yap-Peng Tan in [3] explains the identification of the robust face detection over cover of the partial face identification. Multiple gallery images with multiple faces are gathered with the allotment of the partial face recognition system with the generated image. Here a multiple analysis system will be chosen where the aligned pair of extracted feature are said to be given in a place where multiple morphology have been set. This calculation divides the ideology and the accuracy of the system.

In [4] an image processing domain based transfer learning pattern with cross identification of the faces has been developed by Himanshu S. Bhatt;RichaSingh;MayankVatsa;Nalini K. Ratha. This author provides a facial recognition system with cross feature pattern extractor which brings out many patterns to get matched with. The detection over these exact transfers learning provides a machine learning approach to make the system to learn the provided details.

In [5] Himanshu S. Bhatt Indraprastha has proposed discriminate feature analysis. Here the complete face matching with the descriptor identified is done with the pixel variation analysis. The main thing here for the face recognition here is that the binary code feature extractor. The difference of the binary code extractor tends to produce the complete feature analysis. The analysis of the multiple dataset provides a good result with the developed research.

In [6] S. Satoh has proposed a sequence analysis of the face extraction which tends to give out from the video. A key frame Extraction technique has been generated with the extracted with multiple level of face content detection. Here mainly pattern recognition tends to give out the identification of the user face sequences matching. The research performance analysis is done in the drama video execution.

In [7] Ahmad Zarkasi; Siti Nurmaini has generated a face moment identification system which will be the most significant one. Here the first dynamic face detection on video analysis is proposed with the motion picture. The input image pattern is detected with the template matching algorithm on each template the variation detection. The coordinates of each face regions are identified with the generated template matching.

In [8] real time face detection for the criminal identification has been developed by the ImashaLakshan; LuminiWickramasinghe the predictor concentrates on the reliability of the criminal prediction. The machine learning based IOT headband with truth or lie detector is used. This headband identifies the generated criminal details are true or lie. The authenticity of the given emotions with the reliability is high in the experimental results.

In [9] M Hanuma Teja has detected the real live face with Direct Cosine Transform a single camera image acquisition source. Multiple color transformation has been generated with feature extractor. Morphological operations have been enabled with the analysis of the face descriptor. Mainly the DCT algorithm checks the eye blink pattern, face eyebrows, pupil, nose pattern, jaw pattern and the mouth pattern. With the extracted multiple patterns these faces are known to the author.

In [10] the investigator dedicated with the intelligent transportation system which holds the vehicle movement detection. Here the suspect vehicles with their criminal activities are completely detected where the analysis of the suspects will be known with the vehicle activity. Here a simple CCTV analysis will be generated to detect the suspicious vehicle moment detection and the identification of the criminal or suspect. The accuracy rate of 17.24% is provided in the counterpart area.

III. EXISTING SYSTEM

In the existing system, Convolution Neural Network based face spoofing on stereo matching has been developed. A disparity map has been generated for the stereo mapping of the face spoofing detection. Single image analysis with the large scale matching will be the more complexity one. So to reduce the complexity multiple images on left and right has been added as a binocular pattern.

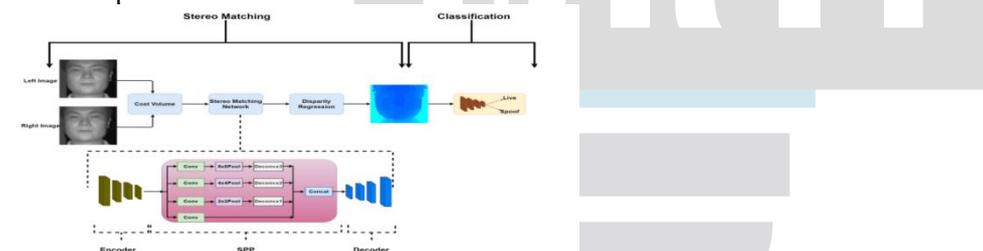


Fig 1 Architecture of the existing system

Generally this involvement of the DBPNN stereo matching system given with three methods: Feature Extraction, Cost effective volume and the 3D- DBPNN classification of the spoofing of the criminal in the face matching identification system. Each structure of the multiple scale feature analysis on max pooling layers had been developed with the disparity map. The accuracy and the efficiency are not good in the existing system. As a future enhancement detection of the criminals with exact identification can be developed with better algorithms.

IV. PROPOSED SYSTEM

In the proposed system, the face detection and recognition system with the classification of the multi face Video streaming system is done. The system makes a complete extraction of the face feature point with the different classification subjectivity. The close pattern of the facial feature on each plotting system using viola jones and haar cascades extraction is done. Generally this involvement of the DBPNN stereo matching system given with three methods: Feature Extraction, Cost effective volume and the 3D- DBPNN classification of the spoofing of the criminal in the face matching identification system. Each structure of the multiple

scale feature analysis on max pooling layers had been developed with the disparity map. The accuracy and the efficiency are not good in the existing system. As a future enhancement detection of the criminals with exact identification can be developed with better algorithms.

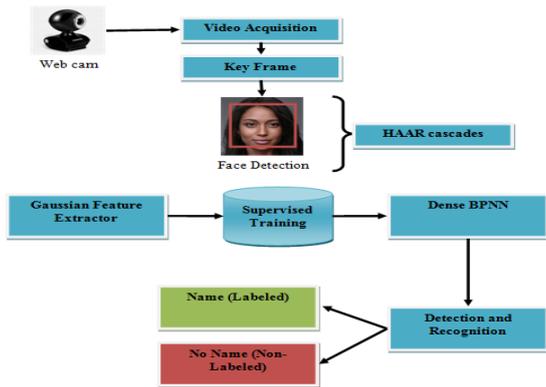


Fig 2 Proposed System architecture

In the proposed architecture, this shows the exact processing of the research generated. The maintenance of the face recognition with the supervised training system can be classified on the exact classification with DBPNN. The training classes of the database show the labeled data since a supervised learning is added. An efficient texture pattern detected in this label functions can be shown and added here with multiple development.

V. METHODOLOGY

The proposed system undergoes the module of these research methods.

(I) Video Acquisition

Video acquisition is the ultra sound panoramic video where the CCTV based video input is added. Here usually a CCTV analysis is added in the public place. Here video surveillance will be the main source of identifying the faces of the persons in public places. Here the multiple videos storage is get with the server side storage which is taken for the further analysis.

(II) Key Frame Conversion

Key frame extraction is the one where the multiple frame source identification is done. Here multiple image analysis with a single frame extraction is done. Usually a video content analysis is the one where the video will be converting as images and then they are finally converted for the further proceedings. For an example 1 second video will be converted as 60 frames. These frames will generate as an image in the storage server system.

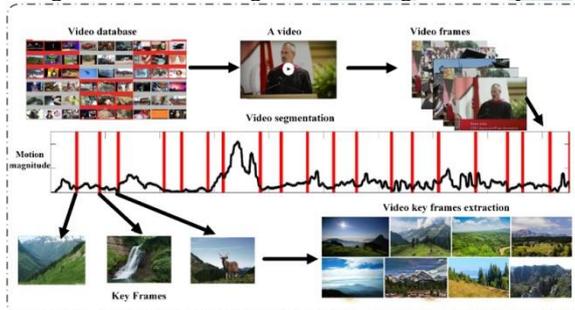


Fig 3 Key frame conversion from video

A meaningful frame needs to be generated with analysis of the motion image picture. The image picture with blur instance and the unwanted noise are reducing in this key frame extraction works. The key frame extraction reduces the low complexity versions. The complexity of the facial feature identification of will be completely reduced. The chronological order arrangements are made after the frame extraction is done.

(iii) HAAR Cascades Feature Point

To identify the face first of all one need to extract the facial features from the set of images. Viola- Jones execution in the HAAR cascades executes with rectangular field.

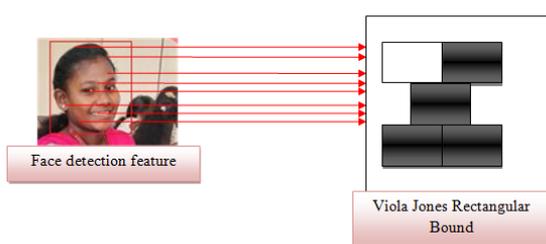


Fig 4 Haar Cascades Feature Extraction and plotting Points

Here the cascades are detected with the integral image called F. The F integral image value are calculated with the given below equation with the position starting at (x,y)=(0,0) and the existing sum of intensities at (1,0).

$$F(x,y) = \sum_{a=0}^x \sum_{b=0}^y I(a,b) \quad (1)$$

A recursive manner of integral image of the original image with F sets are calculated with a and b coordinates. Here 4 values feature point are get with the sum of co- ordinates.

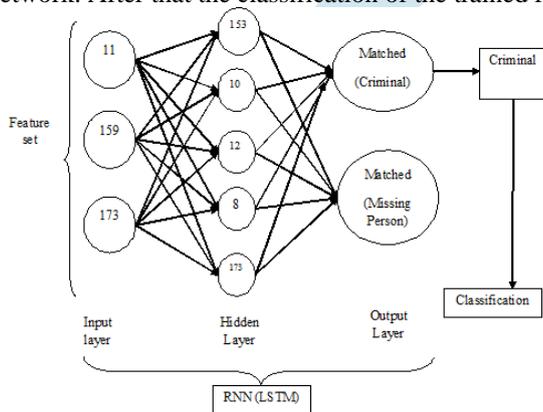
$$R(x,y) = R(x,y-1) + I(x,y) \quad (2)$$

$$F(x,y) = F(x-1,y) + R(x,y) \quad (3)$$

The rectangular sum of region with rectangular shaped area calculates on each area with eye feature, nose feature, and eye brow feature extractor. Template matching with the fast convolution over feature matching is done with the training feature.

(iv) Face classification

The classification with the classifiers of the extractor feature value points. The extracted features points on the HAAR cascades viola jones made a classification on the testing and the training phase. The training phase will get the extracted feature points and then be trained with the server database. The extracted and the trained feature will be added with the Recurrent Neural Network. After that the classification of the trained feature face set with multiple face analysis is done.

**Fig 5 LSTM based RNN classification**

Recurrent Neural Network:

In Recurrent Neural Network LSTM based facial classification is done to identify the facial features. The Long Short Term Memory (LSTM) is based on RNN with memory based identification. Here multiple memory blocks are identified with the neural blocks. Three layers are known with the neural network:

Input Layer: Input layer take the input feature pattern of the face which all gathered on the both testing and training phase.

Hidden Layer: The hidden layer will be placed on the trained features. Thus the face patterns are matched on each neuron layer. Multiple preceptor layers have been added with each feature pattern match.

Output Layer: The output layer will give out the matched feature of the thief feature change are identified. The face of the normal user or the criminal or the missing person can be detection.

The function approximation level is with the concentration RNN given on decomposition system. The LSTM variation will make an exact matching of the user level of faces detection. Each matching values are detected. Thus the face pattern are classified and detected with this field.

VI. EXPERIMENTAL RESULTS

In the experimental results the multiple image dataset are been analyzed. Here the image are divided at two sub process one on the testing phase and the training phase. The testing and training image dataset are created with my classmates based analysis.

The HAAR cascades feature matching and the RNN classification tends to produce the good accuracy compared to the other existing solutions.

**Fig 7 the database of the classmates face analysis**

Each face matching pattern on the HAAR cascade feature analysis is detected with the total number of the features extracted with the system.

| | Eye | Nose | Mouth | cheeks |
|----------|-------|-------|-------|--------|
| Existing | 17.21 | 11.32 | 11.00 | 8.2 |
| Proposed | 72.11 | 71.83 | 87.22 | 16.33 |

Table 1 the feature extraction pattern of existing and proposed system

This pattern differentiation will make a huge difference in the existing and the proposed solutions. Usually more than 17,896 feature pattern are trained in the default server to extract the correct pattern of the criminal and the missing person identification.

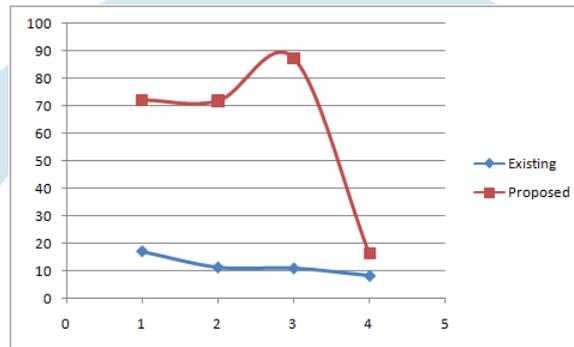


Fig 6 the feature value extraction of the existing and the proposed feature extraction

The response time analysis of the each value prediction will be more different compared to the following solution. The prediction of the time response is mainly focused on the time taken for the existing and proposed solution response. The complete analysis is based on each matching pattern which tends to get the exact solution.

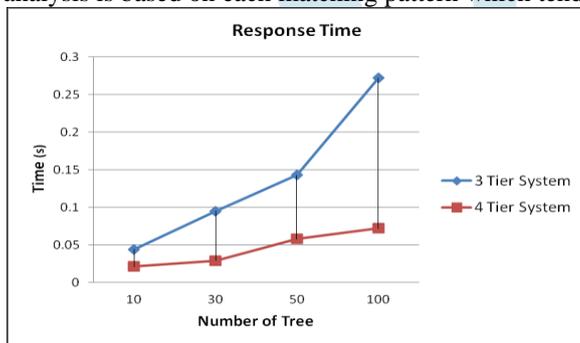


Fig 7 The graphical chart representation of the response time

Thus the comparison chart on the accuracy of the existing and the proposed solution is based on the precision, Recall, F-measures and Final accuracy.

The time taken with the proposed system algorithm execution system is comparatively low where the existing system is a tedious one which makes a prediction with a high rate of timing.

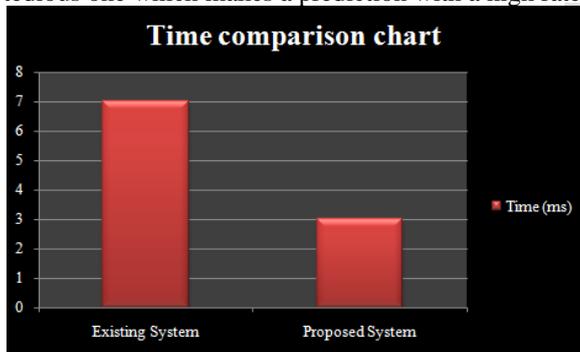


Fig 8 Time comparison chart

| | Precision | Recall | F-Measure | Accuracy |
|------------|-----------|--------|-----------|----------|
| CNN | 74 | 26 | 66 | 78 |
| RNN (LSTM) | 86 | 14 | 89 | 97 |

Table 2 the accuracy graph measurement of the existing and proposed solution

The existing solution measures a low level identification compared with the proposed solution

Thus the paper identifies the exact solution of detection over criminal identification and missing person detection with exact feature analysis.

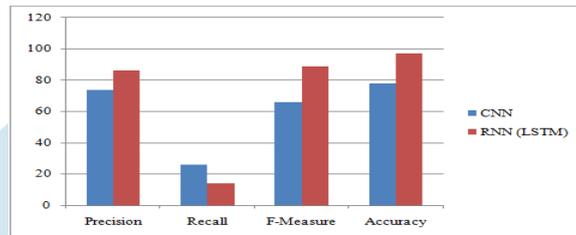


Fig 9 Comparison chart of CNN and RNN

Here a feedback and rating analysis of the face detection with the customer detection of the faces are getting captured with the generated approach system. The maintenance of the system tends out 100 featured faces with a existing and proposed system and check out for the detection of the thief analysis.

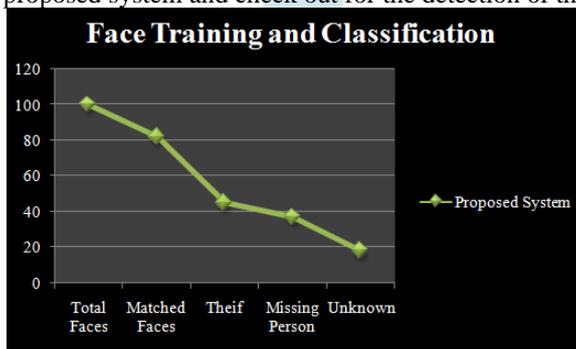


Fig 10 Chart analysis on tested and trained face

Thus the implementation with the result analysis shows out an efficient accessing and formulated pattern with the proposed algorithm and extractions

VII. CONCLUSION AND FUTURE ENHANCEMENT

The identification of the criminals or the missing person on over 7 crore member in public place is a tedious one. Face recognition and the matching pattern proposed in this paper give a good solution for the police or CBI side to identify the face using CCTV. The extraction of geometrical feature values meant to be the basic matching template detection. Further regularization of the Recurrent Neural Network (RNN) system will generate the multiple level of system. This generated method will benefit on the various application of detection of these suspicious behaviors. The accuracy provides a good efficiency compared to all other existing systems.

In future enhancement the detection of the facial pattern can be given with 100% accuracy in further analysis. A silent intimation for the remaining people with the criminal person is detected.

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