International Journal on Future Revolution in Computer Science & Communication Engineering
Volume: 2 Issue: 3
ISSN: 2454-4248
04 - 08

Mathematical Approach and Results of Viola Jones Face Detection Method

Er. Deepika Trivedi
M. Tech. Scholar, Arya Institute of Engineering and Technology
deepikatrivedi8@gmail.com

Abstract :- The fundamental rule of this methodology is to scan a sub-window fit for recognizing faces across a given input image. The standard image processing approach is rescale the input image to various sizes and afterward run the fixed size detector through these images. As opposed to the standard methodology Viola-Jones rescale the detector rather than the input image and run the detector ordinarily through the image – each time with an various size. The drawback of the previous work was that the accuracy level of detecting the human face was not very high. This approach tries to find out an automatic human face detection system that can detect the faces and eyes and calculates the accuracy.

Keywords: *face detection, RGB, cascading*

I. INTRODUCTION

Face detection approach are being better every day in satellite images. This approach uses viola jones method for face segmentation. First of all an image is acquired. Then Vision cascade detector is used to detect the face in an image. Image in resize according to the requirement of the software using image resize. Matlab work on binary images so the colored images then converted in binary images using gray scale conversion. Then image is complemented. After that Face Detected by Bounding Box Analysis. Matab function Object Annotation provides a truecolor image annotated with shape and label at the location specified by position. After that we use the histogram calculation and at last we segmented the face and eyes from given image.

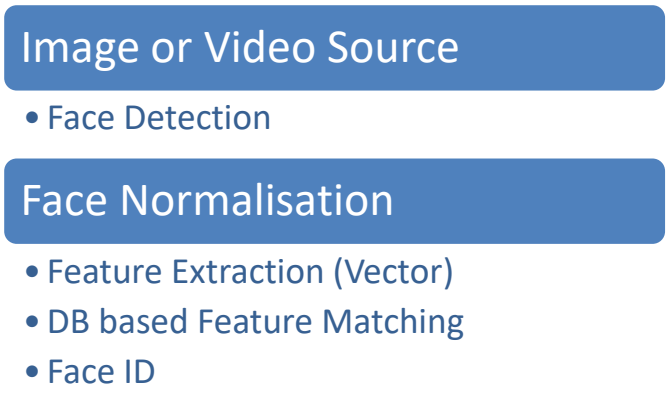

Figure 1: Face Detection

II. RELATED WORK OF FACE DETECTION

Skin tone is quite possibly the main highlights of human face. RGB is sensitive to light changes however YCbCr and HSV are not delicate to light changes. The explanation is that these two shading spaces have separate power and shading channel. Kherchaoui and Houacine displayed skin shading utilizing Gaussian Dissemination Model with Cb and Cr divert in YCbCr shading space. Another strategy preprocesses the offered image to eliminate foundation part as an initial step. It is finished by applying edge discovery on the Y segment of YCbCr shading space. From that point forward, skin division is done on YCrCb shading space with conditions. Qiang-rong and Hua-lan applied white equilibrium amendment prior to identifying faces. The shading value is significant for division, so while securing the image tones may reflect bogus tone.

 ISSN: 2454-4248
04 - 08

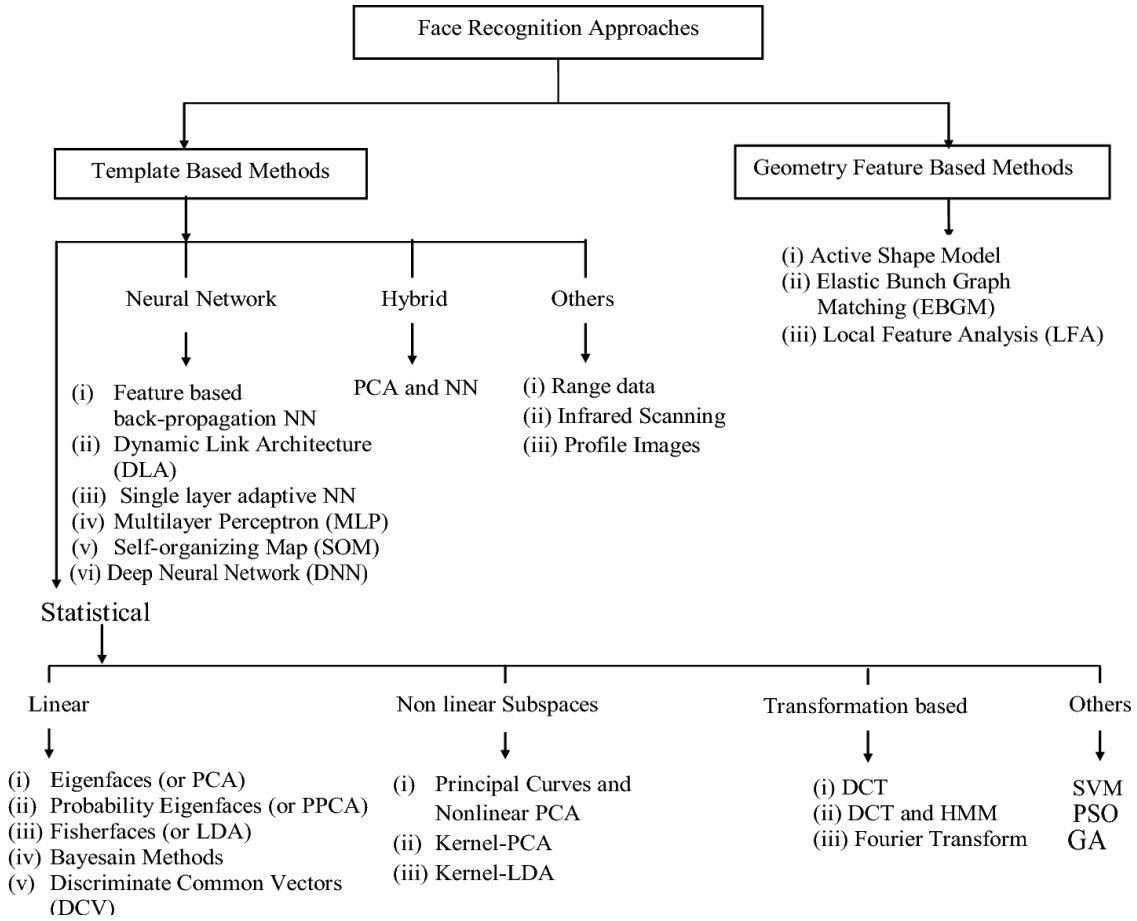

Figure 2: face detection approaches

To conquer this, white equilibrium amendment ought to be done as an initial step. At that point, skin shading like regions are sectioned utilizing curved model in YCbCr. After skin regions are discovered, they joined with edged images to grayscale image. At long last, the consolidated areas are confirmed as face by checking jumping box proportion and region inside the bouncing box. Another application fragments skin like area with edge value in Cb, Cr, Standardized r and Standardized g. At that point possibility for face is picked concerning jumping box proportion, proportion of region inside and zone bouncing box, and least territory of the area.

After competitors are discovered, at that point AdaBoosting strategy is applied to discover face up-and-comers. The confirmation is finished with joining the two outcomes from skin like region and AdaBoosting. Additionally, skin tone can be displayed in curved region in Cb and Cr direct in YCbCr shading space. Skin like region is sectioned if the shading value is inside elliptic locale and up-and-comer areas are confirmed utilizing layout coordinating with Companion et al. identify faces utilizing just skin division in YCbCr shading space and scientists produce the skin shading conditions in RGB shading space also. Neural network and SVM are somewhat techniques that are utilized normally in face discovery approch. Face and non-face images are portrayed regarding wavelet include in AdaBoost strategy. e technique.

From the literature survey it is concluded that several authors used many different techniques for detecting the faces. For getting the more accurate results different techniques and methods are used. The purpose of our work is to design a system which enhances the accuracy level. We are going to detect the face and eyes both. For this work we segmented the face and eyes using viola jones method.

III. VIOLA JONES FACE DETECTION METHOD

The major standard of the Viola-Jones method is to sweep a sub-window fit for getting faces over a given data image. The basic image changing technique may be to rescale the data image to various sizes and after that run the adjusted size finder through these images. This philosophy winds up being monotonous on account of the figuring of the assorted size images.

 ISSN: 2454-4248
04 - 08

Contrary to the standard system Viola-Jones rescaled the detector as opposed to the input image and run the finder generally through the image every one time with a substitute size. Viola-Jones face detector has three perceived key responsibilities. These key responsibilities are: the basic image, a proficient taking in calculation focused around Adaboost, and a course structure.

IV. MATHEMATICAL APPROACH

Cascaded Classifier (Face Recognition type of BB calculation)

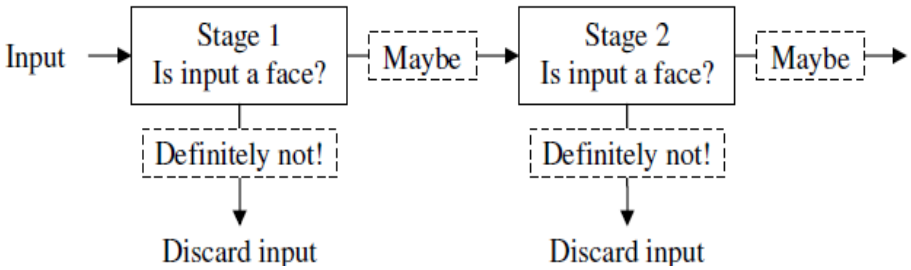

Fig. 3 Cascaded Classifier

Figure 4: Acquired Image

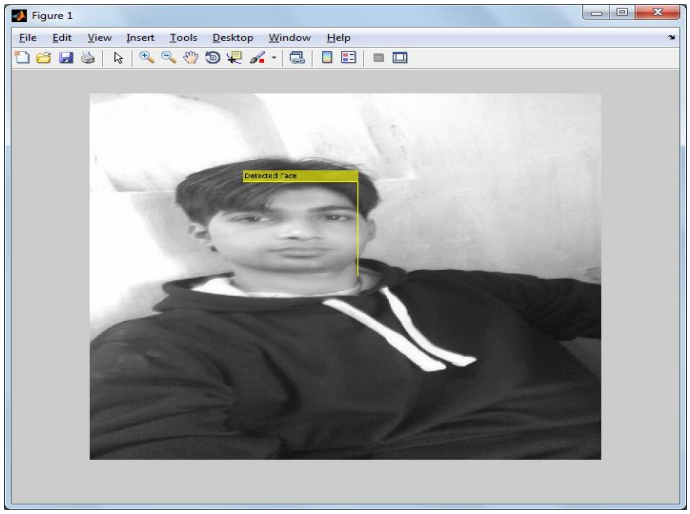

Figure 5 Detected Face or human by yellow square

 ISSN: 2454-4248
04 - 08

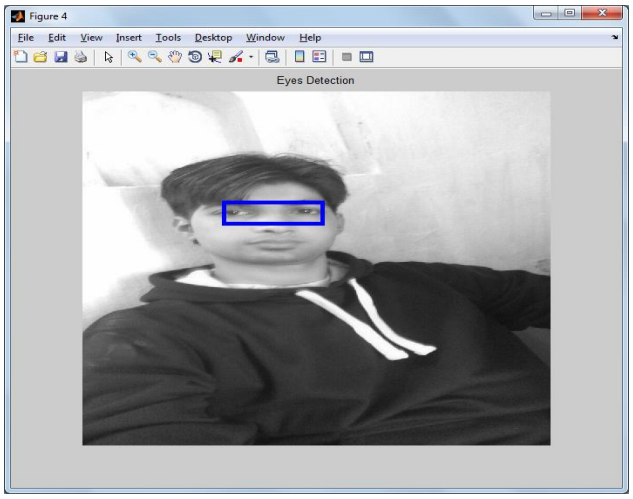

Fig.6 Eyed Detected

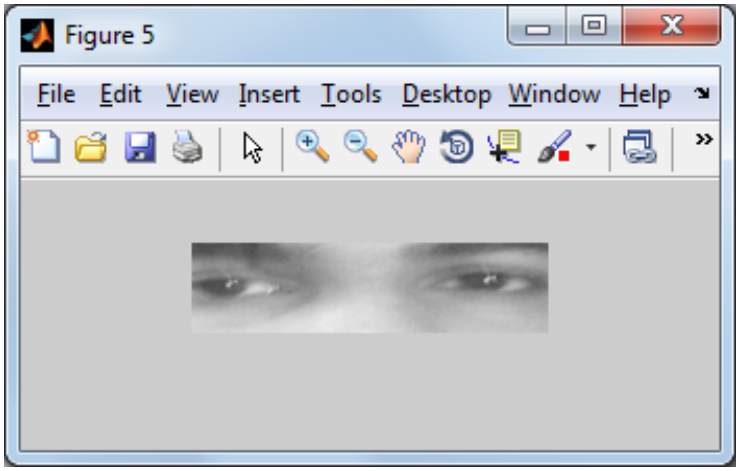

Fig.7 Eyes Detected

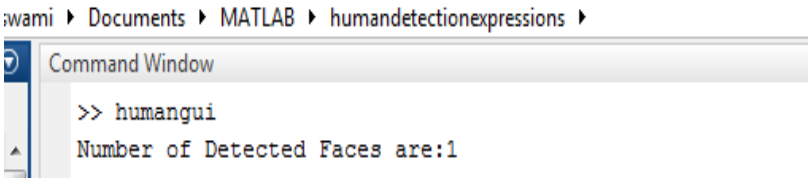

Fig.8 Displays no. of faces in the image.

V. CONCLUSION

This research paper plans a framework which gives the correct outputs of face recognition. Thus this face recognition from specific image is created by viola jones technique The essential standard of this approach is to filter a sub-window fit for identifying faces across a given input image. The standard methodology Viola-Jones rescale the detector rather than the input image and run the detector commonly through the image – each time with an alternate size. The result shows that our system is detecting all faces and segmented all the faces but in some images in cannot segment the eyes.

REFERENCE

[1] Ian T. Young, Jan J. Gerbrands,Lucas J. van Vliet, "Fundamentals of Image Processing", page 1

[2] K.M.M. Rao*,Deputy Director,NRSA,Hyderabad-500 037, "OVERVIEW OF IMAGE PROCESSING".

[3] Yugha R1, Dr S Uma, Swarnalatha S, Poovizhi.M, "Multilevel Authentication System For Providing Security", IPASJ International Journal of Computer Science (IIJCS), Volume 3, Issue 3, March 2015.

[4] Andrew G. Tescher, "Applications of Digital Image Processing XXXI (OP317)", 10-14 August 2008, San Diego, CA USA.

[5] Digital Image Processing with Application to Digital Cinema By K. S. Thyagarajan page no 22.

 ISSN: 2454-4248
04 - 08

[6] AMALOPRAVAM.G,HARISH NAIK T,JYOTI KUMARI, "Transformation of Digital Images using Morphlogical Operations", ISSN: 2278-9669, January 2013 (http://ijcsit.org).

[7] Ahirwar, V., "Hybrid model for preserving brightness over the digital image processing", Computer and Communication Technology (ICCCT), 2013 4th International Conference, 20-22 Sept. 2013, Page no.48 – 53.

[8] Sindhu Madhuri G, "Classification of Image Registration Techniques and Algorithms in Digital Image Processing – A Research Survey", International Journal of Computer Trends and Technology (IJCTT) – volume 15 number 2 – Sep 2014.

[9] Dr. Naif Alajlan, "Digital Image Processing".

[10] Prof.Dr. Abdulkadir Erden, "DEVELOPMENT OF A FACE RECOGNITION SYSTEM", July 2011.

[11] L. Zhi-fang, Y. Zhi-sheng, A.K.Jain and W. Yun-qiong, 2003, "Face Detection And Facial Feature Extraction In Color Image", Proc. The Fifth International Conference on Computational Intelligence and Multimedia Applications (ICCIMA'03), pp.126-130, Xi'an, China

[12] H. Guo, Y. Yu and Q. Jia, 2010, "Face Detection With Abstract Template", Proc. 2010 3rd International Congress on Image and Signal Processing (CISP2010), pp.129-134, Yantai, China.

[13] M. Ş. Bayhan and M. Gökmen, 2008, "Scale And Pose Invariant Real-Time Face Detection And Tracking", Proc. 23rd International Symposium on Computer and Information Sciences ISCIS '08, pp.1-6, Istanbul, Turkey.

[14] G. Wang and Z. Ou, 2006, "Face Recognition Based On Image Enhancement And Gabor Features", Proc. 6th World Congress on Intelligent Control and Automation, pp.9761-9764, Dalian, China.

[15] D.N Pritha, L. Savitha and S.S. Shylaja, 2010, "Face Recognition By Feedforward Neural Network Using Laplacian Of Gaussian Filter And Singular Value Decomposition", Proc. 2010 First International Conference on Integrated Intelligent Computing, pp.56-61, Bangalore, India.

[16] X. Wang, Q. Ruan and Y. Ming, 2010, "3D Face Recognition Using Corresponding Point Direction Measure And Depth Local Features", Proc. ICSP 2010, pp.86-89, Beijing, China.

[17] M. A. Berbar, H. M. Kelash and A. A. Kandeel, 2006, "Faces And Facial Features Detection In Color Images", Proc. Geometric Modeling and Imaging— New Trends (GMAI'06), pp.209-214, London, UK.

[18] K. Seo, W. Kim, C. Oh and J. Lee, 2002, "Face Detection And Facial Feature Extraction Using Color Snake", Proc. ISIE 2002 - 2002 IEEE International Symposium on Industrial Electronics, pp.457-462, L 'Aquila, Italy.

[19] J. Ruan and J. Yin, 2009, "Face Detection Based On Facial Features And Linear Support Vector Machines", Proc. 2009 International Conference on Communication Software and Networks, pp.371-375, Macau, China.

[20] L. Zhao, X. Sun and X. Xu, 2006, "Face Detection Based On Facial Features", Proc. ICSP2006, Guilin, China.

[21] C. Lin, 2005, "Face Detection By Color And Multilayer Feedforward Neural Network", Proc. 2005 IEEE International Conference on Information Acquisition, pp.518-523, Hong Kong and Macau, China.

[22] M. A. Berbar, H. M. Kelash and A. A. Kandeel, 2006, "Faces And Facial Features Detection In Color Images", Proc. Geometric Modeling and Imaging— New Trends (GMAI'06), pp.209-214, London, UK.

[23] S. Kherchaoui and A. Houacine, 2010, "Face Detection Based On A Model Of The Skin Color With Constraints And Template Matching", Proc. 2010 International Conference on Machine and Web Intelligence, pp. 469 - 472, Algiers, Algeria.

[24] M. I. Razzak, M. K. Khan, K. Alghathbar and R. Yousaf, 2010, "Face Recognition Using Layered Linear Discriminant Analysis And Small Subspace", Proc. 2010 10th IEEE International Conference on Computer and Information Technology (CIT 2010), pp.1407-1412, West Yorkshire, UK.

[25] C. Papageorgiou, M. Oren and T. Poggio. A General Framework for Object Detection. International Conference on Computer Vision, 1998