

{tag} International Journal of Computer Applications
Foundation of Computer Science (FCS), NY, USA

[Volume 175](#)

-
[Number 9](#)

Year of Publication: 2017

Authors:

Hanan M. S. Algharib, Shafqat Ur Rehman

10.5120/ijca2017915642

{bibtex}2017915642.bib{/bibtex}

Abstract

The Random forest is a well known powerful classifier, that used to classify a wide range of patterns in our daily life for different purposes, it enters into many fields such as images and objects classification. In this paper, we studied the impact of a five common preprocessing method in face recognition on the random forest performance, The study included applying five different pre-processing methods (Single Scale Retinex, Discreet Cosine Transform, wavelet Denoising, Gradient faces, and the method proposed by tan and et Known as pp chain or TT), each one has applied separately with a general random forest as a classifier, we computed the error rate for each method. The study was conducted on a face recognition system under occlusion and illumination variation. All experiments were done using MATLAB and Extended Yale B database.

References

1. V. Ghosal, "Efficient Face Recognition System Using Random Forests," Work, 2009.

2. B. O. Connor and K. Roy, "Facial Recognition using Modified Local Binary Pattern and Random Forest," vol. 4, no. 6, pp. 25–33, 2013.
3. H. O. A. Achen and P. R. O. F. G. E. L. Akemeyer, "Detection and Recognition of Human Faces using Random Forests for a Mobile Robot."
4. V. Vishwakarma and A. K. Srivastava, "Performance Improvements in Face Classification using Random Forest," vol. 2, no. 3, pp. 2384–2388, 2012.
5. E. Kremic and A. Subasi, "Performance of Random Forest and SVM in Face Recognition," vol. 13, no. 2, pp. 287–293, 2016.
6. F. Classifiers et al., "A Facial Recognition System Based on Techniques of Principal Component Analysis and Auto faces with K-NN , K-Star and Random," vol. 12, no. April, pp. 7–14, 2013.
7. V. W. Parate, M. T. Scholar, and V. Branch, "PCA , DCT and DWT based Face Recognition System using Random Forest Classifier," vol. 3, no. 6, 2015.
8. A. Seal, D. Bhattacharjee, and M. Nasipuri, "Human Face Recognition using Random Forest based Fusion of A-trous Wavelet Transform Coefficients from Thermal and Visible ," AEUE - Int. J. Electron. Common., no. May, 2016.
9. A. I. Salhi, M. Kardouchi, and N. Belacel, "Fast and efficient face recognition system using Random Forest and Histograms of Oriented Gradients," pp. 293–303, 2012.
10. K. A. Ishak, S. A. Samad, M. A. Hannan, and M. M. Sani, "Image Enhancement Technique using Adaptive Multiscale Retinex for Face Recognition Systems 2 The Original Multiscale Retinex.
11. B. Academy, O. F. Sciences, and I. Technologies, "Image Enhancement Using Retinex Algorithms and Epitomic Representation Violeta Bogdanova," vol. 10, no. 3, pp. 10–19, 2010.
12. D. J. Jobson, Z. Rahman, and G. A. Woodell, "Properties and Performance of a Center / Surround Retinex," vol. 6, no. 3, pp. 451–462, 1997.
13. M. Leszczyński, "Image Preprocessing for Illumination Invariant Face Verification," pp. 19–25
14. C. Constancy, "Fast RETINEX for Color Image Enhancement: Methods and Algorithms," pp. 1–23.
15. V. S. Manjula, "Image Normalization Robust using Histogram Equalization and Logarithm Transform Frequency DCT Coefficients for Illumination in Facial Images," vol. 3, no. 11, pp. 1891–1895, 2014.
16. V. P. Vishwakarma, S. Pandey, and M. N. Gupta, "Adaptive Histogram Equalization and Logarithm Transform with Rescaled Low Frequency DCT Coefficients for Illumination Normalization," vol. 1, no. 1, pp. 1–5, 2009.
17. H. K. Ekenel and R. Stiefelhagen, "local appearance based face recognition using discrete cosine transform."
18. Z. Sufyanu, F. S. Mohamad, A. A. Yusuf, and B. Mustafa, "discreet Cosine Transform," no. February, 2016.
19. W. Chen, M. J. Er, and S. Wu, "Transform in Logarithm Domain," vol. 36, no. 2, pp. 458–466, 2006.
20. O. Of, "A Wavelet-Based Image Preprocessing Method for Illumination Insensitive Face Recognition," vol. 1731, pp. 1711–1731, 2015.
21. A. P. C. S. Devi and V. Mahesh, "performance evaluation of illumination normalization techniques for face recognition," vol. 1, no. 2, pp. 11–20, 2013.
22. "Photometric Normalization Techniques for Illumination Invariance AVTOR : Vitomir

Štruc INTERNAL REPORT : LUKS Photometric Normalization Techniques for Illumination.”

23. C. N. Raghu, “Illumination Insensitive Face Recognition Using Gradientfaces,” no. 1, pp. 38–44, 2012.

24. H. Han, S. Shan, X. Chen, and W. Gao, “A comparative study on illumination preprocessing in face recognition,”

25. Z. Yang, X. He, W. Xiong, and X. Nie, “Face Recognition under Varying Illumination Using

26. X. Tan and B. Triggs, “Enhanced Local Texture Feature Sets for Face Recognition under Difficult Lighting Conditions,” pp. 1–16, 2009.

Index Terms

Computer Science

Pattern Recognition

Keywords

Random Forest, Gradient Faces, Wavelet Denoising, Discrete Cosine Transform, Single Scale Retinex, TT (tan and et).