{tag} {/tag}
IJCA Proceedings on National Conference on Recent Advances in Information Technology

NCRAIT - Number 2

Year of Publication: 2014

Authors:
P. S. Hiremath

Manjunatha Hiremath

{bibtex}ncrait1412.bib{/bibtex}

Abstract

Reliable person recognition is integral to the proper functioning of our society. Many researches in face recognition have been dealing with the challenge of the great variability in head pose, lighting intensity and direction, facial expression, and aging. The last few years more and more 2D face recognition algorithms are improved and tested on less than perfect images. However, 3D models hold more information of the face, like surface information, that can be used for face recognition or subject discrimination. A 3D face image is represented by 3D meshes or range images which contain depth information. Range images have several advantages over 2D intensity images and 3D meshes. Range images are robust to the change of color and

illumination, which are the causes for limited success in face recognition using 2D intensity images. In the literature, there are several methods for face recognition using range images, which are focused on the data acquisition and preprocessing stage only. In this paper, we have proposed a new method based on Radon transform and PCA for face recognition using 3D range images. The experimentation has been done using Texas 3D face database. The experimental results show that the proposed algorithm performs satisfactorily with an average accuracy of 96. 00% and is efficient in terms of accuracy and detection time.

References

- W. Zhao, R. Chellappa, P. J. Phillips and A. Rosenfeld, "Face Recognition: A Literature Survey", ACM Computing Surveys, Vol. 35, No. 4, December 2003, pp. 399–458.
- Kyong I. Chang, Kevin W. Bowyer, and Patrick J. Flynn, "An Evaluation of Multimodal 2D+3D Face Biometrics", IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol. 27, No. 4, April 2005.
- Kevin W. Bowyer, Kyong chang, Patrick Flynn, "A survey of approaches and challenges in 3d and multi-modal 3D+2D face recognition", Computer Vision and Image Understanding 101,2006,pp. 1-15.
- Andera F. Abate, Michele Nappi, Daniel Riccio, Gabriele Sabatino, "2D and 3D Face Recognition : A survey", Pattern Recognition Letters 28, 2007,pp. 1885-1906.
- Nilima B. Kachare, Vandana S. Inamdar, "Survey of Face Recognition Techniques", International Journal of Computer Applications, Vol 1. No. 19, 2010.
- Shalini Gupta, Kenneth R. Castleman, Mia K. Markey and Alan C. Bovik, "Texas 3D Face Recognition Database", Image analysis and interpretation ,2010 IEEE southwet symposium on, Austin,TX.
- Chang et al. "Adaptive rigid multi-region selection for handling expression variation in 3D face recognition, in IEEE Workshop on Face Recognition Grand Challenge Experiments, June 2005.
- Gupta S. , Mia K. Markey and Alan C. Bovik, "Anthropometric 3D Face Recognition", Int. J. Comput. Vis, Springer Science+Business Media LLC 2010.
- Jahanbim S. , Hyohoon Choi, Jahanbin R. , Bovik A. C. , "Automated facial feature detection and face recognition using Gabor features on range and portrait images," Image Processing, 2008. ICIP 2008. pp. 2768-2771, 12-15 Oct. 2008.
- Hengliand Tang, Yanfeng Sun, Baocai Yin and Yun Ge, "3D Face recognition based on Sparse representation", Journal of Supercomputing, Vol. 58, Issue 1, 2011, pp. 84-95.
- Amir Averbuch and Yoel Shkolnisky, "3D Fourier based discrete Radon transform", Appl. Comput. Harmon. Anal. 15 (2003) 33–69.
- S. R. Deans, "The Radon Transform and Some of Its Applications", Krieger, 1993.
- Slvatore Ianzavicchia and pier luigi, "Fast computation of 3D Radon Transform via a direct Fourier method", Bioinformatics, Vol 14, No. 2, 1998 pp. 212-216.
- L. Sirovich, M. Kirby, "Low-dimensional Procedure for the Characterization of

Human Faces", Journal of the Optical Society of America A - Optics, Image Science and Vision, Vol. 4, No. 3, March 1987, pp. 519-524.

- Matthew Turk and Alex Pentland, "Eigenfaces for Recognition", Journal of Cognitive Neuroscience, Vol. 3. No. 1, 1991, pp. 71-86.
- P. S. Hiremath and Manjunatha Hiremath, "3D Face Recognition Using Radon Transform and PCA", International Journal of Graphics & Image Processing, Vol. 2, No. 2, ISSN : 2249-5452, May 2012, pp. 123-128.

Index Terms

Computer Science Image Processing

Keywords

3d Face Recognition Range Images Radon Transform Principal Component Analysis

Knn

Svm.