TPA 6: Face Recognition from low resolution, blurred samples

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Problem Statement: This project is aiming at recognition of human faces from low resolution blurred samples

Input: Input to the system are the following

- Frontal human face image for training
- Degraded down sampled images for testing

Expected Output: The developed system should be able to-

- Implement any two methods as given in reference list
- Recognize a subject from input test image
- Performance analysis wrt. degradation/blur/low resolution using ROC or CMS

Hint for excellence:

- *Special credits would be given if system is able to handle pose change along with illumination and expressions.*

References

- Raghuraman Gopalan, Sima Taheri, Pavan Turaga, Rama Chellappa, "A Blur-Robust Descriptor with Applications to Face Recognition," IEEE Transactions on Pattern Analysis and Machine Intelligence, vol. 34 no. 6, pp. 1220-1226, June, 2012
- Hua Huang, Huiting He, Xin Fan, Junping Zhang, "Super-resolution of human face image using canonical correlation analysis", Pattern Recognition, Volume 43, Issue 7, Pages 2532-2543, July 2010

- Zou, W.W.W.; Yuen, P.C., Very Low Resolution Face Recognition Problem, Image Processing, IEEE Transactions on ,Volume: 21 , Issue: 1, Year: 2012 , Page(s): 327 340
- Shekhar, S., Patel, V.M. ; Chellappa, R., Synthesis-based recognition of low resolution faces, Biometrics (IJCB), 2011 International Joint Conference on, 11-13 Oct. 2011
- Ben, X.Y.; Jiang, M.Y.; Wu, Y.J.; Meng, W.X., Gait feature coupling for low-resolution face recognition, Electronics Letters ,Volume: 48 , Issue: 9, Year: 2012 , Page(s): 488 489
- Shih-Ming Huang; Yang-Ting Chou; Szu-Hua Wu; Jar-Ferr Yang; , "Multi-Resolution Local Probabilistic Approach for Low Resolution Face Recognition," Intelligent Computation and Bio-Medical Instrumentation (ICBMI), 2011 International Conference on , vol., no., pp.220-223, 14-17 Dec. 2011
- Zhen Lei; Ahonen, T.; Pietikainen, M.; Li, S.Z.; , "Local frequency descriptor for low-resolution face recognition," Automatic Face and Gesture Recognition and Workshops (FG 2011), 2011 IEEE International Conference on , vol., no., pp.161-166, 21-25 March 2011
- Wonjun Hwang; Xiangsheng Huang; Kyungshik Noh; Junmo Kim; , "Face recognition system using Extended Curvature Gabor classifier bunch for low-resolution face image," Computer Vision and Pattern Recognition Workshops (CVPRW), 2011 IEEE Computer Society Conference on , vol., no., pp.15-22, 20-25 June 2011
- Miaozhen Lin; Xin Fan; , "Low resolution face recognition with pose variations using deep belief networks," Image and Signal Processing (CISP), 2011 4th International Congress on , vol.3, no., pp.1522-1526, 15-17 Oct. 2011
- Biswas, S.; Aggarwal, G.; Flynn, P.J.; , "Face recognition in low-resolution videos using learning-based likelihood measurement model," Biometrics (IJCB), 2011 International Joint Conference on , vol., no., pp.1-7, 11-13 Oct. 2011
- Changtao Zhou; Zhiwei Zhang; Dong Yi; Zhen Lei; Li, S.Z.; , "Low-resolution face recognition via Simultaneous Discriminant Analysis," Biometrics (IJCB), 2011 International Joint Conference on , vol., no., pp.1-6, 11-13 Oct. 2011
- Jillela, R.R.; Ross, A., Adaptive frame selection for improved face recognition in low-resolution videos, Neural Networks, 2009. IJCNN 2009. International Joint Conference on, Year: 2009 , Page(s): 1439 1445
- Eleyan, A.; Ozkaramanli, H.; Demirel, H.; , "Weighted majority voting for face recognition from low resolution video sequences," Soft Computing,

Computing with Words and Perceptions in System Analysis, Decision and Control, 2009. ICSCCW 2009. Fifth International Conference on , vol., no., pp.1-4, 2-4 Sept. 2009

- Liansheng Zhuang; Mengliao Wang; Wen Yu; Nenghai Yu; Yangchun Qian; , "Low-Resolution Face Recognition via Sparse Representation of Patches," Image and Graphics, 2009. ICIG '09. Fifth International Conference on , vol., no., pp.200-204, 20-23 Sept. 2009

- Hennings-Yeomans, P.H.; Baker, S.; Kumar, B.V.K.V.; , "Simultaneous super-resolution and feature extraction for recognition of low-resolution faces," Computer Vision and Pattern Recognition, 2008. CVPR 2008. IEEE Conference on , vol., no., pp.1-8, 23-28 June 2008