Abstract

This paper introduces a face recognition system that contributes the feature and decision fusion in challenging environment. In this work, we investigate the proposed facial recognition system in typical office environments conditions. Though the traditional HMM based facial recognition system is very sensitive to the facial parameters variation, the proposed feature and decision fusion based face recognition is found to be stance and performs well for improving the robustness and naturalness of human-computer-interaction. At first appearance and shape based features are extracted using Active Appearance Model and Active Shape Model. The other task combines appearance and shape based features that have been used by the multiple Discrete Hidden Markov Model classifiers with likelihood ratio based score fusion and majority voting method. The performances of all these uni-modal and multi-modal system performance have been evaluated and compared with each other according to the VALID
Reference

- Kiyomi Nakamura, and Hironobu Takano, “Rotation and Size Independent Face Recognition by the Spreading Associative Neural Network,” International Joint Conference on Neural Networks, Sheraton Vancouver Wall Centre Hotel, Vancouver, BC, Canada, 2006.
Feature and Decision Fusion based Facial Recognition in Challenging Environment

  - A. Adjoudant, C. Benoit, “On the integration of auditory and visual parameters in an
    HMM-based ASR,” Speechreading by Humans and Machines: Models, Systems, and Speech
    Recognition, Technologies and Applications, ed. D.G. Strok and M. E. Hennecke, (Springer,
  - Nayer Wanas, “Feature Based Architecture for Decision Fusion,” Ph.D. Dissertation,
  - C. Ji and S. Ma., “Combinations of weak classifiers,” IEEE Transactions on Neural
  - L. Xu, A. Krzy`zak, and C. Suen. Methods of combining multiple classifiers and their
    applications to handwriting recognition. IEEE Transactions on Systems, Man, and Cybernetics,
    and Visual Speaker Identification Comparison Experiments,” Proc. of the 5th International
    Conference on Audio- and Video-Based Biometric Person Authentication (AVBPA-2005), New
    York, 2005.

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Face Recognition

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