**A NOVEL FUSION METHOD OF PCA AND LDP FOR FACIAL EXPRESSION FEATURE EXTRACTION**

**ABSTRACT**

Facial expression recognition is a research hotspot in the field of human–computer interaction in recent years. The existing method of fusing PCA and LBP for feature extraction is susceptible to random noise and the change of non-monotone illumination. This paper proposes a new fusion method of PCA and LDP (Local Directional Pattern) for feature extraction. First, PCA is adopted to extract global features of facial images. Then LDP operator is used to extract local texture features of eyes and mouth area. After combining the global features with local texture features, the fusion features are obtained. Finally, support vector machine (SVM) is applied to classify and recognize facial expression. The experimental result shows that the method proposed in this paper is more effective than solely adopting PCA or fusion of PCA and LBP. It’s more robust to noise and change of non-monotone illumination, and improves the rate of facial expression recognition.