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Improved Feature Extraction Technique for Handling Occlusion in Automatic Facial Expression Recognition

Authors : Khadijat T. Bamigbade, Olufade F. W. Onifade

Abstract : The field of automatic facial expression analysis has been an active research area in the last two decades. Its vast applicability in various domains has drawn so much attention into developing techniques and dataset that mirror real life scenarios. Many techniques such as Local Binary Patterns and its variants (CLBP, LBP-TOP) and lately, deep learning techniques, have been used for facial expression recognition. However, the problem of occlusion has not been sufficiently handled, making their results not applicable in real life situations. This paper develops a simple, yet highly efficient method tagged Local Binary Pattern-Histogram of Gradient (LBP-HOG) with occlusion detection in face image, using a multi-class SVM for Action Unit and in turn expression recognition. Our method was evaluated on three publicly available datasets which are JAFFE, CK, SFEW. Experimental results showed that our approach performed considerably well when compared with state-of-the-art algorithms and gave insight to occlusion detection as a key step to handling expression in wild.

Keywords : automatic facial expression analysis, local binary pattern, LBP-HOG, occlusion detection
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