Texture analysis using local ternary pattern for face anti-spoofing

ABSTRACT

This paper proposes a new face anti-spoofing approach based on analysis of texture characteristics. Photo images are used for spoofing the face recognition and verification system. These photos are similar to the images of a live person which are exhibiting quite different contrast and texture characteristics when compared to real face images. Various feature extraction methods for texture classification including local Binary Patterns emerge as one of the most popular method because of its simplicity and classification accuracy. However, in homogenous regions, the order of the pixel with respect to its neighbors is quite noisy which can affect the performance of Local Binary Pattern. This paper demonstrates the use of local Ternary Pattern (LTP) in face liveness detection system to overcome this problem. The LTP approach is tested on three publicly available NUAA Photograph Imposter database, CASIA Face Anti -Spoofing Database and REPLAY-ATTACK database. Moreover, different experiments are performed by applying different sizes of neighbor pixels and radius of the patches. The test results are compared with the LBP operator and other state-of art work. The proposed face anti-spoofing method performs better than conventional texture based methods.