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Abstract
Internet can be used to distribute digital media inexpensively and efficiently. However, the distribution of digital media grew fast on the internet and led to endanger to the copyright and integrity protection, because digital media can be easily replicated and modified. The existing methods for the intellectual property right protection are to embed robust digital watermark into the multimedia data. But the robust watermark methods can only verify their ownership but can not identify illegal tamper of image. Image authentication techniques can be classified into two categories: fragile and semi-fragile. Fragile authentication schemes are able to detect any modification. Semi-fragile authentication schemes are unaffected by legitimated modifications, such as JPEG compression, but sensitive to illegitimate manipulation, such as cutting, pasting and filter processing, etc.
In this thesis, we provide two semi-fragile schemes. The first scheme is based on frequency domain and picks some DCT coefficients from each block. Then the DCT coefficient distance between each block is computed and recorded. An image feature consists of DCT distance between all blocks. This image feature can used to distinguish effectively if the image has been processed through image compression (such as JPEG compression) or other image processing. If image is suffered the tamper attacks, we can recover them up to as close as the original image. The second scheme is based on spatial domain. We divide image into fix number blocks and compute each block feature by our proposed method. This scheme not only accepts conventional image compression (such as JPEG and JPEG2000) but also accepts image scaling, and rejects unacceptable image processing (such as cut contrast process, etc.) and can locate suspect blocks.
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