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Abstract
The need of copyright protection and authentication for digital images is increasing rapidly, especially when more and more people access digital images from Internet without licensing. Among all the research approaches that try to resolve this problem, digital watermarking is no doubt the most attractive one. Digital image watermarking is a technique used to hide additional information into an image and extract it for copyright identification latter.

In this thesis, three watermarking algorithms for copyright protection and authentication of digital image are proposed. One is a spatial domain watermarking algorithm, and the other two are a DCT-based watermarking algorithm and a wavelet-based watermarking algorithm. Different from the general watermarking approaches, in the proposed algorithms the watermark is not embedded into the original image but rather, combining with the image features to generate a secret key. The secret key is kept by the rightful user. In the first algorithm, we use a chaotic permutation before feature selection, so as to improve the robustness of the algorithm. The protection scheme also needs a digital time-stamping strategy plus a trustful third-party, which is used to attest if a watermark is bound with the digital image.

The advantage of the proposed algorithms is that the original image will not be modified, therefore the robustness and invisibility is no longer a tradeoff like that in traditional approach. Experimental results show the effectiveness of the proposed algorithms.
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