A Study on Hierarchical Online Multi-Functional Image Authentication Centers

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ABSTRACT

With the advance of digital techniques, digital images may be copied illegally or used without authorization. Therefore, it has become an urgent issue to develop methods to protect the copyright of digital images. In this study, the concept of hierarchical online image authentication centers is proposed. Not only novel authentication methods but also new digital watermarking techniques are proposed and integrated into the system for more secure and effective image copyright protection. First, techniques for online search of suspected images and verification of watermarked images are integrated into the system. Second, the functions of authentication and certificate issuing are implemented for use at the central image authentication center. Moreover, a method for certificate tampering detection is proposed. Third, a more efficient way for watermark verification by progressive image matching is developed.

In addition, although digital watermarking techniques are commonly used for verifying the copyright of images, users need to keep both original images and corresponding watermarked ones. This results in waste of storage space. Therefore, a method for lossless recovery of original images from watermarked ones is desired. For this purpose, a lossless visible watermarking technique is proposed finally. Good experimental results showing the feasibility of the proposed methods are also included.