

EFFICIENT FAIR CONTENT EXCHANGE WITH ROBUST WATERMARK OWNERSHIP

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ABSTRACT. *In recent years, the Internet is a major media to convey digital contents. Users can purchase or exchange the digital contents via the Internet. Due to the security problems of the Internet, mutual authentication between users must be ensured before exchanging digital contents. In addition, how to exchange the digital contents fairly via the Internet is another major problem since users may not be honest. In some proposed methods, a copyright owner can use the digital watermark to claim the ownership of her/his digital content by showing her/his personal digital watermark to other users. By using digital watermark, some buyer-seller watermarking schemes have been proposed to protect the ownership of digital content. In these schemes, if a buyer attempts to purchase digital contents, she/he can perform the watermarking protocol to obtain the desired digital content. However, when a user attempts to exchange her/his digital contents with the others, none of them can efficiently and fairly offer the digital content exchange function. In this paper, we propose our fair content exchange scheme to solve all the above problems. By using our proposed scheme, users can efficiently exchange their digital contents securely and fairly.*

Keywords: Digital content exchange, Digital watermark, Fair exchange, Mutual authentication

1. Introduction. To date, digital watermarking has become one of the famous methods for data hiding. In digital watermarking, the watermark embedder often chooses the specific digital string (or symbol) and embeds it into the purchased digital content imperceptible. We call this specific digital string (or symbol) the digital watermark. The digital watermark can be used for claiming the ownership of some digital content and finding the illegal distribution from the copyright violators.

For providing a good digital watermarking scheme, some researches focused on the watermark design. To date, many schemes have been proposed for the reversible watermark [11, 14, 19, 20, 22, 28, 33, 37]. In these schemes, the watermark recovery information is embedded into the host image and the resolution of the final host image is not affected. The other schemes [5, 6, 35, 39] focused on the embedded watermark protection and the tempered area detection. In the reversible watermark schemes, the watermark can be embedded and used to detect whether the transferred digital content was modified or not by the attackers. It also can be used for guaranteeing the integrity of the digital content and make sure that the original digital content can be recovered even if the transferred digital content was modified by the attackers. In addition, the reversible watermark can recover