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Multiple Watermarking Technique for Securing Online Social Network Contents using Back Propagation Neural Network

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Abstract

The initial contribution in this paper begins with proposing a robust and secure DWT, DCT and SVD based multiple watermarking techniques for protecting digital contents over unsecure social networks. The proposed technique initially decomposes the host image into third level DWT where the vertical frequency band (LH2) at second level and low frequency band (LL3) at the third level DWT is selected for embedding image and text watermark respectively. Further, the proposed method addresses the issue of ownership identity authentication, multiple watermarks are embedded instead of single watermark into the same multimedia objects simultaneously, which offer the extra level of security and reduced storage and bandwidth requirements in the important applications areas such as E-health, secure multimedia contents on online social network, ssecured E-Voting systems, digital cinema, education and insurance companies, driver's license /passport. Moreover, the robustness image watermark is also enhanced by using Back Propagation Neural Network (BPNN), which is applied on extracted watermark to minimize the distortion effects on the watermarked image. In addition, the method addresses the issue of channel noise distortions in the identity information. This has been achieved using error correcting codes (ECCs) for encoding the text watermark before embedding into the host image. The effects of Hamming and BCH codes on the robustness of personal identity information in the form of text watermark and the cover image quality have been investigated. Further, to enhance the security of the host and watermarks the selective encryption is applied on watermarked image, where only the important multimedia data is encrypted. The proposed method

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