Abstract

A semi-blind watermarking scheme is presented based on Singular Value Decomposition (SVD), which makes essential use of the fact that, the SVD subspace preserves significant amount of information of an image and is a one way decomposition. The principal components are used, along with the corresponding singular vectors of the watermark image to watermark the target image. For further security, the semi-blind scheme is extended to an invisible hash based watermarking scheme. The hash based scheme commits a watermark with a key such that, it is incoherent with the actual watermark, and can only be extracted using the key. Its security is analyzed in the random oracle model and shown to be unforgeable, invisible and satisfying the property of non-repudiation.

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Index Terms

Computer Science

Image Processing
Keywords

Singular Value Decomposition (SVD), Principal Components, Semi Blind Watermark, Invisible Watermark, Hash Code