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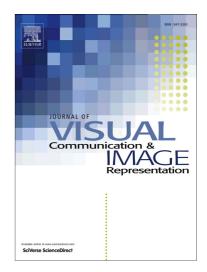
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Separable reversible data hiding in encrypted image based on

pixel value ordering and additive homomorphism

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Abstract: This work proposes a separable reversible data hiding scheme in encrypted images

based on pixel value ordering (PVO). After the original image is encrypted using homomorphism

encryption by the content owner, the data hider embeds the secret data in encrypted domain. The

PVO strategy realizes hiding data in each block. Additive homomorphism guarantees the

performance of PVO in encrypted domain is close to that in plain domain. Besides, the

homomorphism encryption does not cause data expansion, and the payload can be further

improved. With the watermarked encrypted image, if the receiver has only the data hiding key, he

can extract the additional data. If the receiver has only the encryption key, he can obtain a

decrypted image similar to the original one. If the receiver has both the data hiding key and the

encryption key, he can extract the additional data without any error and recover the original image

losslessly.

Keyword: Reversible data hiding; encrypted image; pixel value ordering; additive

homomorphism; separable

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