Abstract

In this paper, we propose an approach using encryption technique and LDPC source coding for the image authentication problem. Image authentication is important in content delivery via untrusted intermediaries, such as peer-to-peer (P2P) file sharing. Many differently encoded versions of the original image might exist. In addition, intermediaries might tamper with the contents. Distinguishing legitimate diversity from malicious manipulations is the challenge addressed in this research. The key idea is to provide a Slepian-Wolf encoded quantized image projection as authentication data which is again encrypted using a secret key cryptography before ready to send. This can be correctly decoded with the help of an authentic image as side information. This mechanism provides the desired robustness against legitimate variations while detecting illegitimate modification. The decoder incorporating expectation maximization (EM) algorithms can authenticate images which have undergone contrast, brightness and even warping adjustments. Our novel authentication system also offers tampering localization by using inference over a factor graph that represents tampering models.
Implementation of Technique for Image Authentication using Regular LDPC Codes

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Index Terms

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