A Survey of Feature-Based Steganalysis for JPEG Images

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Abstract : Due to the increase in usage of public domain channels, such as the internet, and communication technology, there is a concern about the protection of intellectual property and security threats. This interest has led to growth in researching and implementing techniques for information hiding. Steganography is the art and science of hiding information in a private manner such that its existence cannot be recognized. Communication using steganographic techniques makes not only the secret message but also the presence of hidden communication, invisible. Steganalysis is the art of detecting the presence of this hidden communication. Parallel to steganography, steganalysis is also gaining prominence, since the detection of hidden messages can prevent catastrophic security incidents from occurring. Steganalysis can also be incredibly helpful in identifying and revealing holes with the current steganographic techniques, which makes them vulnerable to attacks. Through the formulation of new effective steganalysis methods, further research to improve the resistance of tested steganography techniques can be developed. Feature-based steganalysis method for JPEG images calculates the features of an image using the L1 norm of the difference between a stego image and the calibrated version of the image. This calibration can help retrieve some of the parameters of the cover image, revealing the variations between the cover and stego image and enabling a more accurate detection. Applying this method to various steganographic schemes, experimental results were compared and evaluated to derive conclusions and principles for more protected JPEG steganography.

Keywords : cover image, feature-based steganalysis, information hiding, steganalysis, steganography
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