

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 5, Issue 10, October 2016

A Proposal towards Effective Image Recovery in Data Hiding Schemes

Y.Rokesh Kumar ¹, Vijay Krupa Vatsal K ²

Assistant Professor, Department of CSE, Malla Reddy Engineering College (A), Telangana, India¹

Assistant Professor , Department of CSE, Malla Reddy Engineering College (A), Telangana, India²

ABSTRACT: Reversible data hiding is a significant technique is expansively used in numerous applications, where no distortion of original cover is approved. In practical aspect, numerous techniques of reversible data hiding have come out in recent times. Quite a lot of attempts on reversible data hiding in encrypted images were made. In our work, we propose a novel method for reversible data hiding in encrypted images, in which we do not vacate room following encryption as done but reserve room prior to encryption. Here we firstly empty out room by means of embedding least significant bits of some pixels into other by an established reversible data hiding means and subsequently encrypt the image, so positions of these least significant bits in encrypted image can be employed to embed data. The proposed means can achieve actual reversibility; specifically data extractions as well as image recovery are free of any error and not only does projected method divide data extraction from image decryption but moreover accomplish outstanding performance in different prospects. In the scheme data extraction as well as image recovery is the same to that of framework of vacating room after encryption.

KEYWORDS: Reversible data hiding, Encrypted image, Data extraction, Image decryption, least significant bits.

I. INTRODUCTION

Pertaining to provision of confidentiality for images, encryption is a successful as well as popular means since it converts the original and important content to incomprehensible one. Reversible data hiding in images is a method, by which original cover can be recovered after extraction of embedded message losslessly [1]. Even though few methods of reversible data hiding in encrypted images have been published until now, there are a number of promising applications if reversible data hiding can be functional to encrypted images. A number of attempts on reversible data hiding in encrypted images were made. A more accepted method is on the basis of difference expansion in which difference of each pixel group is extended, and consequently least significant bits of difference are all-zero and can be employed for embedding messages. An additional promising strategy for reversible data hiding is histogram shift in which space is accumulated for data embedding by means of changing bins of histogram. The modern techniques combine difference expansion or histogram shift towards residuals of image, for instance the predicted errors, to attain improved performance. In our work, we suggest a new method for reversible data hiding in encrypted images, in which we do not vacate room following encryption as done but reserve room prior to encryption. In projected method, we initially empty out room by means of embedding least significant bits of some pixels into other by an established reversible data hiding means and subsequently encrypt the image, so positions of these least significant bits in encrypted image can be employed to embed data [2][3]. Previously made methods put into practice reversible data hiding in encrypted images by vacating room following encryption, rather than which we projected by reserving room before encryption. Not only does projected method divide data extraction from image decryption but moreover accomplish outstanding performance in different prospects. Real reversibility is recognized, specifically, data extraction as well as image recovery is free of any error. For specified embedding rates, Peak signal-to-noise ratio of decrypted image enclosing embedded data is considerably enhanced; and for satisfactory Peak signal-to-noise ratio, range of embedding rates is very much enlarged.

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 5, Issue 10, October 2016

II. METHODOLOGY

Reversible data hiding has gained attraction considerably in research interest since it was introduced initially. In realistic aspect, many techniques of reversible data hiding have come out in recent times. Reversible data hiding within encrypted images is a recent subject that has drawn attention due to needs concerning privacy-preserving from managing of cloud data. The entire methods which were introduced earlier embed data by means of reversibly vacating room from encrypted images, which might be subject to a number of errors on data extraction and restoration of image. In our work, we suggest a new method for reversible data hiding in encrypted images, in which we do not vacate room following encryption as done but reserve room prior to encryption and thus it is easy for data hider to embed data reversibly within encrypted image. The proposed means can attain real reversibility; specifically data extractions as well as image recovery are free of any error. Criterion methods of reversible data hiding algorithms are the eventual operator in support of reserving room before encryption and can be simply functional to structure of reserving room before encryption to attain improved performance compared with methods from structure of vacating room after encryption. Earlier methods put into practice reversible data hiding in encrypted images by vacating room following encryption, rather than which we projected by reserving room before encryption [4]. As a result the data hider can advantage from extra space that is emptied out in earlier stage to make data hiding procedure easy. The proposed means can take benefit of all conventional reversible data hiding techniques for plain images and attain excellent performance with no loss of perfect secrecy. This novel method can attain real reversibility, separate data extraction and very much enhancement on quality of marked decrypted images.

III. AN OVERVIEW OF PROPOSED SYSTEM

While losslessly vacating room from encrypted images is comparatively tricky and occasionally ineffective, but passionate for finding of novel reversible data hiding techniques working directly for encrypted did not stop. When we reverse order of encryption as well as vacating room, specifically reserving room earlier to image encryption at content owner side, tasks of reversible data hiding in encrypted images would be more usual and much simple which leads to new framework, reserving room before encryption. The methods that were introduced earlier embed data by means of reversibly vacating room from encrypted images, which might be subject to a number of errors on data extraction and restoration of image. Content owner initially reserves sufficient space on original image and subsequently alter image into its encrypted version by means of the encryption key. The data embedding procedure in encrypted images is intrinsically reversible for the data hider merely needs to contain data into spare space earlier emptied out. This novel means can accomplish real reversibility, separate data extraction and very much enhancement on quality of marked decrypted images. It can take assistance of the entire conventional reversible data hiding techniques for plain images and attain excellent performance with no loss of perfect privacy. The data extraction as well as image recovery is the same to that of Framework of vacating room after encryption [5]. Standard reversible data hiding algorithms are the ultimate operator in support of reserving room before encryption and can be simply functional to structure of reserving room before encryption to attain improved performance compared with methods from structure of vacating room after encryption. This is since in this new structure, we follow the usual idea that initially losslessly compress redundant image content and subsequently encrypts it regarding protecting privacy. In fact, to construct encrypted image, initial stage is divided into image partition, self reversible embedding and image encryption. In Image Partition, operator here for reserving room earlier than encryption is a criterion reversible data hiding technique, therefore objective of image partition is to build a smoother area on which standard reversible data hiding algorithms such as can achieve improved performance. The objective of self-reversible embedding is to embed least significant bits-planes by employing conventional reversible data hiding algorithms [6]. After image encryption, data hider cannot access content of original image devoid of the encryption key, consequently privacy of content owner being confined.

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 5, Issue 10, October 2016

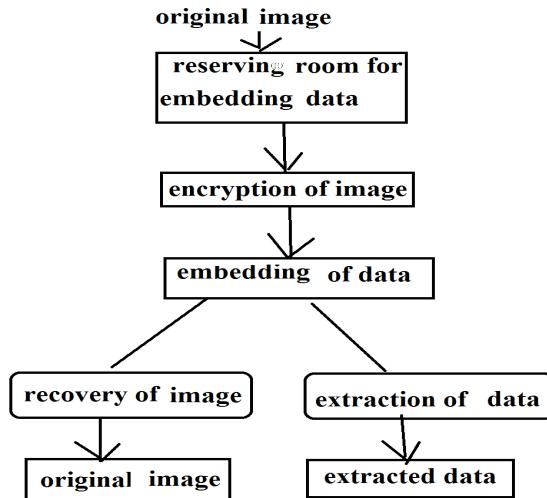


Figure 1: An overview of reserving room before encryption

IV. CONCLUSION

Reversible data hiding within encrypted images is a current subject that has drawn consideration. Although not many methods of reversible data hiding in encrypted images have been published until now, there are a number of promising applications if reversible data hiding can be functional to encrypted images. The modern techniques typically combined difference expansion or histogram shift towards residuals of image, for instance the predicted errors, to attain improved performance. In our work, we recommend a new technique for reversible data hiding in encrypted images, in which we do not vacate room following encryption as done but reserve room prior to encryption. We empty out room initially by embedding least significant bits of some pixels into other by established reversible data hiding means and subsequently encrypt the image, so positions of these least significant bits in encrypted image can be employed to embed data. Projected system screen data extraction from image decryption but moreover accomplishes outstanding performance in different prospects. The system can take advantage of all conventional reversible data hiding techniques for plain images and attain excellent performance with no loss of perfect secrecy.

REFERENCES

- [1] J. Tian, "Reversible data embedding using a difference expansion," *IEEE Trans. Circuits Syst. Video Technol.*, vol. 13, no. 8, pp. 890–896, Aug. 2003.
- [2] Z. Ni, Y. Shi, N. Ansari, and S. Wei, "Reversible data hiding," *IEEE Trans. Circuits Syst. Video Technol.*, vol. 16, no. 3, pp. 354–362, Mar. 2006.
- [3] D.M. Thodi and J. J. Rodriguez, "Expansion embedding techniques for reversible watermarking," *IEEE Trans. Image Process.*, vol. 16, no. 3, pp. 721–730, Mar. 2007.
- [4] W. Liu, W. Zeng, L. Dong, and Q. Yao, "Efficient compression of encrypted grayscale images," *IEEE Trans. Image Process.*, vol. 19, no. 4, pp. 1097–1102, Apr. 2010.
- [5] X. Zhang, "Reversible data hiding in encrypted images," *IEEE Signal Process. Lett.*, vol. 18, no. 4, pp. 255–258, Apr. 2011.
- [6] W. Hong, T. Chen, and H. Wu, "An improved reversible data hiding in encrypted images using side match," *IEEE Signal Process. Lett.*, vol. 19, no. 4, pp. 199–202, Apr. 2012.