A Survey on Steganography Algorithm Using Reversible Texture Synthesis

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Abstract: *Steganography is used to hide the confidential information within the cover image. Stego indicates "covered" and graph indicate "writing". In texture synthesis process a source texture image is used and hide the secret message in synthesized image. Steganography using texture synthesis process is used to cover the secret message that permits removing secret data and source texture from the stego synthetic texture. Image data hiding is a method used for rising embedding capacity effectively. In the existing method confident information is hidden in a cover image. Here, this technique is utilized to resample the small texture image and which generates a new texture image with a similar local appearance and arbitrary size. Our method gives three different advantages. First, the embedding capacity and the size of stego images are proportional. Second, steganographic method win over steganalytic method .Third, recovery of source texture. However, it still relics a challenging obstruction to produce high quality synthesis results. We suggest reversible texture synthesis for implanting the data which boost the data embedding without any distortion.*

Keywords: Texture synthesis, Reversible texture synthesis, Steganography, Cover image, Data embedding

1. Introduction

In this approach the message is embed into a host medium .It hide the secret message efficiently. Steganography is a technique used for information hiding. The steganography algorithm is utilized to make the presence of communication between two parties unknown to an attacker and whose victory depends on detecting existing channel. Remove the source texture and confident message from original image. This image is exactly like the original image. An existing image as a cover medium is used in most image steganographic algorithms. Hiding message into the cover image is image distortion. The cost of embedding secret message into cover image is high. There are two drawbacks. First, the size of the cover image cannot change, the more secret messages increases more distortion. There is a possibility of compromise between image capacity and image quality. A stego images have some distortion. Natural features of cover image will change. This give way to the second drawback that an image steganalytic algorithm can beat the image. We offer steganography using reversible texture synthesis technique. Reversible texture synthesis is the approach for retrieving secret message and source texture from stego image. Stego image is the image after embedding secret message on cover image. Our approach gives many advantages. First, increasing embedding capacity due to arbitrary size of texture synthesis. Second, it provides source texture without any modifiacation. Reversible data hiding will give the capacity of better embedding process. Third, stegoanalytic algorithm remove the source texture after the data have been extracted from stego image. Steganography technique used in military application, cryptography and video texture synthesis. In military application the secret message transformation is done using steganography technique. Cryptography embeds the encrypted data.

2. Literature Survey

Shan-Chun Liu and Wen-Hsiang [1] introduced Line-Based Cubism Like Image. It is a new method for combining art image generation and data hiding. It is used to enhance camouflage effect for various information coverting applications is introduced. In this paper a new computer art called line based Cubism-like image. It preserves characteristics of the cubism art abstraction by protruding lines and regions from multiple viewpoints are suggested in the creation procedure with an input source image. The projecting line segments in the images are detected. It is rearranged to form abstract region type art image of the cubism-flavor.
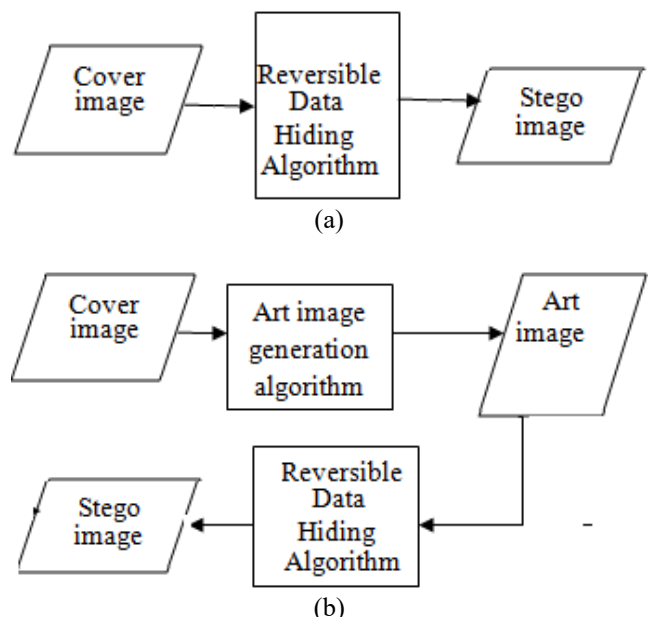

(a)

(b)

Figure 1: (a) Framework of conventional data hiding methods (b) Framework of the proposed method

In this approach data coverting with minimal distortion is

carried out during recoloring the regions in the produced art image. It is done by shifting the pixels' colors for the minimum amount of 1 while preserving the average colors of the regions remains unchanged.
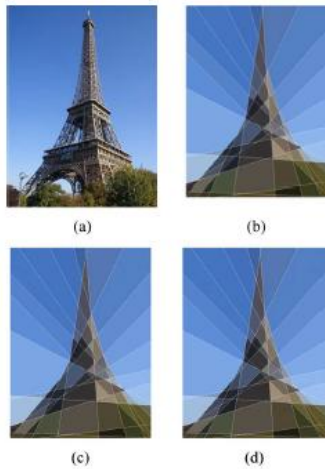

Figure 2: An experimental result (a) Source image (b) Generated Cubism-like image with no message data embedded (c) Stego-image with color shifting of ±1(d) Stego-image with color shifting of ±1 through ±8

Y.Guo,G.Zhao and Z.Zhou [2] suggested Video texture synthesis. The process of giving a continuous and infinitely varying stream of frames is called Video Texture Synthesis. Its application includes computer vision and graphics. The video texture synthesis method has two major stages.

First Video stitching stage in which a video texture synthesis model is introduced to produce an infinite video flow. We show a new spatial –temporal descriptor that is used to find similar frames stitching video clips. It provides an effective presentation of various types of dynamic textures. Second, Transition smoothing stage in which a smoothing method is introduced to increase synthesis quality. Its objective is to form a diffeomorphic growth model to match local dynamic around stitched frames.
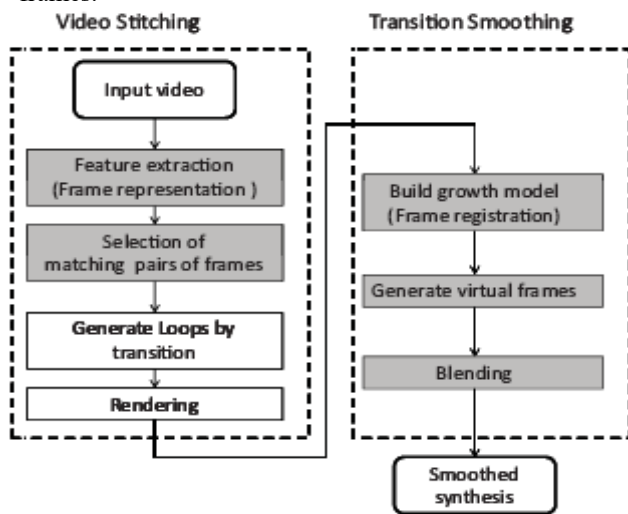

Figure 3: Overview diagram of the videos texture synthesis method

The synthesis results of walking motion are shown below. The top rows are synthesized results obtained by VT while bottom rows are synthesized results obtained by the proposed method. Difference in synthesis quality are highlighted in green ellipse
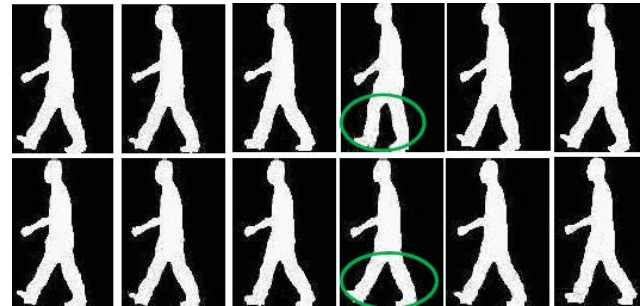

Figure 4: Walking motion after synthesis result

Xiaolong Li,Bin Li,Bin Yang and Tieyong Zeng [3] proposed Histogram Shifting (HS).It is a useful method of reversible data hiding(RDH). Using HS-based RDH high capacity and low distortion can be achieved. In this approach, it revise the HS method .It present a general framework to construct HS-based RDH. One can get a RDH algorithm by designing shifting and embedding functions. Two fresh and efficient RDH algorithms are also proposed. It is used to show the universality and applicability of our framework. More efficient RDH algorithms can be devised according to the suggested framework.

Hirofumi otori and shigeru [4] suggests a new type of image coding method .It uses texture image synthesis. Data input device is a digital camera. It is mounted on a mobile phone. It is used to obtain embedded data by analyzing the pattern of an image code like a two-dimensional bar code. First, there is regularly arranged dotted pattern. It is painted with color picked out from a texture sample. To preserve its quality, this technique then cover the dotted pattern using the same texture sample. The textured code gives the conventional bar code .It is used onto real texture objects for tagging data.
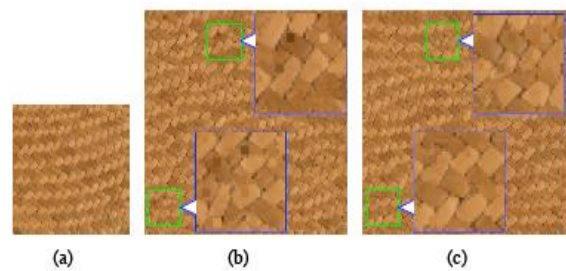

Figure 5: The effect of LBP colors

The texture image in (b) is synthesized from (a) by randomly selecting the colors among the corresponding class and (c) is synthesized using our color screening mechanism

Ioan-Catalin Dragio,Dinu Coltac [5] about the employment of native prediction. It is employed in distinction enlargement reversible watermarking. For every pixel, a least square predictor is calculated on a block.It is focused on the pixel .Then prediction error is distended. An equivalent predictor

is recovered at detection with none further data. The projected native prediction is general and it applies in the prediction context.
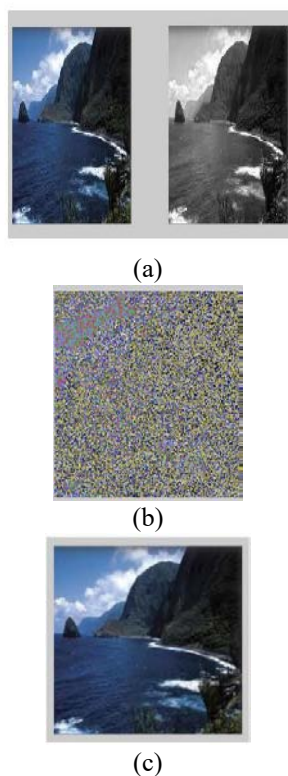

(a)

(b)

(c)

Figure 6: (a) Cover image and B channel image (b) Transformation (c) Recovered image

3. Conclusion

This project suggest a reversible steganographic algorithm using texture synthesis. From an original source texture, our approach can give a large stego synthetic texture hiding confident information. It combine steganography and patch-based texture synthesis. Our method is fresh and gives reversibility to extract the original source texture from the stego synthetic textures. So another round of texture synthesis is possible. The mentioned algorithm is secure and robust against RS stegoanalysis attack. The introduced method gives substantial benefits and gives a chance to cover steganographic applications.

References

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