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Steganography using Stego Synthetic Texture with Reversibility

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ABSTRACT: Steganography can be categories into Text Steganography, Image Steganography, Audio/Video Steganography. Image Steganography is one of the common methods used for hiding the information in the cover image, but we propose different approach for steganography by using texture synthesis with reversible capability. This synthesis process resamples a texture image with identical appearance and random size. We add the texture synthesis method into steganography to hide the secret messages. In difference to with an existing cover image to hide messages, our system hides the source texture image and inserts secret messages through the process of texture synthesis. This allows extracting the secret messages and source texture from a stego synthetic texture. Our algorithm can provide various numbers of embedding capacities, produce texture images, and recover the source texture images.

KEYWORDS: Texture Synthesis, Reversible, Steganography.

I. INTRODUCTION

Steganography is the process of hiding secret message within in such a way that someone cannot identify the existence or contents of the hidden message. Steganography is not to be disordered with Encryption, which is the process of creation a message incomprehensible Steganography attempts to de the existence of communication. It is a singular method of hiding message into images. Our system proposed texture synthesis for steganography in reversible manner. In contrast, existing systems used cover images to hide secret messages , our proposed system hides texture image and embeds secret messages through the texture synthesis process. This allows us to extract original messages and the source texture from a stego synthetic texture.

II. RELATED WORK

Many image steganography algorithms adopt existing image as cover image. The embedding secret message into cover image is the image distortion in the stego image. This existing approach has to two disadvantages. First, size of the cover image is fixed, and second, image distortion. Because of this distortion of image it is quite possible that an image steganalytic algorithm can defeat the image steganography and hence expose that secret hidden message is being carried in a stego image. A stego Image contains distortion so it is easy to identify that image contain some secret message or data. Therefore our reversible texture synthesis approach overcomes drawbacks of an existing system.

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III. PROPOSED SYSTEM

Our system proposed Steganography approach using reversible texture synthesis. In texture synthesis process splits source texture with identical local appearance and arbitrary size. We hide our secret message into source texture by generating index table. We extract our original secret message and source texture from stego synthesis texture. We will describe some basic terminology to be used in our approach. The simple entity used for our texture synthesis is mentioned to as a "Patch." A patch denotes an image block of a source texture where size of patch is user-specified.

The texture synthesis can synthesize an arbitrary size of texture images, the embedding capacity which our scheme offers is proportional to the size of the stego texture image. This approach is not likely to defeat our steganography texture synthesis algorithm since the stego texture image is composed of a source texture without modifying the existing contents of image. The reversible ability is provided in our algorithm to recover the source texture which is exactly same as original texture image.

IV. SYSTEM ARCHITECTURE

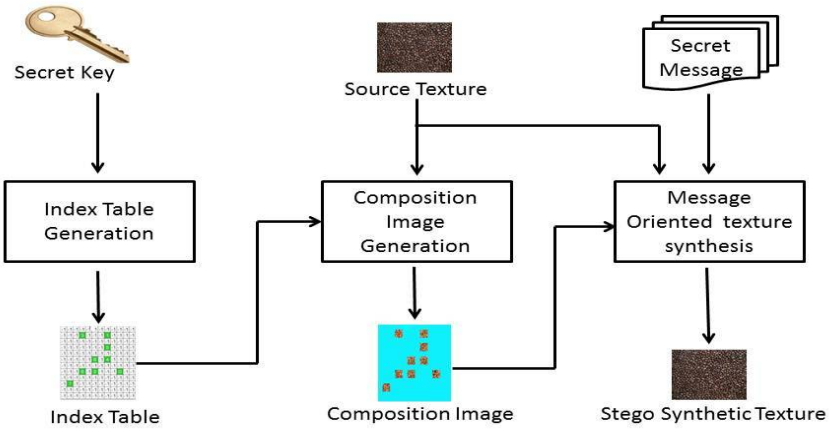

Figure1 : Message Embedding Process

In which we demonstrate the message embedding procedure as shown in Figure1. The three processes of the message :

1. **Index Table Generation Process**: In which we generate the index table to record the location of the source patch set SP in the synthetic texture.The index table permits us to access the synthetic texture and recover the source texture completely.
2. **Patch Composition Process:**In which our system is to paste the source patches into a work surface to produce a composition image.First, we create a blank image as our work surface where the size of the work surface is equal to the synthetic texture. By mentioning to the source patch IDs stored in the index table, then paste the source patches into the work surface. During the pasting process, if no overlapping of the source patches is encountered, then paste the source patches directly into the work surface.
3. **Message-Oriented Texture Synthesis Process:**We have now produced an index table and a composition image and have pasted source patches directly into the work surface.We will embed the secret message through the message oriented texture synthesis to produce the final stego synthetic texture.

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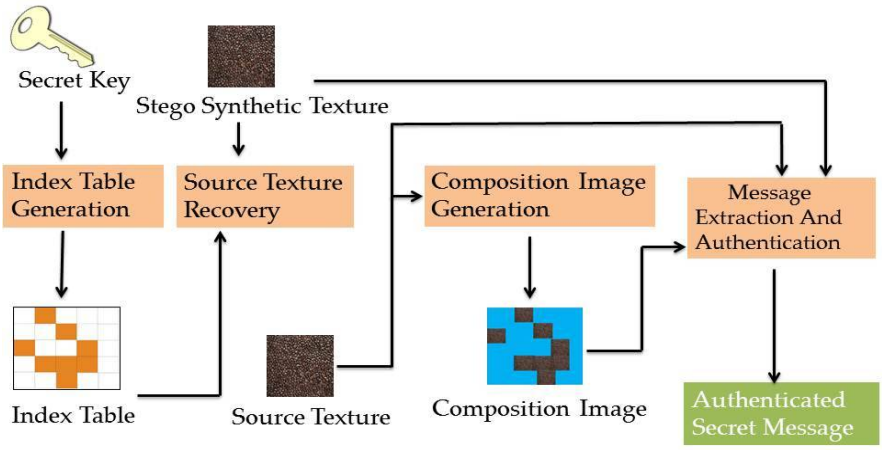

Figure2 :Message Extraction Process

The message extracting process is done at receiver side using generating index table. It retrievessource texture by performing texture synthesis process, and extract and authenticate the secret message hidden in the stego synthetic texture. The extracting process follows four steps as shown in Figure2. Given secret key used to generate same index table which is generated in embedding process,next is source texture recovery means its recover source texture by referring index table.When index table is generated composition image is generate according to index table and finally message is extracted and authentication is done.

V. CONCLUSION

In this propositions a reversible steganographic process using texture synthesis.It given an original source texture, our system can produce a huge stego synthetic texture hiding secret messages. Our technique is new and provides reversibility to retrieve the original source texture from the stego synthetic textures.With the two techniques we have presented, our system can produce visually reasonable stego synthetic textures even if the secret messages containing of bit “0” or “1” have an uneven appearance of possibilities. The existing system is secure and robust against an RS steganalysisattack.We consider our recommended System offers large benefits and provides an opportunity to extend steganographic applications.

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