# Memory Management Through A Process of Virtual Data Hiding in an Carrier Object

**Sachin More[a], Dayanand Ingle[b]**

[a]Department of Information Technology,Thakur College of Commerce and Science, Kandivali, Mumbai, Maharashtra, India
[b]Department of Computer Engineering, Bharti Vidyapeeth College of Engineering Kharghar, Navi Mumbai, Maharashtra, India

## Abstract

We proposed an image morphing based method for information hiding. The basic idea is to hide a secrete data into a morphed image which is obtained from the secrete image and another reference image. To make this method practically useful, it is necessary to produce natural morphed images. This is a necessary condition conceal the existence of the secret image. To produce natural morphed images, we should choose a proper feature point set (FPS) for morphing. This is a tedious work if we do it manually, because the number of possible FPSs is very large. To solve the problem more efficiently, we adopted proposed interactive algorithm in this study and conducted experiments for generating morphed images. Results show that, if we provide a relatively good initial FPS, proposed interactive algorithm can fine-tune the FPS, and produce more natural images with limited number of iteration.
**KEYWORDS –** Morphing,Virtuality, DataHiding, stegnalyzer

## I. INTRODUCTION

### 1.1 Motivation

Information hiding is a class of technologies for information protection [1]-[3]. Digital watermarking is an information hiding technology for preventing “readable” information from being copied and distributed illegally. On the other hand, data embed is a technology for concealing the existence of secret messages (e.g. important national, company or personal secrets) and thus preventing the messages from being read and used illegally. In this study, we consider data embed only.

In data embed, the secret message m is embedded in a cover datum c. The cover datum c is changed to the datum s when the secret is embedded into c. To conceal the existence of the secret, we usually require that s is “almost the same as” c. That is, if c is a natural image (e.g. picture of Mona Lisa), s should be a very similar image that will not attract attention from some malicious third party.

In image morphing based data embed [4]-[6], we relaxed the above requirement by allowing s be different from c. One of the advantages of using morphing based data embed is that the message can be embedded in the "visible" part of s. In conventional method, the message is hidden in the "invisible" part of s and thus can be easily "disabled" by some malicious third party, even if he/she cannot extract the message. Using the visible part, however, any change of the message will distort s significantly and can be detected easily. In this sense, morphing based method is more robust to disable attack.

One important issue is that, s must be natural enough, because any unnaturalness in s may attract attacks from the malicious third party. To solve this problem, we should choose a proper feature point set (FPS) for morphing. In fact, from experiments we found that the naturalness of the morphed image depends highly on the positions of the feature points. However, since the number of possible FPSs is very large, it is a tedious work (if not impossible) to choose the FPS manually.

In this study, we try to adopt interactive genetic algorithm (IGA) for producing a proper FPS. We use IGA here rather than GA because evaluation of image naturalness is performed "subjectively". Although we may find some "objective" evaluation function based on the experience of some human expert, the function may depends highly on the preference of the expert to certain colors, facial styles, and so on. In this sense, the "naturalness" so defined may contain some artifacts, and may not be really natural.

To show the usefulness of IGA, we conducted experiments with facial image generation. Results show that, if we have a relatively good initial FPS, IGA can fine-tune the FPS, and produce more natural facial images even if we use a small number of evaluations. The rest of the paper is organized as follows. In the next section, morphing based data embed is reformulated; in Section III, the IGA based method for facial image generation is described in detail; Section IV provides the experimental results; and Section V is the Conclusion.

### 1.2 Objectives

- ❖ To hide the massive quantity knowledge behind the image.
- ❖ This work additionally helpful to scale back the length of key file.
- ❖ To compare the performance analysis of projected theme with existing algorithmic program like LSB, HLSB, Power spectrum etc.
- ❖ Performance analysis of projected algorithmic program in terms of embeddability criterion, process price, process time, suppression capability etc.
- ❖ To maintain in reliability between carrier image size & secret knowledge.
- ❖ To produce unbreakable wall for stegnalyzer whereas extracting the key knowledge.
- ❖ To maintain Image sensory activity quality. it's necessary that to avoid suspicion the embedding should to occur while not important degradation or loss of sensory activity quality of the quilt media.
- ❖ To offer security to hidden message from unauthorized accesses.

### 1.3 Scope

Morphing algorithms still advance and programs will mechanically morph pictures that correspond closely enough with comparatively very little instruction from the user. This has junction rectifier to the utilization of morphing techniques to form convincing slow-motion effects wherever none existed within the original film or video footage by morphing between every individual frame victimization optical flow technology. Morphing has conjointly appeared as a transition technique between one scene and another in tv shows, though the contents of the 2 pictures square measure entirely unrelated. The formula during this case tries to search out corresponding points between the photographs and warp one into the opposite as they cross fade. While maybe less obvious than within the past, morphing is employed heavily nowadays. Whereas the result was at the start a novelty, today, morphing effects square measure most frequently designed to be seamless and invisible to the attention.

A particular use for morphing effects is fashionable digital font style. victimization morphing technology, known as interpolation or multiple master technology, a designer will produce Associate in Nursing intermediate between 2 designs, for instance generating a semi daring font by compromising between a daring and regular vogue, or extend a trend to form Associate in Nursing ultra-light or ultra-bold. The technique is usually employed by font style studios.

## II. LITERATURE SURVEY

### 2.1 Background History

Morphing pictures of one face into another is nice fun. Morphing is that the method of making a sleek animated transition from one image into another. victimization morphing we are able to add beautiful effects into our home-made videos, produce visual jokes for our friends, or master a singular animated avatar to represent oneself in on-line communities. you will simply realize more funny uses on your own. abundant empirical work has centered on the perception and process of pictures. for several experiments, researchers have generated artificial faces employing a form of techniques. whereas varied techniques of image deformation are developed and generally applied in animation and morphing, there ar few works to displayed these techniques to handle videos, specifically time period warp of associate communicative moving half within the video like external body part.

### 2.2 Existing System

In 2010, Qiangfu Zhao and Mayuko Akatsuka. [1] projected methodology to perform the morphing of face pictures in frontal read with uniform illumination mechanically, employing a generic model of a face and evolution methods to search out the options in each face pictures. They used a model of seventy three points supported a straightforward parameterized face model. during this work, the model doesn't believe in color or texture; it solely uses data about the geometrical relationship among the weather of the face supported operation. The results square measure sensible though it worked just for frontal read face morphing with uniform illumination; otherwise this face morphing technique tends to come up with blurred intermediate frames once the 2 input faces disagree considerably.
For example, in 2012 the strategy by Lin Yuan and Touradj Ebrahimi. [2] fits a Morphable model to faces in each the supply and target pictures and renders the supply face with the parameters assessed from the target image. Finally, it replaces the target face with supply face within the target image. Morphable model [4] is made from a applied math analysis of pictures, obtained from an outsized info of 3D scans, which might be morphed by adjusting parameters. It will estimate the 3D form of a personality's face, its orientation within the area, and illumination conditions within the scene. therefore the reconstructed face extracted from 2nd image will be manipulated in 3D.
In 2014, Yutaro Minakawa, Mitsuru Abe, Kentaro Sekine, and Qiangfu Zhao. [3] delineated another system for automatic face swapping employing a giant info of faces. although it's laborious for users to search out a candidate face to match the target face in appearance and cause from their pictures, the system allowed de-identification mechanically by choosing

candidate face pictures from an outsized face library that's almost like the target face in look and cause. Lastly, it replaces the target candidate with selected candidate from the library image exploitation image primarily based methodology.

In 2014, Yun-Te Lin, Chung-Ming Wang. [4] projected the system that replaces the target subject face within the target video with the supply subject face, beneath similar cause, expression, and illumination. This approach relies on 3D morph-able model [4] ANd an expression model info to upset expressions and therefore the input data of the supply subject face is reduced to at least one to 2 pictures. The 3D face synthesizer derives a Morphable face to suit the input image, and map the feel from the image to the derived 3D face model. A face alignment rule is applied to the target video to find the elaborate options and descriptions of the target subject face. A cause figurer exploits the face alignment results to estimate the top cause parameters of the target subject face. Here methodology employs a 3D countenance info to clone the expressions to the supply face model. to suit the expressions to the target video, Y. T. Cheng et al. [10] projected AN rule to extract the expression parameters. In some videos, directly rendering the supply subject face model onto the target frame ends up in illumination inconsistency. A relighting rule relights the rendered supply subject face for illumination consistency. Finally, it seamlessly composites the rendered supply model with the target frame exploitation Poisson equation. The output could be a video with the target face replaced by the supply face, with similar cause, expression, and lighting.

In 2015, Seong G. Kong. [5] projected the strategy that permits commutation performances in video. It conjointly provides face replacement in target video from supply video. The system tracks each the faces in supply and target video exploitation multilinear model [1]. exploitation this half-track 3D pure mathematics, supply face is crooked to focus on face in each frame of video. it's generally necessary that the temporal arrangement of the performance matches specifically within the supply and target video; this can be done by retiming rule. when trailing and retiming, it blends the supply performance within the target video to provide the ultimate result. They computed optimum seam through the video volume that maintains temporal consistency within the final composite.

In 2015Taheer Jamil. [6] projected a replacement face morphing approach that deals expressly with giant cause and expression variations. It recovers the 3D face pure mathematics of the input pictures employing a projection on a pre-learned 3D face topological space. The pure mathematics is interpolated by resolving the expression and cause and ranging them swimmingly across the sequence. Finally, it poses the morphing downside as AN repetitious optimisation with AN objective that mixes similarity of every frame to the geometryinduced crooked sources, with a similarity between neighboring frames for temporal coherence. during this system, it fits a 3D form to each the input pictures. A 3D form contains 2 sets of parameters: external parameters describing the 3D cause of the face, and intrinsic parameters describing the pure mathematics of the person beneath the impact of expression. Then, it linearly interpolates each the intrinsic and external parameters of the 2 input faces, and generates a series of interpolated 3D face models. In every frame, the crooked faces square measure amalgamated along. bound strategies conjointly allowed for automatic face replacement of individuals in single image [7,8].

In 2016, Sikha Mary Varghese,Alphonsa Johny,Dr.Jubilant Job. [9] introduced easy 3D face model, which is thought as Morphable tips. They projected a system that permits morphing specific a part of face like nose, mouth, cheek etc. in single image. This Morphable guideline could be a 3D model structured almost like the ball and plane methodology. This model consists of straightforward curves sort of a circle, line etc. that is controlled by the 3D Vertices.

Individual form will be modified by ever-changing the parameter. during this paper they need applied this model to reshape external body part parameter such like nose, mouth, cheek etc. however model fitting method to the external body part in image is manual.

### 2.3 Limitations Of Existing System

- For morphing, every pixel's line segments have to be referenced and this can
- Severely impair speed. Also, extra fixing effort is required where special
- Transformation processes produce unexpected interpolations in the image.

## III PROBLEM FORMULATION

### 3.1 Problem Definition

In this our aim is to enhance the performance of Image morphing and Virtual information Embedding for pictures. drawback occurred in style of dynamic environments, it's a powerful ability, however it's typically tough to get complete define of Secrete information, accountable to look the empty development, as a result the detection of secrete information isn't very easy. Therefore ought to improve the technique.
To achieve this, the subsequent specific objectives

- To propose morphing techniques that to effectively generate intermediate morph pictures.
- To maintain in reliableness between carrier image size & secret information.
- To produce unbreakable wall for stegnalyzer whereas extracting the key information.
- To maintain Image sensory activity quality. it's necessary that to avoid suspicion the embedding ought to occur while not important degradation or loss of sensory activity quality of the duvet media.
- To give security to hidden message from unauthorized accesses.

### 3.2 Proposed System

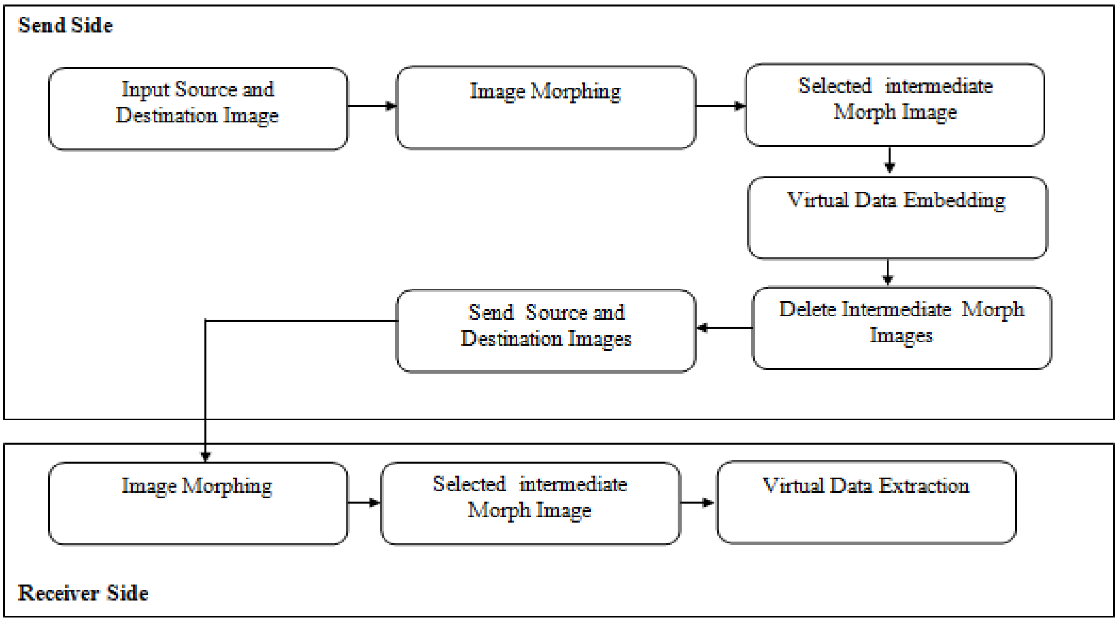


Fig 3.2.1: Architecture of Proposed Method

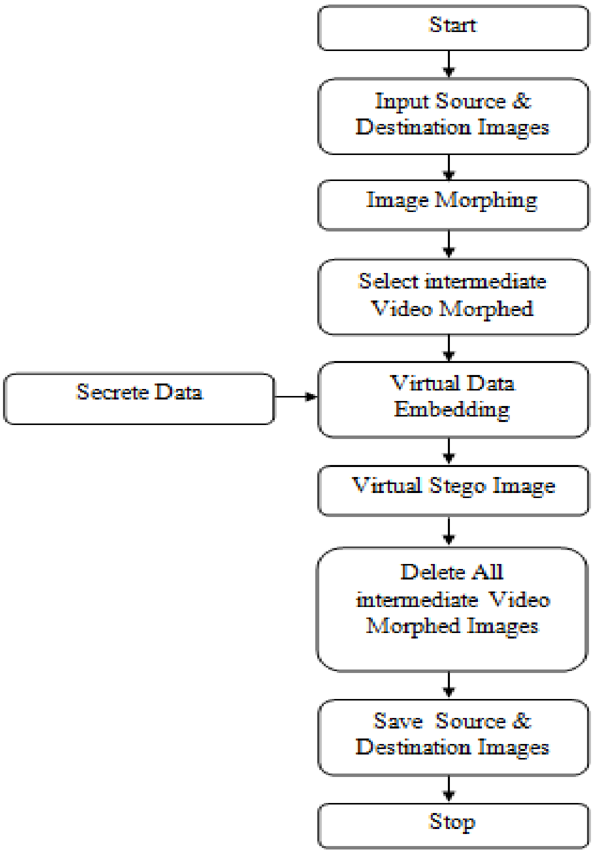


Figure 3.2.1.1 Image Morphing and Data Embedding Block Diagram

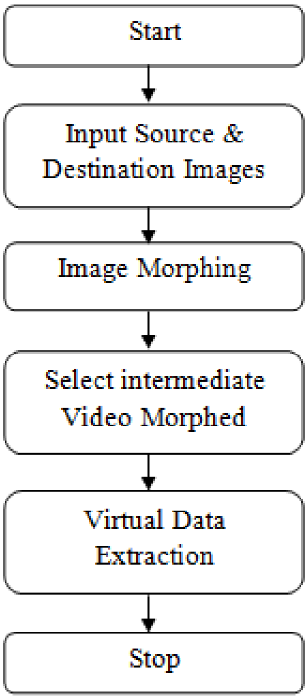


Figure 3.2.1.2 Image Morphing and Data EmbeddingBlock Diagram

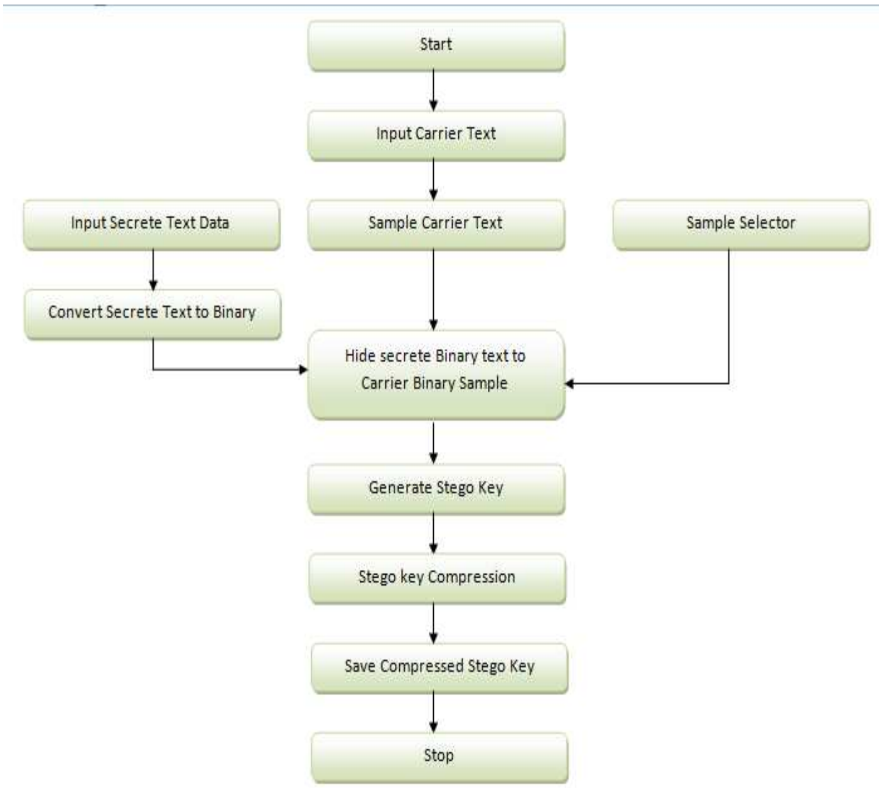


Figure 3.2.1.3 Virtual Data EmbeddingBlack Diagram
(Note : Carrier Text is a intermidiate Morphed Image)

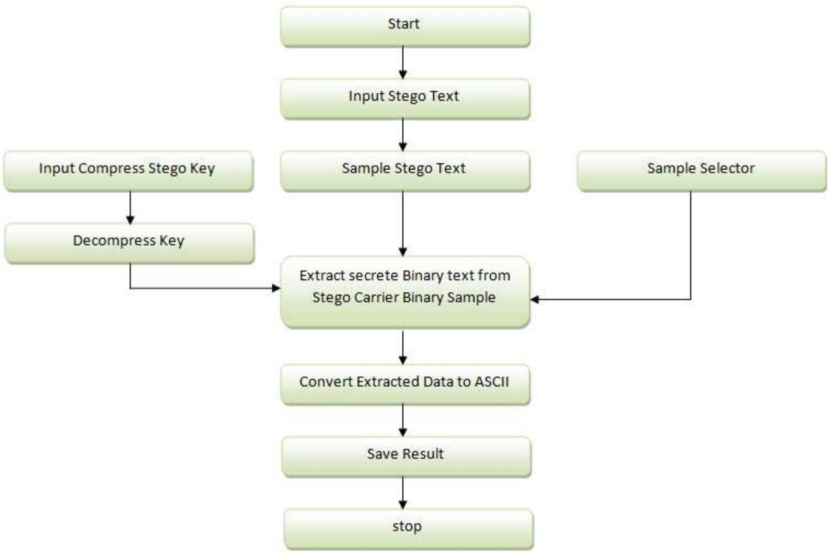


Figure 3.2.1.4 Virtual Data Extraction Block Diagram
(Note : Stego Text is a intermidiate Morphed Image)

### 3.2.2 Proposed Algorithm

#### 3.2.2.1 Morphing

1. Start
2. Read Source ($S_i$) & Destination($D_i$) Video Frames
3. For i=0 to H(Si) * W(Si)
   Extract RGB of Si & Di
   Morph $P_i(D_i)$ into $P_i(_{Si})$
   Save Intermediate Image ($ID_i$)
   End
4. Stop

IV CONCLUSION

Virtual reality means existing in appearance but not in reality. Virtual reality concept implemented.it hides the large data so maximum space is being saved. Video is made up of image and audio. Image has much scope for data hiding .images have much data hiding capacity than audio. it shows people that hiding the data but in reality not. .hacker will not get clue that in resultant image secret data stored but while extracting exact original data recovered from resultant image without degrading quality of image. Hiding data in image can save maximum space on system.on receiver end original data extracted without any change.a pattern of big string generated and from thatpattern original data generated again.wherever data hidden at master position .a meaningful pattern created from that point.

REFERENCES


1. Yutaro Minakawa, Mitsuru Abe, Kentaro Sekine, and Qiangfu Zhao, “Neural Network Based Feature Point Detection for Image Morphing,” Signal Processing, 90, pp. 727-752, 2010.
2. Qiangfu Zhao and Mayuko Akatsuka, Generating Facial Images for Data embed Based on IGA and Image Morphing, 2012 IEEE.
3. Ryota Hanyu, Kazuki Murakami, and Qiangfu Zhao, “Verification of an Image Morphing Based Technology for Improving the Security in Cloud Storage Services” 2014 IEEE.
4. Vanmathi C, Dr. S. Prabu, “Distortion less Reversible Data Hiding based on Dual Repeat Accumulate Coding Technique” 2014 IEEE.
5. Sikha Mary Varghese, Alphonsa Johny , Dr.Jubilant Job “A Survey on Joint Data-Hiding and Compression Techniques based on SMVQ and Image Inpainting” 2015 International Conference on Soft-Computing and Network Security (ICSNS -2015), Feb. 25 – 27, 2015, Coimbatore, INDIA.
6. Hao-Tian Wu, Reversible Image Data Hiding with Contrast Enhancement, IEEE SIGNAL PROCESSING LETTERS, VOL. 22, NO. 1, JANUARY 2015 81.
7. Lin Yuan and Touradj Ebrahimi, IMAGE TRANSMORPHING WITH JPEG, Third Edition, Morgan Kaufmann Publishers, 2015 IEEE.
8. Seong G. Kong, " Head Pose Estimation From a 2D Face Image Using 3D Face Morphing With Depth Parameters," IEEE TRANSACTIONS ON IMAGE PROCESSING, VOL. 24, NO. 6, JUNE 2015.
9. Xinpeng Zhang, Jing Long, Zichi Wang, and Hang Cheng, Lossless and Reversible Data Hiding in Encrypted Images with Public Key Cryptography, 2015 IEEE
10. Yun-Te Lin, Chung-Ming Wang, " A Novel Data Hiding Algorithm for High Dynamic Range Images " 2016 IEEE.