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REVIEW ON SECURE DATA MANAGEMENT USING FACE MORPHING

Anvita D. Phutane[1], Dr. A. A. Gurjar[2]

[1]*M.E Scholar, Department of Electronics & Telecommunication Engineering, Sipna College of Engineering and Technology, Amravati, Maharashtra, India*
[2]*Professor, Department of Electronics & Telecommunication Engineering, Sipna College of Engineering and Technology, Amravati, Maharashtra, India*

Abstract
We proposed an image morphing based method for information embedding. 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 essential to produce natural morphed images. This is a necessary* condition *conceal the existence of the secret image. To produce natural morphed images, we should select a proper feature point set (FPS) for morphing. This is a monotonous 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: Feature Point Set, Face Morphing, Image Morphing, Video Morphing

I. INTRODUCTION

Information embedding is a class of technologies for information protection. Digital watermarking is an information embedding 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, 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.

Objectives

1. To hide the massive quantity knowledge behind the image.
2. This work additionally helpful to scale back the length of key file.
3. To compare the performance analysis of projected theme with existing algorithmic program like LSB, HLSB, Power spectrum etc.
4. Performance analyses of projected algorithmic program in terms of embed ability criterion, process price, process time, suppression capability etc.
5. To maintain in reliability between carrier image size & secret knowledge.

6. To produce unbreakable wall for stegnalyzer whereas extracting the key knowledge.
7. 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.
8. To offer security to hidden message from unauthorized accesses.

II. LITERATURE REVIEW

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.

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,

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 2015 Taheer 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. [7] 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.

Y. T. Cheng et al. 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.

III. PROPOSED WORK

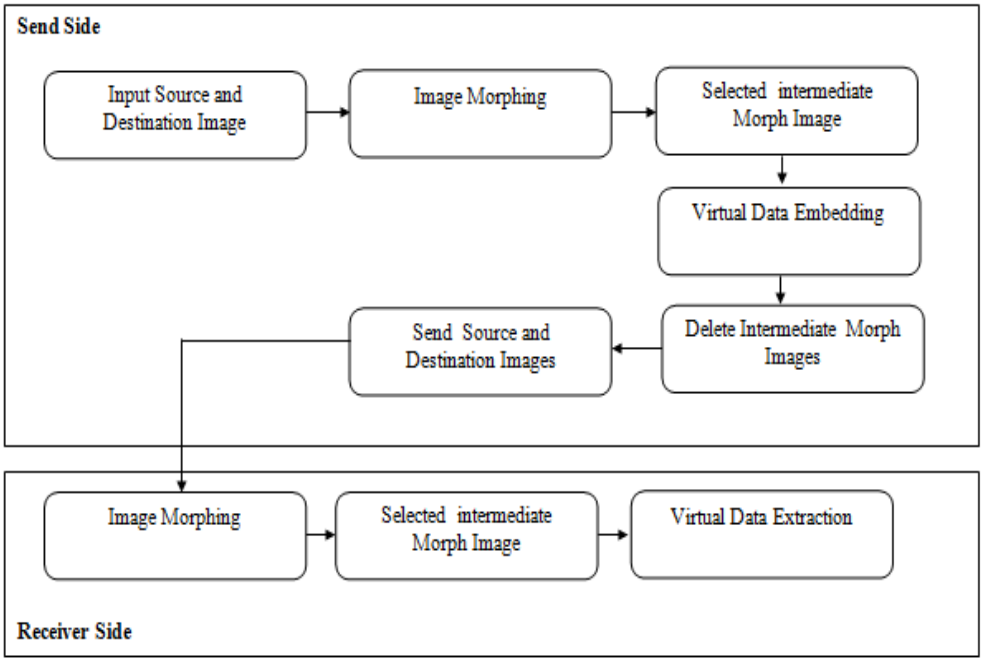

Fig 1. Architecture of Proposed Method

Proposed Algorithm

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

In this work, a real-time face warping technique for video sequence is introduced which allows morphing of specific parameter of the face which cannot be achieved by existing video warping framework but can be achieved by morphable guidelines. Its real-time performance coupled with the interesting face warping results display that this technique has a reasonable viewpoint to be applied in many entertainment applications such as editing special effects on video including faces. The system witness a wide range of applications in medical, media and telecommunication fields. By changing various features in real time, user can get desired appearance on social media and the cosmetic/plastic surgeon can modify person's facial features in real time, thus allowing a patient to see the effects of proposed plastic surgery before it is done. If it get further enhanced to mobile phones then in a 3G video call, it will be helpful for feature correction in real time.

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