

Region Based Cryptography: A Study of Difference Between the .jpg Image and .png Image After Recombined RGB Images

Irfan Jalal Bhat^{1*}, Raghav Mehra², Amit Kumar Chaturvedi³

¹Dept. of Computer Application, Bhagwant Univeristy Ajmer, India

²Associate Professor & Dean Student Welfare Bhagwant Institute of Technology, Muzaffarnagar, India

³Assistant Professor MCA Departement Govt. Engineering College, Ajmer Rajasthan, India

*Corresponding Author: irfanbhatphd@gmail.com, Tel.: +919419126726

DOI: <https://doi.org/10.26438/ijcse/v7i2.606609> | Available online at: www.ijcseonline.org

Accepted: 11/Feb/2019, Published: 28/Feb/2019

Abstract—Today is the age of information and technology. We cannot proceed even a single step without it. We are fully dependent on information and technology. In this paper we will show that which image is best after recombined of RGB image. First we take .jpg image, differentiate it and then recombined to obtained the final image and again we take the .png image, differentiate it RGB, recombined it to get final image. At last we will compare the final image of .jpg and .png and see different.

Keywords— Region Based Cryptography, .jpg image, .png image, secrets, sharing,

I. INTRODUCTION

With the improvement in the field of data and innovation over the timeframe, new conceivable outcomes for correspondence among us are augmented. Internet business being quick and progressively solid technique for giving administrations developed as a standout amongst the most dominant method for collaboration between end clients like us and government offices, managing an account fields and different associations [1]. With the fast progression of system innovation, web has turned into the helpful media for transmission of sight and sound data. Different classified information are ceaselessly being transmitted over the system. Different strategies have been created to manage these issues. Visual cryptography is presented by first in 1994 by Noar and Shamir [2]. Visual cryptography is a cryptographic system which permits visual data (for example printed content, manually written notes and pictures) to be encoded so that the decoding can be performed by the human visual framework, without the guide of PCs. Visual cryptography conspire takes out complex calculation issue in decoding process, and the mystery picture can be reestablished by stacking activity. This property makes visual cryptography particularly valuable for the low calculation stack prerequisite.

II. REGION MERGE

The result of region merging usually depends on the order in which regions are merged. The simplest methods begin merging by starting the segmentation using regions of 2x2, 4x4 or 8x8 pixels. Region descriptions are then based on their statistical gray level properties. A region description is compared with the description of an adjacent region; if they match, they are merged into a larger region and a new region description is computed. Otherwise regions are marked as non-matching. Merging of adjacent regions continues between all neighbours, including newly formed ones. If a region cannot be merged with any of its neighbours, it is marked 'nil' and the merging process stops when all image regions are so marked. In this paper Active Contour Method was proposed. An active contour is an energy minimizing spline that detects species features within an image. It is an edible curve (or surface) which can be dynamically adapted to required edges or objects in the image (it can be used to automatic objects segmentation). It consists of a set of control points connected by straight lines. The active contour is denoted by the number of control points as well as sequence of each other [3]. Fitting active contours to shapes in images is an interactive process. The user must suggest an initial contour, which is quite close to the intended shape. The contour will then be attracted to features in the image extracted by internal energy creating an attractor image.

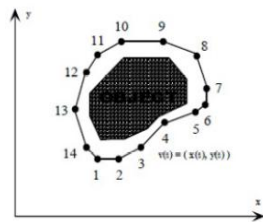


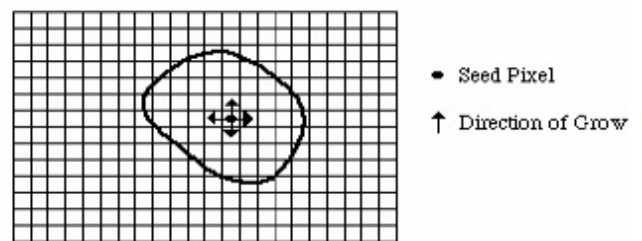
Figure-1: Basic contour formation

In this research paper we have implemented Active contours, or snakes, have been used widely for image segmentation. A novel method incorporating geodesic curves and region information is introduced. The extra region force gives the active contour model a global complementary view of the boundary information within the image. The proposed method incorporates edge information, namely Edgewood, into Active Contours[5].

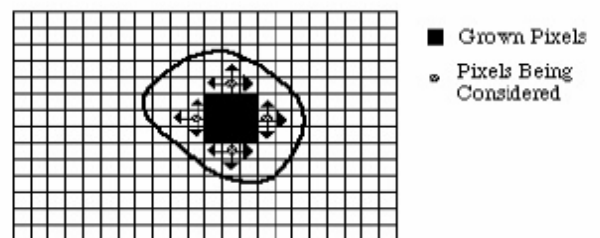
Edgewood-driven Geometric Snake or EDGS. The partial differential equation (PDE) resulting from this integration of image Edgewood and region term is implemented using a level set approach. Experimental results demonstrate that the proposed method makes sound results, especially with respect to images within weak boundaries, and noise. In this paper [6] researcher propose selection of seed points. Seed point selection is based on some user criterion. The initial region begins as the exact location of these seeds. The regions are then grown from these seed points to adjacent points depending on a region membership criterion. The criterion could be, for example, pixel intensity, gray level texture, or colour. Since the regions are grown on the basis of the criterion, the image information itself is important. For example, if the criterion were a pixel intensity threshold value, knowledge of the histogram of the image would be of use, as one could use it to determine a suitable threshold value for the region membership criterion. In this paper L et. al [5] Seed Growing method is discussed. Segmentation of medical images using seeded region growing technique is increasingly becoming a popular method because of its ability to involve high-level knowledge of anatomical structures in seed selection process. Region based segmentation of medical images are widely used in varied clinical applications like visualization, bone detection, tumor detection and unsupervised image retrieval in clinical databases. As medical images are mostly fuzzy in nature, segmenting regions based intensity is the most challenging task. In this paper, authors have discussed about popular seeded region grow methodology used for segmenting anatomical structures in images. Researchers have proposed a gradient based homogeneity criteria to control the region grow process while segmenting images. Seeded region growing approach to image segmentation is to segment an image into regions with respect to a set of q seeds as

presented in is discussed here. Given the set of seeds, S_1, S_2, S_q , each step of SRG involves identifying one additional pixel to one of the seed sets. Moreover, these initial seeds are further replaced by the centroids of these generated homogeneous 8 regions. The only drawback of SRG algorithm is the docility in automating seed generation and dependency of output on order sorting of pixel as deferent order of processing pixels during region grow process leads to deferent final segmentation results. In this paper researcher proposed that Segmentation of ultrasound images is a midcult task, due to numerous artefacts and the presence of speckled noise. Dentitions between objects are often blurred and weakened by speckling. Consequently, segmentation methods for ultrasound must be resistant to noise. In this paper, a method called Seeded Region Growing (SRG) is tested in isolating regions of interest for later processing. The SRG method involves selecting points called seeds as the starting locations for the segmentation process.

III. HOW SEEDED REGION GROWING WORKS?



(a) Start of Growing a Region



(b) Growing Process After a Few Iterations

Figure - 2: Seed growing Method

Figure 2 is demonstrated that how seeded region growing will work to grow pixel by pixel to achieve the segmentation.

IV. METHODOLOGY

In this paper we first take the image with name IMG1.jpg (image is in .jpg type) we implemented it in MATLAB and differentiate the original image into the basic color i.e RED, GREEN, BLUE (RGB) and after recombined all the three images we get the final image as show in figure 3 below

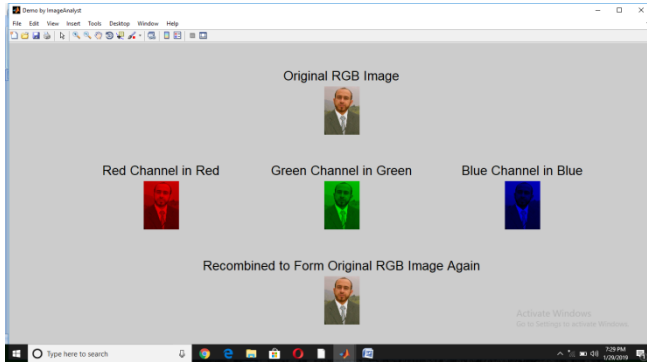


Figure-3

Again we take image with name image1.png (image is in .png type) we implemented it in MATLAB and differentiate the original image into the basic color i.e RED, GREEN, BLUE (RGB) and after recombined all the three images we get the final image as show in figure 4 below

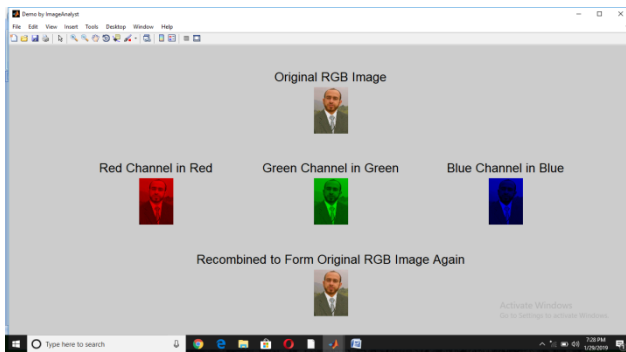


Figure-4

V. CONCLUSION AND FUTURE SCOPE

After analyzing the above two images and taking some other examples also. We can concluded that .jpg is has lost low quality after recombined as compared to .png images. The final images we obtained after recombined the RGB images in .png has lost a lot of original quality. So when we differentiate the three colours of RGB images we should take the .jpg image in order to get the good result.

ACKNOWLEDGMENT

We feel grateful to the referees for their valuable suggestions that have helped immensely in preparing the revised manuscript.

REFERENCES

- [1] Blakley, G. "Safeguarding cryptographic keys". Proceedings of AFIPS 1979, 48: 313–317.
- [2] Shamir, A. "How to share a secret". Communications of the ACM. 1979, 22 (11): 612–613. doi:10.1145/359168.359176.

- [3] Naor M, Shamir A. Visual cryptography. In: Workshop on the Theory and Application of Cryptographic Techniques; 9(12 May 1994; Perugia, Italy, pp. 1-12.
- [4] Sandeep Gurung, Bijoy Chhetri, Mrinal Kanti Ghose "A Novel approach for Circular Random Grid with Share Authentication". 2015 IEEE
- [5] Arash Karimi, Hadi Shahriar Shahhoseini "Cryptanalysis of a Substitution-Permutation Network Using Gene Assembly in Ciliates" Int'l J. of Communications, Network and System Sciences Vol. 5 No. 3, 2012.
- [6] B. Saha, "A Comparative Analysis of Histogram Equalization Based Image Enhancement Technique for Brightness Preservation", International Journal of Scientific Research in Computer Science and Engineering, Vol. 3, Issue. 3, pp. 1-5, 2015.
- [7] P. Sharma1, Ishra2, V.K. Sarthi3, P. Bhatpatri4, R. Shrivastava5 "Visual Encryption Using Bit Shift Technique" International Journal of Scientific Research in Computer Science and Engineering Vol.5, Issue.3, pp.57-61, June (2017)
- [8] M. Arora1*, S. Sharma2 "Synthesis of Cryptography and Security Attacks" IJSRNSC Volume-5, Issue-5, Oct 2017
- [9] A. Canteaut, "Correlation attack for stream ciphers", Encyclopedia of Cryptography and Security, pp. 261–262. Springer US, 2011.
- [10] T. Siegenthaler, "Decrypting a class of stream ciphers using ciphertext only. Computers", IEEE Transactions, Vol.C-34 Issue.1pp.81–85, 1985.
- [11] Fakhari P, Vahedi E, Lucas C. Protecting patient privacy from unauthorized release of medical images using a bio-inspired wavelet-based watermarking approach. Digit Signal Process 2011; 21: 433-446
- [12] Hou YC. Visual cryptography for color images. Pattern Recogn 2003; 36: 1619-1629.
- [13] Hou YC, Quan ZY. Progressive visual cryptography with unexpanded shares. IEEE T Circ Syst Vid 2011; 21:1760-1764.
- [14] Hou YC, Quan ZY, Tsai CF, Tseng AY. Block-based progressive visual secret sharing. Inform Sciences 2013; 233:290-304.
- [15] Ito R, Kuwakado H, Tanaka H. Image size invariant visual cryptography. IEICE T Fund Electr 1999; E82-A:2172-2177.
- [16] Shyu SJ. Image encryption by random grids. Pattern Recogn 2007; 40: 1014-1031.
- [17] D. Boneh and M. Franklin, "Identity-based encryption from the Weil pairing, in: Advances in Cryptology – CRYPTO Lect. Notes in Comput. Sci. 2139, Springer-Verlag, pp. 213-229(2001)

Authors Profile

Irfan Jalal Bhat pursued Bachelor of Computer Application from University of Jammu, in 2010 and Master of Computer Application from Jammu University in year 2013. He is currently pursuing Ph.D.



Dr. Amit Kumar Chaturved, completed his Ph.D Degree in year 2012. Currently he is working as Assistant Professor MCA Departement Govt. Engineering College, Ajmer Rajasthan (India).



Dr. Raghav Mehra, currently working as Associate Professor & Dean Student Welfare Bhagwant Institute of Technology, Muzaffarnagar (India). Dr. Raghav Mehra has been involved in various research activities for more than three years. He has more than



twenty papers in his credit which have been published in various international / national journals and refereed conferences, He has taught variety of new subjects and attended variety of workshops and conferences that are relevant to the field of genetic algorithms, software engineering, automated generation of test data, object oriented systems, object oriented software testing, evolutionary computing etc. He is perusing his research work sincerely and he is making awareness about above mentioned topics and subjects among the faculties and students in the northern part of India. He is quite active in his pursuit of achieving newer heights in technical education. He has widely travelled across India and is very energetic to present and share his research work across the borders of India also. He is an active member of IEEE.
