IJCSE International Journal of Computer Sciences and Engineering Open Access
Research Paper Volume-6, Issue-2 E-ISSN: 2347-2693

Compare Modify Canny Edge Detection Method with Existing Edge Detection Methods

S. Pahadiya[1*], R. Khatri[2]

1* Dept. of Cyber Security, VITM Indore, M.P, India
[2] Dept. of Cyber Security, VITM Indore, M.P, India

*Corresponding Author: shreyaphadiya.24@gmail.com, Tel.: +91-9179606015

Available online at: www.ijcseonline.org

Received: 21/Jan/2018, Revised: 29/Jan/2018, Accepted: 12/Feb/2018, Published: 28/Feb/2018

Abstract— Edge detection is play important in image processing. Find accurate and correctly edge is very important. Many algorithms used to detect boundary of an object. Compare edge detection algorithms on the base of accuracy, Sharpe edge detection and time. Most of the image shape information of an image object is enclosed in edges. Detect edge of in image using some filter, sharpness and celerity of images can be increase. In this paper we are comparing edge detection methods on the basis of time.

Keywords— Information security, digital watermarking, copyright protection, graphics contents, 3D polygon model.

I. INTRODUCTION

Digital watermarking is that the method that embeds knowledge referred to as a watermark into a transmission object in such the simplest way that the watermark is in a while detected or extracted for object assertion functions. The transmission objects, within which the watermark is embedded, are usually called: the original, cowl signal, host signal or just the work.

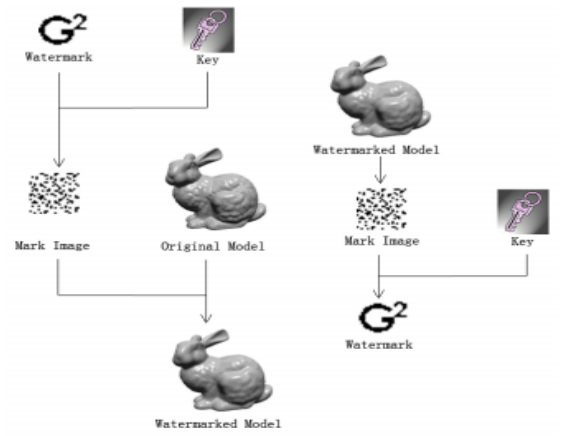

Figure 1: Flow chart of the insertion process and the extraction process

Watermarks and watermarking techniques can be classified into several categories taking into account by this various criteria [2]. As it can be noted, one of the criteria is *embedding domain* in which the watermarking is implemented. For example, watermarking can be done in the spatial domain. An alternative possibility is the watermarking in the frequency domain.

The flow chart of the insertion process and the extraction process is shown in Figure 1. A *digital watermark* is a distinguishing piece of information that is assigned to the data to be protected. One important requirement by this is that the watermark cannot be easily extracted or removed from the watermarked object.

Rest of the paper is organized in the following manner, Section I contains all the introductory requirements to understand the domain area. It also provides the detailed explanation about digital water marking, Section II presents related work on digital water marking techniques available with this domains such as canny. In this work a wide variety of existing mechanism, algorithms and architectures is studied, Section III we studied about existing algorithms 3-D Polygon mesh objects, In section IV we present our proposed work and algorithm, section V result analysis shows the calculated result by our proposed algorithm and also compared with existing algorithms, last section VI we conclude the work done by us.

II. RELATED WORK

The existing watermarking techniques can be classified as either to be object space based or frequency space based approaches. While the object space approaches embed the

information by modifying the original data directly, the frequency domain approaches transform the original data into frequency domain first and embed watermarks there. Till very recent, researches on watermarking have been mainly focused on the digital media such as text, image, sound and video [2]. The first attempt to introduce the watermarking technology into the computer graphics world was probably made by R. ohbuchi. el al.[1,2].

Benedens[5] presented another object space based method through altering the normal vectors calculated from the surface geometry of a 3D model. He demonstrated the robustness of the method against the simplification attacks.

On the other hand, Kanai et al.[9] proposed a frequency space based approach by using wavelet transform and multiresolution representation of polygon models. Watermarks are embedded in the wavelet coefficient vectors and are imperceptible and invariant to the affine transform. However, the application of the method is limited to those triangle meshes whose mesh topology fits into a 4-to-i subdivision connectivity scheme.

The method developed by E. Praum el al [7] also based on multi-resolution representation, but can be applied to arbitrary triangle meshes. This is realized by constructing a set of scalar basis function over mesh vertices. Watermarks are embedded in the model by perturbing the vertices along the direction of surface normal, weighted by the basic functions. They also suggest making watermarks survival from simplification by re-sampling an attacked mesh using the original mesh connectivity.

III. EXISTING SYSTEM

In the existing watermarking algorithm of 3-D mesh objects, watermark is embedded by repositioning of selected vertices from their original positions. The repositioning are done by modifying the vertex normal distance of selected vertices. The amount of repositioning various from object to object depending upon the range of coordinate values of vertices.

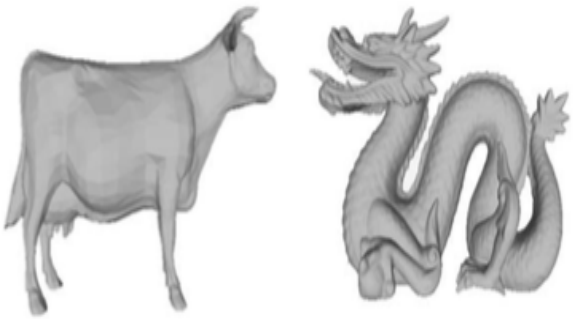

Figure 2: 3D Mesh Object

- **Watermark Embedding**

The proposed non-blind algorithm in spatial domain directly inserts the watermark information into the vertices. The proposed algorithm is geometry-driven i.e. connectivity/topology of the vertices is not modified. Repositioning the selected vertices according to the groups they belong embeds the watermark.

A 3-D mesh is first preprocessed to calculate center of gravity (Cg) of the object. The Cartesian coordinates of the vertex vi =(xi,yi,zi) are converted into spherical coordinate (ρi,θi,φi) as per equation-1, 2, 3, where ρi represents the vertex normal distance of i^{th} vertex from center of gravity.

The spherical coordinates (ρi,θi,φi) are calculated as:

$$\rho_i = ((x_i - x_{cg})^2 + (y_i - y_{cg})^2 + (z_i - z_{cg})^2)^{1/2}$$

$$\theta_i = \tan^{-1} \frac{y_i - y_{cg}}{x_i - x_{cg}}$$

$$\phi_i = \cos^{-1} \frac{z_i - z_{cg}}{\rho_i}$$

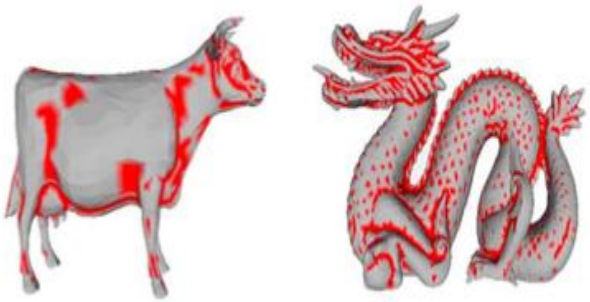

Figure 3: 3-D Polygon mesh objects showing deeper region (Red)

IV. PROPOSED SYSTEM

We currently use these 2 integral invariants to insert watermarks into the mesh model, further on extract watermarks from models.
First, we decide a monochrome image because the watermark image. This image is also the emblem of an organization or a bunch that owns the copyright of the model. Before inserting the watermark into the mesh, we tend to rework it with Associate in Nursing Arnold transformation. This is often a scrambling procedure that creates the image seem like white-noise [25]. We are going to show its use at a later purpose during this subdivision.

Insertion. The watermark is inserted as follows. First, we tend to place balls focused on the model vertices, ensuring

that none of them see one another. Here, session not solely suggests that the balls themselves don't intersect, however the connected vertices of the 3 categories (see formula in Fig 6) conjointly don't overlap. This could be accomplished with the subsequent steps. We tend to traverse all the vertices, attempting to put a neighbor ball around every of them. If a replacement neighbor ball doesn't see the other existing neighbor ball, we tend to add it to the neighbor ball set, and otherwise we tend to discard it. We tend to do that procedure on all vertices till no additional neighbor ball is placed. This makes the method of fixing invariants in every neighbor ball freelance of the modification the opposite neighbor balls.

Extraction. First, we tend to prepare Associate in Nursing output image a similar size because the watermarked image. We tend to then traverse all the vertices to extract the watermark. We tend to try and place a neighbor ball around every vertex. If the ball intersects Associate in nursing existing neighbor ball, we tend to discard it. Otherwise, we tend to cypher the invariants and check the inserted bits. This is often the alternative of the insertion procedure. We tend to assume these bits to be the watermark image half and its sequence variety. If the assumed sequence variety is within the vary of the expected sequence variety.

V. RESULT ANALYSIS

We implemented proposed algorithm based on insertion and extraction. Proposed system implemented using swing (java Desktop) application, JFreeChart library for plot graph. We calculate execution time and accuracy of Existing and Proposed system for different images.

Figure 4: Original Image

Figure 5: Image with Edge detection

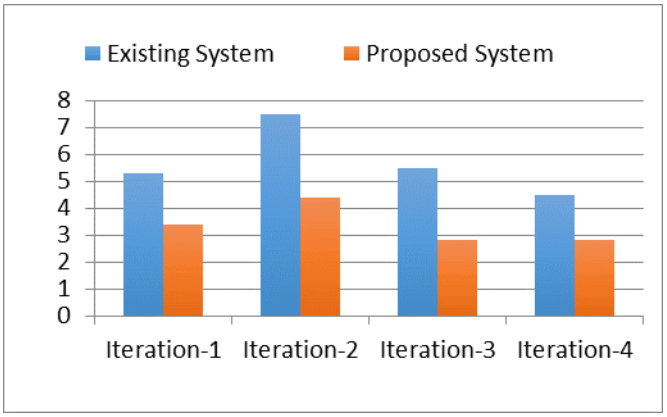

Figure 6 Result shows in form of graph

VI. CONCLUSION

Watermarking is that the method of embedding predefined knowledge into pictures {in a|during a|in Associate in Nursing exceedingly in a very} means that the degradation of quality is reduced and stay in an inaudible level. Several digital watermarking algorithms are planned in special and rework domains. The techniques within the special domain still have relative low-bit capability and don't seem to be resistant enough to lossy compression. On the opposite hand, frequency domain-based techniques will insert additional bits for watermark and are additional strong to attack.

REFERENCES

[1] Ohbuchi R, Masuda H, Aono M. "Watermarking three-dimensional polygonal models through geometric and topological modifications", IEEE Journal on Selected Areas in Communications, Vol 16, Issue: 4, May 1998.

[2] Siddharth Manay, Byung-Woo Hong, Anthony J. Yezzi, Stefano Soatto, "Integral invariant signatures", European Conference on Computer Vision, pages 87-99. Springer, 2004.

[3] Helmut Pottmann, Qi-xing Huang, Yong-liang Yang, and Johannes Wallner, "Integral invariants for robust geometry processing", Elsevier Computer Aided Geometric Design Vol 26, Issue 1, Pages 37-60, January 2009.
[4] Ryutarou Ohbuchia, Hiroshi Masudab, Masaki Aonoa "Data embedding algorithms for geometrical and on geometrical targets in three-dimensional polygonal models", Elsvier Computer Communications, vol 21, issue 15, pp 1344-1354, Oct. 1998.
[5] Benedens O, Busch C. "Towards blind detection of robust watermarks in polygonal models", Proceedings of Eurographics, Interlaken, Vol 19, No 3 pp199-208, 2000.
[6] Benedens O. "Affine invariant watermarks for 3D polygonal and NURBS based models", Proceedings of the 3rd International Workshop Information Security,pp 15-29, March 2000.
[7] Kanai S, Date H, Kishinami T. "Digital watermarking for 3D polygons using multiresolution wavelet decomposition", Proceedings of International Workshop on Geometric Modeling, Tokyo, 296-307, 1998.
[8] Uccheddu F, Corsini M, Barni M. "Wavelet-based blind watermarking of 3D models", Proceedings of the 2004 Multimedia and Security Workshop, Magdeburg, pp. 143-154, 2004.
[9] Ohbuchi R, Mukaiyama A, Takahashi S. "A frequency-domain approach to watermarking 3D shapes", Computer Graphics Forum, Vol 21, Issue 3, Pp. 373–382, Sep 2002.
[10] Wolfgang, R.B. and Delp, E.J.: "A watermark for digital images, A method for signature casting on digital images", Proc. IEEE Int. Conf. on Image Processing, Vol.3, pp.219-222, 1996.
[11] Igor Guskov , Wim Sweldens , Peter Schröder, "Multiresolution signal processing for meshes", Proceedings of the 26th annual conference on Computer graphics and interactive techniques, p.325-334, July 1999.
[12] Sagi Katz , Ayellet Tal, "Hierarchical mesh decomposition using fuzzy clustering and cuts", ACM Transactions on Graphics (TOG), v.22 n.3, July 2003

Authors Profile

Shreya Pahadiya pursed Bachelor of Engineering from University Rajiv Gandhi Prodyogiki Vishwavidyalay Bhopal in 2014. she is currently pursuing Master of Techonology Department of Cyber Security from Vikrant Institute of Technology & Management Indore, since 2014. Hir main research work focuses on security Algorithms, internet computing, information security.

Mr. Ravi Khatri currently working as Associate Professor at Vikrant Institute of Technology & Management Indore and member of IACSIT and ISTE and having 20 research paper and main research area IOT and collaborative Computing He has 8 years of teaching experience.

