ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Website: www.ijircce.com

Vol. 5, Issue 4, April 2017

Analysis of Colour Rectification for 3D RGB-D System with Copyright Security

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ABSTRACT: Now a day's all customers of the web have the capability to down load replica and retransmit the multimedia knowledge legally or illegally due to the web open environment. Many issues come up reminiscent of copyright security and intellectual property. Now 3D IMAGE segmentation has witnessed great success in many computer vision tasks such as object location and object recognition. Most image segmentation methods are designed for color images. In this paper, different approaches for colour correction as well as digital security are studied. Our goal is find a novel approach which is capable to resolve such mixed, lost, and noisy pixel problems of the 3D RGB-D system and has been simulated using MATLAB software. The advantage of MATLAB offers is that it is widely available, continuously updated and has wider reach.

KEYWORDS: 3D, RGB-D, Image, MATLAB, Security

I. INTRODUCTION

Three-dimensional computer graphics (3D computer graphics, in contrast to 2D computer graphics) are graphics that use a three-dimensional representation of geometric data (often Cartesian) that is stored in the computer for the purposes of performing calculations and rendering 2D images. Such images may be stored for viewing later or displayed in real-time.

3D computer graphics rely on many of the same algorithms as 2D computer vector graphics in the wire-frame model and 2D computer raster graphics in the final rendered display. In computer graphics software, the distinction between 2D and 3D is occasionally blurred; 2D applications may use 3D techniques to achieve effects such as lighting, and 3D may use 2D rendering techniques.

3D computer graphics are often referred to as 3D models. Apart from the rendered graphic, the model is contained within the graphical data file. However, there are differences: a 3D model is the mathematical representation of any three-dimensional object. A model is not technically a graphic until it is displayed. A model can be displayed visually as a two-dimensional image through a process called 3D rendering or used in non-graphical computer simulations and calculations.

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Fig.1 Contrast Correction for Optical See

A. LIMITATIONS

- Depending on the intended use of a depth map, it may be useful or necessary to encode the map at higher bit depths. For example, an 8 bit depth map can only represent a range of up to 256 different distances.
- Depending on how they are generated, depth maps may represent the perpendicular distance between an object and the plane of the scene camera.

Collected 3D data is useful for a wide variety of applications. These devices are used extensively by the entertainment industry in the production of movies and video games. Other common applications of this technology include industrial design, orthotics and prosthetics, reverse engineering and prototyping, quality control/inspection and documentation of cultural artifacts.

II. REVIEW WORKS

A. Watermarking Technique

A digital watermark is a kind of marker covertly embedded in a noise-tolerant signal such as an audio, video or image data. It is typically used to identify ownership of the copyright of such signal. "Watermarking" is the process of hiding digital information in a carrier signal; the hidden information should,[1] but does not need to, contain a relation to the carrier signal. Digital watermarks may be used to verify the authenticity or integrity of the carrier signal or to show the identity of its owners. It is prominently used for tracing copyright infringements and for banknote authentication.

Spectral domain 3D image watermarking is heavily preferred over the spatial domain because of the robustness of the embedded watermark. The spectral domain image 3D image watermarking branches into DCT(Discrete Cosine Transform), DFT(Discrete Fourier Transform) and DWT(Discrete Wavelet Transform).

B. Robust Semi-Automatic Depth

Here presented a semi-automatic system for obtaining depth maps for unconstrained images and video sequences, for the purpose of stereoscopic 3D conversion. With minimal effort, good quality stereoscopic content is generated. Our work is similar to Guttmann al. The core of our system incorporates two existing semi-automatic image segmentation algorithms in a novel way to produce stereoscopic image pairs. The incorporation of Graph Cuts into the Random Walks framework produces a result that is better than either on its own. This alleviates much user input, as only the first frame needs to be marked. However, the quality of the final depth maps is dependent on the user input, and thus the depth prior. With this, we introduced to control the depth prior contribution, mitigating some of the less favorable effects. For future research, we are currently investigating how to properly set this constant, as it is currently static and selected apriori. We are investigating possible meansfor adaptively changingbased on some confidence measureto determine whether one paradigm is preferred over the other.

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C. Graph based Segmentation

In MAY 2015 Jingyu Yang et all in topic "Graph-Based Segmentation for RGB-D Data Using 3-D Geometry Enhanced Superpixels" With the advances of depth sensing technologies, color image plus depth information (referred to as RGB-D data here after) is more and more popular for comprehensive description of 3-D scenes. This paper proposes a two-stage segmentation method for RGB-D data: 1) over segmentation by 3-D geometry enhanced superpixels and 2) graph-based merging with label cost from superpixels. In the over segmentation stage, 3-D geometrical information is reconstructed from the depth map. Then, a K-means-like clustering method is applied to the RGB-D data for over segmentation using an 8-D distance metric constructed from both color and 3-D geometrical information. In the merging stage, treating each superpixel as a node, a graph-based model is set up to reliable the superpixels into semantically-coherent segments. In the graph-based model, RGB-D proximity, texture similarity, and boundary continuity are incorporated into the smoothness term to exploit the correlations of neighboring superpixels.

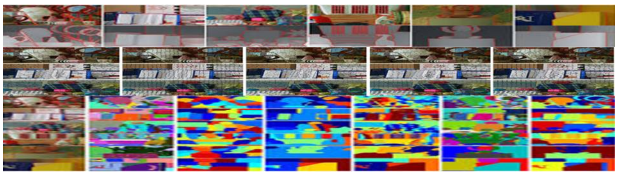

Fig.2 Geometry Enhanced Superpixels

This paper presents a novel segmentation method for RGB-D data based on 3-D geometry enhanced superpixels. We first cluster the pixels by K-means with an 8-D distance to generate the semantically-coherent superpixels. Then we merge the superpixels based on a graph-based energy minimization framework with label cost, to obtain segmentation results. By introducing the geometrical information, the proposed segmentation method overcomes the difficulty in superpixel clustering stage, the reconstructed 3-D geometrical information from depth maps greatly improves over segmentation performance. In the merging stage, superpixels are merged into semantically-coherent segments by a graph-based energy minimization framework with label cost. Experimental results show that the superpixel clustering method is powerful in generating semantically-coherent over segmentation results. The effects of parameters in the graph-based merging model are investigated, suggesting a set of typical value.

D. Mobile panorama

In January 2015 Wei Yao et all in the paper "Instant Color Matching for Mobile Panorama Imaging" presents an efficient color matching approach to address the photometric inconsistency problem that commonly exists in panoramic images. Color correction, as the first step, is to adjust the color and luminance of source images so that the differences between adjacent images can be minimized Color blending is used after the color correction to further smooth the color transition between adjacent images. With the first image being selected as a basis image, the proposed approach can start the color matching and stitching process once the second image is captured.

Fig.3 panorama Images consist photometric inconsistency problem

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This paper color matching approach is presented to solve the photometric inconsistency problem in mobile panoramic image stitching. The proposed approach consists of two steps. Color correction first corrects the source images to minimize the color and luminance differences between adjacent images. Color blending is then applied to further smooth the color transition between adjacent images to make the seam invisible. A major advantage of the proposed approach is that the processing can be done in parallel with image capturing while the existing approach in [4] can only establish the cost function to get correction parameters when all the source images are captured

E. Color Overlay Forward Error Correction

A color overlay structure was developed for media streaming applications using multiple paths and the FEC technique. The overlay is bandwidth-efficient due to its basic ALM organization. In addition, many extra links between peers are utilized. The FEC techniques enable the system to use these extra links to their maximum efficiency. The color overlay improves system capacity by reducing bottlenecks, is more resilient to network dynamics, and is more reliable against node failures, as compared to other existing ALM structures. A light-weight protocol was also presented for building the overlay. Extensive simulations clearly demonstrate the advantages of the proposed color overlay.

F. Spatial domain Watermarking

Embedding a watermark in the spatial domain scatters the knowledge to be embedded making it hardly ever detectable. These approaches are nice in their resistance to cropping, however they are vulnerable to assaults like noise and compression. The most straightforward means to add a watermark to an photograph within the spatial domain is so as to add a pseudorandom noise sample to the luminance values of its pixels. A few approaches are centered on this precept (Emek, &Pazarci, 2005).

G. Frequency or transform area Watermarking

Embedding a watermark in a grow to be domain proved to be extra effective with appreciate to attaining the imperceptibility and robustness standards of digital image.
Watermarking algorithms. Mainly used frequency-domain transforms comprise the Discrete Wavelet transform (DWT), the Discrete Cosine turn into (DCT), Discrete
Fourier change into (DFT), Haar Wavelet transform (HWT) and Contourlet turn out to be (CT) (Shilbayeh,&Alshamary, 2010).
Most often, the frequency-based procedures are higher than the spatial-headquartered ones based on the following observations:

- Within the frequency area, extra bits of watermark can be embedded into the fashioned snapshot.
- In the frequency area, watermarked picture being more amazing to attacks.

H. The Discrete Wavelet Transform based techniques (DWT)

Discrete Wavelet change into (DWT) situated strategies are more powerful and standard considering DWT has a number of benefits over other transforms together with space-frequency localization, multi resolution illustration, advanced HVS modeling, linear complexity and adaptively. It locates areas of high frequency or core frequency to embed information imperceptibly. Despite the fact that, DWT is widespread, powerful and familiar amongst watermarking approaches, it has its possess barriers in shooting the directional

III. THE STATEMENT OF THE PROBLEM

There are a lot of digital picture watermarking techniques utilized to hide secret knowledge in the fashioned picture for the reason of copyright safety and knowledge authentication. The 3D watermarking algorithm offered on this work, presents a good approach to overcome the difficulty of attacks after transmitting picture through the web or after performing some picture operation like compression or cropping. For this reason, there may be an important ought to endorse a new development of digital 3D watermarking approaches that is potent in opposition to different types of attacks and the extracted watermark which may also be comfortably recognized.

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IV. SIGNIFICANCE OF THE STUDY

1. The process may furnish a first-class improvement to scientific application. 3D Digital watermark can create hidden label and annotation in clinical application considering that 3Dwatermark probably used for same sufferer documents.

2. The process is a compatible solution for the hindrance of copyright security and data authentication.

3. The process may be used in banks software. 3DWatermark acts as a digital signature, giving the snapshot a sense of possession or authenticity.

4. The approach could have pleasant significance in fingerprint application considering that it is invisible and inseparable from the content material.

5. This kind of software is valuable for monitoring and tracing illegally produced copies of digital work.

V. CONCLUSION

In this paper we studied different approaches for colour correction and security issue in digital data. The state of the art in color correction by presenting a way to address the material distortion and a real-time color correction algorithm based on display profiles. We showed that the material distortion cans be addressed as linear functions on the LAB components. Quick Correction navigates display profiles using sampling, adically new approach. Some approach is not obvious from a traditional computer graphics perspective (i.e., colors in RGB), and is valid only once we consider a perceptual representation of color (i.e., using the CIE LAB color space). Our key contribution is to find the real time feasibility of color correction.

In two predominant instances, the watermark assaults wreck embedded watermark information. First when the watermark knowledge is embedded in high frequency components of the photographs. Excessive frequency content of an snapshot behaves like brought noise and consequently noise removing algorithms similar to smoothing, and median filtering destroys it. Lossy compression algorithms also attempt to scale down the photograph size through doing away with the small details which correspond to excessive frequency content material of the image.

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