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A Survey on Improved Quality of Color Image Using Modified Gamut Mapping

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ABSTRACT: Image processing is the name given to the entire process involved with the input editing process of image from system. These are the different type of the objective function are used for getting the better quality of image. The total range of color in color model is known as gamut. Previously they used the color image different as an objective types function but the result are not appropriate. There are some types of artifacts are present. In next process improved color image differences are utilize as an objective function and resulting image contain the better quality from the previous one.

KEYWORDS: Image quality, color, gamut mapping.

I. INTRODUCTION

There are many ways to improve the color quality of image. There are different type of the objective function are used to improve the color quality of image. To find the original content from the image that's why we need image processing. This method used improved color image difference as an objective function for improvement. The color image quality by removing the artifact. There is lots of objective functions are used to removing the artifact from the distorted image and improving the color quality of the image.Previously developed a color image difference (CID) metric for predicting indicating the gamut mapping distortion. They used the gamut mapping algorithm and used the CID metric as an objective function. But they noticed there are visual artifacts that are noticed by modification done by the improved color image differences metrics. When the color image difference (CID) metrics is used as an objective function but that image contain artifact after some iteration. So there is space for the improvement [1].After that doing some changes in color image differenc and named as improved color image difference and used as an objective function. When that improved color image difference is used as an objective function that image are free from the artifacts and obtain retain contrast, structure and the color of the references image to the great extent [1].

II. RELATED WORK

For removing the artifact from the image and improving the color quality of image many author work on different area.They uses the different algorithm and objective function and some are as follows.
N. Bonnier et al. developed spatial gamut mapping algorithms (SGMAs) by a psychophysical experiment. The resultsof the experiments are then compared to selected image quality metrics (IQMs) [9].

Lin Zhang et al. developed a novel feature similarity (FSIM). The image quality assessment is developed on the basisof human visual system that understands the image feature according to low level feature [3].
Zhengyouzhi et al. developed objective evaluations of fused images. They display a structural similarity metric thatdoes not use a reference image for image evaluations. They form metric by using universal image quality index. Image evolution distinguishes between complimentary information and redundant information [4].

Ding Wenrui et al. developed an image and video quality assessment method. For describe image quality they use peaksignal to noise ratio and the structure similarity index . For obtain the mapping function between the objective qualityassessment and subjective quality assessment they used neural network [11].

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Ingmar Lisser et al. developed image difference framework. They compare image normalization, feature extraction, feature combination. They create image difference and measure by choosing some implementation for every steps[5].

Sr No	Author	Publications	Method	Remark
1	Ingmar Lissner et al.	IEEE TRANSACTION ON IMAGE PRO. VOL 22. NO 2. FEB 2013.	They presented image difference framework and compare normalization, feature extraction and feature combination.	There is need of improved image difference database of gamut mapped images.
2	Ingmar Lissner et al.	IEEE TRANSACTION ON IMAGE PRO. VOL 21. NO 3. FEB 2012.	They done an analysis of various image processing problem related to human color perception. They calculate look up table.	Color appearance model(CAM) and image appearance model(IAM) are research area and their prediction accuracy can be improved.
3	Lin Zhang et al.	IEEE TRANSACTION ON IMAGE PRO. 2011	They developed a novel feature similarity (FSIM) index for full reference IQA, based on the fact that human visual system (HVS) understands an image according to its low level features.	FSIM/FSIM$_C$ scale depends on both the image resolution and the viewing distance, and hence, is difficult to be obtained.
4	ZhengYouzhi et al.	TSINGHUA SCIENCE AND TECHNOLOGY.2009	They used structural similarity metric and not use a reference image for image fusion evaluations.	There are distinguishing between complimentary and redundant information define better.
5	Ding Wenrui et al.	TSINGHUA SCIENCE AND TECHNOLOGY.2008	The neural network was used to obtain the mapping function between the objective quality assessment and subjective quality assessment.	For the accurate result more HVS characteristics should be analyzed to develop high performance quality assessment method
6	N. Bonnier et al.	PROC. 14th COLOR IMAG. CONF. IS&T/SID, SCOTTSDALE, AZ, USA, 2006, PP. 56–61.	In psychophysical experiment comparing five gamut mapping algorithms, two point wise and three spatially adaptive applied to fifteen images.	There is no strong correlation between experimental result and observers.
7	Ingmar Lissner et al.	TSINGHUA SCIENCE AND TECHNOLOGY.2008	They combine several image difference feature for optimizing relation between image difference prediction and human assessment.	For the improved performance there is need of non redundant IDF.
8	Raja Balasubramanian et. al.	XEROX RESEARCH AND TECHNOLOGY WEBSTER, NEW YORK.	Spatial gamut mapping technology is used to overcome shortcoming encountered with standard point wise gamut mapping algo.	There is less accurate color match with original image
9	Zhou wang et. al.	IEEE TRANSACTION ON IMAGE PRO. 2006.	They used image difference metric as an objective function for examining the relation between objective measure and perceived quality of image	Cross image and distortion are hard to evaluating image quality metric.

Table 1.1. Related Work

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III. METHODOLOGY

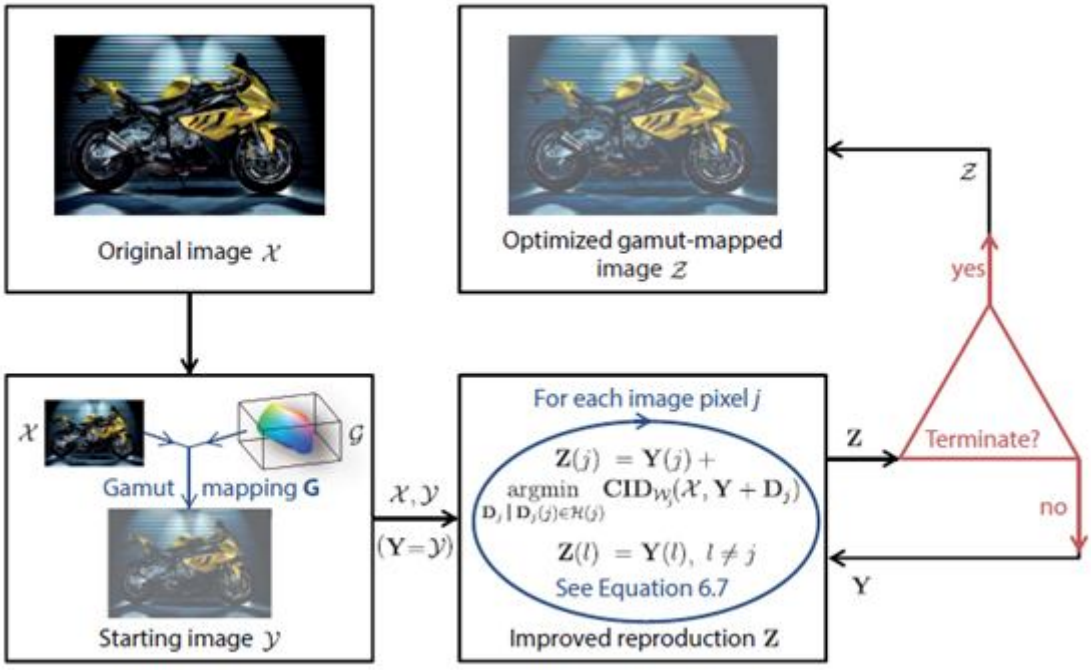

Fig.1.1:Overview for gamut mapping [1].

The original image X is available and the colorgamut than getting the starting image Y. Than the color image difference is minimized for the each pixel. This process is continued until the condition is not fulfilled. Finally getting the output image Z that is gamut mapped image [1].

A. *Description of the gamut mapping method:*

There are lots of objective function are used to removing the artifacts from the distorted image and improving the color quality of image. Firstly developed a color image difference metric for predicting the gamut mapping distortion. They used the gamut mapping algorithm and used the color image difference metric as an objective function but they noticed there are visual artifact. For removing that artifact there is need to do the improvement in color image difference metric. When improvement color image difference metric is used as an objective function then the image are free from the artifact obtained retain contrast, structure and the color of the original image to the great extent [1]. In the improvement color image difference metric they combined all the modification, different comparison term those are present in color image difference metric, coma contrast term and coma structure term which are indicated by Cc and Sc respectively.

IV. PSEUDO CODE

Step 1: input is color gamut g and reference image x.

Step 2: Image y is valid in color gamut for iteration.

Step 3: Do the pixel wise gamut mapping.

Step 4: If the condition is not fulfilled then go to step 3.

Step 5: Terminate after the condition if fulfilled.

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Step 6. Output is gamut mapped image.

V. CONCLUSION

For enhancing the color image quality there are gamut mapping method are used. An existing gamut mapping algorithm is used to create an in gamut starting image for the iteration. Optimized images describe higher agreement with the original than the starting images, but were contaminated by various types of artifacts. That addressed the multiple modifications in color image difference metric. Improved color image difference metric describe high prediction performance on visual datasets comprising gamut mapping distortions. The improved modifications allow artifact free gamut mapping optimizations, retaining contrast, structure, and particularly color of the original image to a great extent.

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