



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJIRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 10, Special Issue 2, December 2021

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.569

Subjective Edge Feature Enhancement Approach Using Redundant Contrasting Domain Images in Digital Image Processing

Dr. C.Jayanthi¹, Mr.V.Karthikeyan²

Assistant Professor, Department of Computer Science, Government Arts College (Autonomous), Tamilnadu, India¹

Ph.D Research Scholar (Part Time), PG & Research Department of Computer Science, Government Arts College (Autonomous), Tamilnadu, India²

ABSTRACT: Digital Image Processing is a method of operations on an image, in order to get an enhanced images or to extract some useful information. It is a type of signal processing in which input is an image and output may be image or characteristics, features associated with that image. Nowadays, image processing is among continuously growing technologies. It forms core research area within engineering and computer science disciplines. To improve the quality of an image is the main contracting approach in natural scene images which have high histogram image quality. An image quality for SCA (screen content image) using optimizes edge feature selection based on image quality enhancement is important approach in image processing. By using EFEA (edge feature enhancement approach) in redundant contrasting domain, to analyze the color features of image. The feature extraction directly applies into the image pixel domain to make noiseless depression without affecting the base histogram. All edge features are evaluated from multiobjective histogram optimization in the proposed feature edge based model. They are extracted based on the gradient map of input Screen Content Images, including all edge features. This proposed system improves the contrast as well as improving image quality by selecting the right features to enhance the image quality in the real world.

KEYWORDS: Image, Edge feature selection, edge feature enhancement approach, Multi objective histogram optimization, Screen content image.

I. INTRODUCTION

The contrast of an image is highly concentrated on a specific range, e.g. an image is very dark; the information may be lost in those areas which are excessively and uniformly concentrated. The problem is to optimize the contrast of an image in order to represent all the information in the input image. To design and optimized image quality assessment model that can predict the perceptual quality of SCIs is desirable. This method serves as a benchmark for edge mapping, adjusting and optimizing the performance of the image quality improvements. To improve image quality assessment using natural screen content image based on subjective edge feature. To design a multi-objective histogram feature extraction approach using redundant contrasting domain Image processing is important in quality assessment specific for screen content images, which is the image quality for increasing. Due to various factors of image content, the histogram qualities are poor or noisy to make contrasting the image enhancement. These problematic factor features of gradient, histogram, contracting features need quality enhancement to improve the better visual perception. Commonly a screen content image (SCI) consists of a mix of natural images, graphics, text, and even some icons generated, rendered by electronic devices. Inspired by various internet-based applications, such as virtual screen share, cloud computing and gaming, video conferencing, etc., an increasing amount of visual content is shared between different digital devices. In these applications, visual content is typically presented in the form of screen content images (SCIs), which render texts, graphics and natural pictures together. For efficient sharing among various types of devices, it is important to efficiently acquire, compress, store or transmit SCIs. Currently, many relevant algorithms for SCI have been proposed, including SCI segmentation, SCI compression, SCI quality assessment, etc. An extension of the HEVC standard, when processing SCIs, may have various distortions, such as blurring and abstract artifacts. Generally, peak signal to noise ratio (PSNR) is adopted to evaluate the quality of the processed images. However, it's known that PSNR isn't according to human beings' holding.

Although many IQA methods have been used to evaluate quality of distorted natural images, and whether these IQA methods are applicable to distorted SCIs type of images including texts and pictures concurrently. Generally, a visual quality of SCIs may be degraded with various distortion types during image processing process, including image acquisition, transmission and coding. In processing of SCIs, all types of distortion will inevitably cause image quality degradation. The structural similarity measure (SSIM), which considers local luminance, contrast and structure degradation, not just the difference in pixel intensity. To improve the performance of SSIM, lots of objective models are being designed to improve the image quality. A portion of the image area in SCI is called high frequency sharp edge patches (SEPEs), so the remaining smooth and background areas are named as non-SCE SEPEs so we can consider different properties of SCI links. The traditional non IQA metrics only extract the features from the whole SCIs, but the universal features cannot simultaneously represent the textual and pictorial regions. Different from these whole regional (ER) based measurements, we propose a hybrid area (HR) based feature representation that combines the characteristics of local and global SCIs.

II. OBJECTIVES

To improve the quality of the image is the main contracting approach in natural scene images which have high histogram image quality. To design and optimized image quality assessment (OIQA) model that can predict the perceptual quality of SCIs is desirable. This method serves as a benchmark for edge mapping, adjusting and optimizing the performance of the image quality improvements. To improve image quality assessment using natural screen content image based on subjective edge feature. To design a multi-objective histogram feature extraction approach using redundant contrasting domain to improve the quality.

III. PROBLEM STATEMENT

A natural scene image (NSI) may show considerably different characteristics from a screen content image (SCI). These noisy edges are irregular contrasting which maintain to apply sharpen edges to cast major challenges to objective image quality assessment. Screen content images are commonly composite image including textual and pictorial regions leading to various types of difficulties in results. Most of the problem observation from local quality of each image patch is not equal to subjective differential mean opinion score (DMOS) of an image. Image quality contrasting with importance are different image patches, which is not sufficient for quality assessment. Due to more scene contents are not observed as preprocessing because the objects considered are non-sensitive, which make color different on the boundary region of the image. Which this consideration leads to more complex to improve quality assurance, sensitivity, specificity and time to enhance more complex to improve the quality of the image.

IV. RELATED WORKS

- [1] Image quality affects deep learning reconstruction of MRI, IEEE. Author/Year - Haris Jeelani, Jonathan Martin, (2018). Techniques used – image reconstruction, based on deep learning. Limitations/Drawbacks - Recently, deep learning has been applied to MRI reconstruction and produces high quality images at high acceleration rates. Since deep learning highly depends on training data, the standard of coaching images must not be ignored.
- [2] Image quality assessment based on multi-feature extraction and synthesis with support vector regression, SPIC. Author/Year – Yong Ding, Yang Zhao, (2017). Techniques used – Multi-Feature Extraction and Synthesis with Support Vector Regression. Limitations/Drawbacks – Inaccurate for lack of consideration on the human visual system (HVS) or too complex due to excessive effort on HVS simulation.
- [3] Improving Lung Lesion Detection in Low Dose Positron Emission Tomography Images Using Machine Learning, IEEE. Author/Year – YinghweyNai, Joshua D. (2018). Techniques used – Image Quality Transfer based on Positron Emission Tomography. Limitations/Drawbacks - Investigate the feasibility of using machine learning to improve low-dose PET images to standard dose, high-quality images for better lesion detection at low-dose PET scans.
- [4] An improved pair wise comparison scaling method for subjective image quality assessment. Author/Year – ZhuqingZhang, Jun Zhou, (2017). Techniques used – Image quality assessment, Pair wise comparison. Limitations/Drawbacks - Those scores made by unreliable subjects that may affect the scaling of image quality scores are defined as outliers. Recent studies have shown that pair wise comparison is more reliable and accurate than single stimulus method.
- [5] Robust No-Reference, No-Parameter, Transform Domain Image Quality Metric for Evaluating the Quality of Color Images. Author/Year – Karen Panetta; ArashSamani, (2018). Techniques used – No-Reference-Parameter, Transform

Domain Image Quality Metric for Evaluating the Quality of Color Images. Limitations/Drawbacks - These measurements may then be used to make critical system decisions. Therefore, it's imperative that the standard of the image used for extracting important measurements is of the very best fidelity.

[6] Quality Evaluation of Image Dehazing Methods Using Synthetic Hazy Images, IEEE. Author/Year – Xiongkuo Min, Guangtao Zhai, (2019). Techniques used – Image Dehazing Methods Using Synthetic Hazy. Limitations/Drawbacks - This strategy and study DHA evaluation using synthetic hazy images systematically. First, build a synthetic haze removing Low quality image (SHRQ) database.

[7] Blind quality assessment based on pseudo reference image," IEEE Trans. Multimedia. Author/Year – X. Min et al, (2018). Techniques used – PRI-based distortion-specific metrics into a general-purpose BIQA method named blind PRI-based (BPRI) metric. Limitations/Drawbacks - Image is not fully available, the reduced-reference and no-reference IQA metrics may still be able to derive some characteristics of the perfect quality images, and then measure the distorted image's deviation from these characteristics.

[8] Blind quality assessment based on pseudo reference image," IEEE Trans. Multimedia Author/Year – X. Min et al, (2018). Techniques used – PRI-based distortion-specific metrics into a general-purpose BIQA method named blind PRI-based (BPRI) metric. Limitations/Drawbacks - Image is not fully available, the reduced-reference and no-reference IQA metrics may still be able to derive some characteristics of the perfect quality images, and then measure the distorted image's deviation from these characteristics.

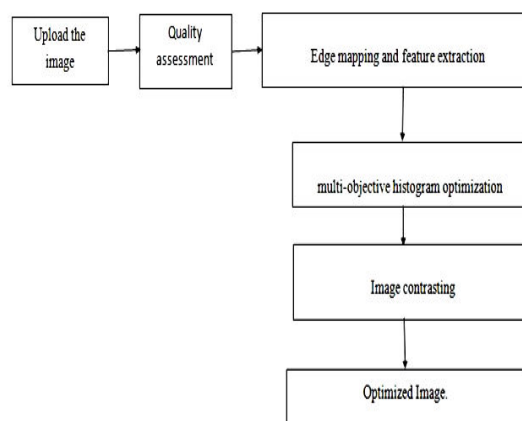
[9] Benchmarking single-image dehazing and beyond arrive. Author/Year – B. Li, (2018). Techniques used – Realistic Single Image DE hazing (RESIDE). Limitations/Drawbacks - Highlights diverse data sources and image contents, and is divided into five subsets, each serving different training or evaluation purposes as a medium transmission map for an input hazy image.

V. PROPOSED SOLUTION AND ITS IMPLEMENTATION

Screen content images are very different from natural images which have been dealt with many types of formats. Quality Assessments methods specifically designed for natural images can also be used to evaluate the quality of screen content images. Yet, their performances are unsatisfactory. This may be due to the statistical differences of Screen content images and Natural images. When processing screen content images, various distortions may be involved, such as blurring and compression artifacts.

Generally, peak signal to noise ratio (PSNR) is adopted to evaluate the quality of the processed images. However, it is known that PSNR is not consistent with human visual perception. The histogram methods have been proposed to evaluate the quality of distorted natural images. To multi-objective histogram optimization algorithm improves the quality of the image contrast.

SYSTEM ARCHITECTURE: The Fig shows the architecture and functional components of the feature based on a reduced reference method and its functional components.



VI. FUNCTIONAL MODULES

The proposed approach has the following modules to support identification of improving the quality of images.

a) SCI FEATURES AND PERCEPTIONS MODEL

Screen content images are a specific type of images including texts and pictures concurrently. In real applications, specified objective metrics are more desired to predict quality of processed SCIs, based on which we can control the processing of SCIs more efficiently. Before using the target metrics, we'd like to verify whether these metrics are according to human eyesight when judging SCI quality. Hence, it's meaningful to research both subjective and objective methods within the quality evaluation of distorted SCIs.

b) EDGE FEATURE EXTRACTION

In this first entropy and contrast features are extracted with a gray level co-occurrence matrix, which are highly perceptive of micro structural change.

Second, the local phase coherence is employed to capture the loss in sharpness. Then, average pool is adopted to fuse features obtained from all of the SEPes. In this SEPes represented to the local features. We further combine local features with global features that are derived using the corner feature method as the hybrid region (HR) based features. Finally, a regression module is learned using support vector regression to coach the mapping function that maps HR based features to subjective quality scores. Experimental results on the screen image quality assessment database show that the proposed method is able to do better performance in visual quality prediction for SCIs than the performance achieved by state of the art methods.

c) MULTI-OBJECTIVE HISTOGRAM OPTIMIZATION

Multi – objective histogram optimization feature is considering an active contour model of image. It is formulated in the intensity edge of the independent image to find the gradients. It is more transparent, too much conventional in the histogram color contrasting. Then consider bound boxing region extraction modeled as efficiently computed based on the multiphase set level model formulation and in the second portion general computation of region Segmentation method for piecewise smooth images. Finally, logical operations are done on the multiple channel images to improve the image enhancement to produce high performance.

VII. CONCLUSION

Quality Assessment of screen content images has become more and more popular. There are various type of approaches used to improve the image quality but the edge feature enhancement approach is improve the image quality is high level. To conclude, that improving image quality assessment in natural screen content image has dominant as well as enrichment. This is based on a subjective edge feature enhancement approach using redundant contrasting domain. These make an image quality perception as well as image processing. Besides, segmentation, drawbacks can be rectified by the histogram evaluation SCI optimized techniques. This proposal makes an efficient result as well as producing higher sensitivity, precision, and recall result on reduced false ratio to improve the quality assessment in image enhancement.

REFERENCES

1. Haris Jeelani, Jonathan Martin, Francis Vasquez, Michael Salerno, Daniel S. Weller, "image quality affects deep learning reconstruction of MRI", IEEE 15th International Symposium on Biomedical Imaging (ISBI 2018), pp: 357360.
2. Yong Ding, Yang Zhao, Xinyu Zhao, "Image quality assessment based on multifeature extraction and synthesis with support vector regression", Signal Processing: Image Communication, Yr2017, pp:113.
3. YinghweyNai, Joshua D. Schaefferkoetter, Daniel FakhryDarian, "Improving Lung Lesion Detection in Low Dose Positron Emission Tomography Images Using Machine Learning", 2018 IEEE Nuclear Science Symposium and Medical Imaging Conference Proceedings (NSS/MIC), pp13.



4. Zhuqing Zhang , Jun Zhou , Ning Liu , Xiao Gu, Ya Zhang,” An improved pairwise comparison scaling method for subjective image quality assessment”, IEEE International Symposium on Broadband Multimedia Systems and Broadcasting (BMSB), 2017,pp:16.
5. Karen Panetta; Arash Samani ; Sos Agaian, "A Robust NoReference, NoParameter, Transform Domain Image Quality Metric for Evaluating the Quality of Color Images", IEEE Access (Volume:6) 2018, pp:1097910985.
6. Xiongkuo Min, Guangtao Zhai, Yucheng Zhu,” Quality Evaluation of Image Dehazing Methods Using Synthetic Hazy Images” IEEE TRANSACTIONS ON MULTIMEDIA, VOL. 21, NO. 9, SEPTEMBER 2019, pp: 23192333
7. X. Min et al., “Blind quality assessment based on pseudo reference image,” IEEE Trans. Multimedia, vol. 20, no. 8, pp. 2049–2062, Aug. 2018.
8. K. Gu et al., “Noreference quality metric of contrast distorted images based on information maximization,” IEEE Trans. Cybern., vol. 47, no. 12, pp. 4559–4565, Dec. 2017.
9. B. Li et al., “Benchmarking single image dehazing and beyond,” IEEE Trans. Image Process., vol. 28, no. 1, pp. 492–505, Jan. 2019.
10. B. Cai, X. Xu, K. Jia, C. Qing, and D. Tao, “DehazeNet: An end-to-end system for single image haze removal,” IEEE Trans. Image Process., vol. 25, no. 11, pp. 5187–5198, Nov. 2016.



**Impact Factor:
7.569**



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 **9940 572 462**  **6381 907 438**  **ijirset@gmail.com**



www.ijirset.com

Scan to save the contact details