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 6, June 2017

Comparative Study of RGB, HSV & YCbCr Color Model Saliency Map

Shruti V. Ghinmine, Prof. Amol Sapkal

M. Tech Student, Dept. of Electronics & Communication, DMIETR, Wardha (MS), India

Assistant Lecturer, Dept. of Electronics & Communication, DMIETR, Wardha (MS), India

ABSTRACT: Saliency means that the highlighting the salient foreground object automaticallyfrom background. In laptop, imaginative and prescient gadget, a saliency map indicates pixel's specific exceptional of any colour snap shots. The purpose of a saliency map is to simplified or trade the representation of a picture into something that is extra meaningful and less complicated to analyse. In this paper, wecompare the various color models. There are three color models are discuss which are RGB (red, green, blue), HSV (hue, saturation, value) & YCbCr (luminance and chrominance) colour models. After that find the saliency map of these color model for better segmentation of the image.

KEYWORDS: Saliency map, color models, RGB color model, HSV and YCbCr color model.

I. INTRODUCTION

The early studies on saliency model is encouraged by means of simulating the visual interest mechanism of HVS [2], via which most effective the sizable part of the scene projected onto the retina is thoroughly processed by means of human mind for semantic information. based at the biologically workable visual attention architecture and the feature integration concept, Itti et al. proposed a well-known saliency model, which first computes characteristic maps of luminance, coloration and orientation the use of a center-surround operator throughout specific scales, and then performs normalization and summation to generate the saliency map. Salient regions displaying high nearby assessment with their surrounding regions in terms of any of the 3 features are highlighted in the saliency map [2].

In this paper, we discuss how various color models are use in finding the saliency map. The RGB color map is use for color feature extraction. The HSV (hue, saturation, value) discus the brightness of the color image. And the YCbCr means grey level luminance and chrominance which is use for shade distribution.

II. RELATED WORK

In this paper [1], a generic and unified framework for pixel wise saliency detection by aggregating multiple image cues and priors, where the feature-based saliency confidence are jointly modeled with the neighborhood coherence constraint. Based on the saliency model, the shape-adaptive cost-volume filtering technique to achieve fine-grained saliency value assignment while preserving edge-aware image details. In this paper, a unified framework called pixel wise image saliency aggregating (PISA) various bottom-up cues and priors. For balancing the accuracy-efficiency trade-off, theories introducing a faster version of PISA called F-PISA. It performs saliency computation for a feature-driven, subsampled image grid, and then uses an adaptive up sampling scheme with the color image as the guidance signal to recover a full-resolution saliency map [1].

This paper presents a novel saliency detection framework termed as saliency tree [2], which provides a hierarchical representation of saliency for generating high-quality regional and pixel-wise saliency maps. Initial regional saliency is measured by integrating global contrast, spatial sparsity and object prior of primitive regions to build a reasonable basis for generating the saliency tree. Then saliency-directed region merging, regional centre-surround scheme, salient node selection, regional saliency adjustment and selection, and pixel-wise saliency map derivation are proposed and systematically integrated into a complete saliency tree model. Both subjective and objective evaluations on five

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 6, June 2017

datasets demonstrate that saliency tree achieves a consistently higher saliency detection performance compared to the state-of-the art saliency models, and especially enhances the applicability on complicated images [2].

This paper presents a Gabor wavelet [6] based texture analysis scheme is proposed and its application to image databases is demonstrated. A comprehensive performance evaluation of these method is given using a large number of textures and a comparison with some of the well-known multiresolution texture classification algorithms is made. Further, a novel adaptive filter selection strategy is suggested to reduce the image processing computations while maintaining a reasonable level of retrieval performance. The experimental results indicate that these Gabor feature are quite robust. Rotation and scale invariance is important in many applications and our preliminary results on rotation invariant classification using Gabor features are very encouraging [6].

III. PROPOSED METHOD

I. COLOUR MODELS

Any color image is the combination of the basic primary three R,G,B colors i.e. Red, Green and Blue. Each parameter (red, green, and blue) defines the intensity of the color as an integer between 0 and 255. Our eyes see something (For example, the sky), and statistics dispatched from our eyes to our brains tells us it's a certain colour (blue). gadgets reflect mild in extraordinary mixtures of wavelengths. Our brains choose up on those wavelength combos and translate them into the phenomenon we call color[4].

A. R, G, B Colour Model

The RGB coloration version is an additive coloration model wherein purple, green and blue mild are delivered together in diverse ways to reproduce a vast array of colors [5]. The name of the version comes from the initials of the three additive primary colorings, pink, green and blue. The main purpose ofthe RGB shade model is for the sensing, representation and show of images in electronic systems, such as televisions and computers, although it has also been used in conventional photography.

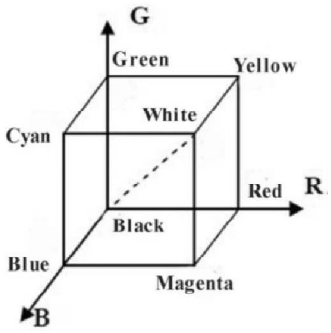

Fig. 1.

Fig. 2. Color representation

B. YCbCr Colour Model

The maximum commonplace way to describe what we see in terms of coloration is the use of combination of red, green and blue, that is referred as RGB colour area. A colour area is honestly a version of representing what we see in tuples. YCbCr is one of the popular coloration space in computing. It represents shades in terms of 1 luminance aspect/luma (Y), and two chrominance additives/Chroma (Cb and Cr). YCbCr is a commonly used shade space in digital video domain. because the illustration makes it smooth to dispose of some redundant coloration information, it's miles used in picture and video compression requirements like JPEG, MPEG1, MPEG2 and MPEG4.

C. HSV Colour Model

Hue-saturation based color spaces had been brought when there was a want for the user to specify coloration houses numerically. They describe shade with intuitive values, based totally at the artist's concept of tint, saturation and tone. Hue defines the dominant color (which include crimson, inexperienced, pink and yellow) of a place, saturation

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 6, June 2017

measures the colorfulness of a place in percentage to its brightness. The “depth”, “lightness” or “value” is associated with the color luminance [7]. The intuitiveness of the colors pace components and specific discrimination among luminance and chrominance homes made those colors paces famous within the works on pores and skin shade segmentation. Numerous interesting properties of Hue have been noted in [Skarbek and Koschan 1994]: it's miles invariant to highlights at white light assets, and also, for matte surfaces, to ambient light and floor orientation relative to the mild source. but, [Poynton 1995], points out several unwanted functions of these color spaces, which include hue discontinuities and the computation of” brightness” (lightness, fee), which conflicts badly with the properties of coloration vision.

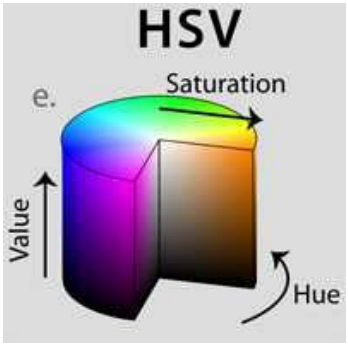

Fig. 3. HSV color model.

IV. RESULTS

The various saliency maps are shown below,

1. RGB saliency map

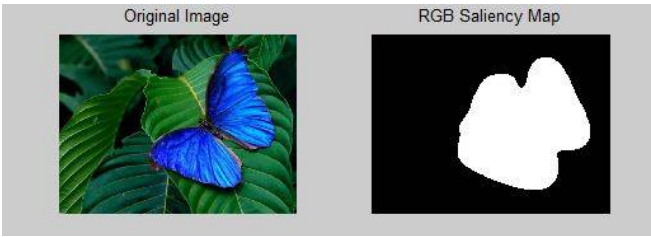

Fig. 4. RGB saliency map

2. YCbCr saliency map

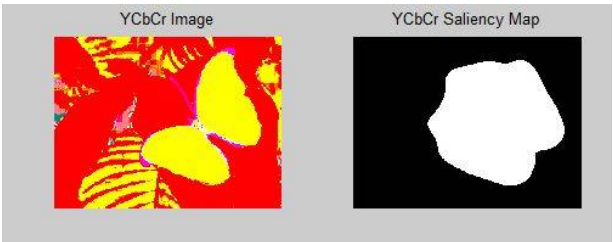

Fig. 5. YCbCr saliency map

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 6, June 2017

3. HSV saliency map

Fig. 6. HSV saliency map

V. CONCLUSION

From all results it is concluded that when RGB color model gets converted into YCbCr color model it gives little better saliency map and again this RGB color model converted into HSV then that gives more precious saliency map of color model.

REFERENCES

[1] Keze Wang, Liang Lin, Jiangbo Lu, Member, IEEE, Chenglong Li, and Keyang Shi "PISA: Pixelwise Image Saliency by Aggregating Complementary Appearance Contrast Measures with Edge-Preserving Coherence." IEEE transaction on image processing, vol. 24, No. 10, October 2015J. Clerk Maxwell, A Treatise on Electricity and Magnetism, 3rd ed., vol. 2. Oxford: Clarendon, 1892, pp.68-73.

[2] Zhi Liu, Member, IEEE, Wenbin Zou, and Olivier Le Meur "Saliency Tree:A Novel Saliency.*"IEEE transaction on image processing, Vol 23, no. 5, May 2014.* .

[3] Research article, "Unified Saliency Detection Model Using Color And Texture Features." Libo Zhang, Lin Yang, Tiejian Luo School of Computer and Control, University of Chinese Academy of Sciences, Beijing, China.

[4] Review article,RupaliNayyer and Bhubneshwar Sharma. "Use and analysis of Color Models in Image Processing",International Journal of Advances in Scientific Research ISSN: 2395-3616.

[5] HaneetKour," Analysis on Image Color Model", International Journal of Advanced Research in Computer and Communication Engineering, Vol. 4, Issue 12, December 2015.

[6] B. S. Manjunath and W. Y. Ma, "Texture features for browsing and retrieval of image data," IEEE Trans. Pattern Anal. Mach. Intell., vol. 18, no. 8, pp. 837–842, Aug. 1996.

[7] Miss.SnehalManjare, Dr. Mrs.S.R. Chougule, "Skin Detection for Face Recognition Based on HSV Color Space," International Journal of Engineering Science & Research Technology, [Manjare, 2(7): July, 2013].

[8] Rainu R Padam," Research on Saliency Detection," International Journal for Research in Applied Science and Engineering technology (IJRASET), Vol. 2 Issue V, May 2014.

[9] Geetkiran Kaur,Harsimranjeet Kaur, Yasmeen Kaur, "Visual Attention Models and Saliency Map," International Journal of Advanced Research in Computer Science and Software Engineering, Volume 3, Issue 9, September 2013.

[10] AoHuanhuan, Yu Nenghai, "Edge Saliency Map Detection with Texture Suppression," 2011 Sixth International Conference on Image and Graphics.