



International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 8, August 2015

Enhanced Fusion of Different Exposed Images with Moving Objects

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ABSTRACT: In this paper, exposure fusion process is proposed for different exposed images with moving objects. The proposed method includes ghost removal unit and fusion unit. Ghost removal includes detecting and correcting non consistent(motion) pixels. in detection module here the brightness of reference image and input images is checked pixel by pixel the difference is taken if difference is more than defined value it is taken as non consistent pixels. In correction module intensity is checked between reference image and input image and if difference is more than defined value it is added to reference image and if it is less it is subtracted from reference image .corrected images become static and then it is passed to fusion unit which improves(enhances) the fine details in final image .the main objective is to enhance the output image and to eliminate ghost effects.

KEYWORDS: exposure fusion, exposed images with moving objects, ghost removal, enhanced image , high dynamic range, low dynamic range.

I.INTRODUCTION

Real world scene exhibits larger dynamic range and camera can display only the finite dynamic range due to finite capacity of the sensors .when taking photo images which have bright regions tend to be over exposed and dark regions tend to be under exposed both regions appear to be saturated to enlarge the dynamic range of camera exposure fusion method is used .This process works well if input are static image if there are moving objects in the scene it produces ghost effects i.e. Objects appear in multiple positions. in order to eliminate ghost effects ghost removal unit is proposed which detects and corrects non consistent pixels. In this modern era Customer demand for high quality photos at low cost and there is lot of competition is there to produce good resolution photos. That proposed method is done using high end camera it can be also applicable for mobile phones.

II.LITERATURE SURVEY

Exposure fusion [3] works well for static images if moving objects it creates ghost effects to detect ghost effects various methods like variance, entropy, pixel order is presented and removal of ghost is the main objective of this paper .

In bit map based movement detection[4] exposure fusion and hdr methods are proposed and here it is applied to dynamic scenes without introducing ghost artefacts the proposed method uses binary operations which detects the clusters of motion pixels .

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III.EXPOSURE FUSION

Exposure fusion includes ghost removal unit and exposure fusion unit.

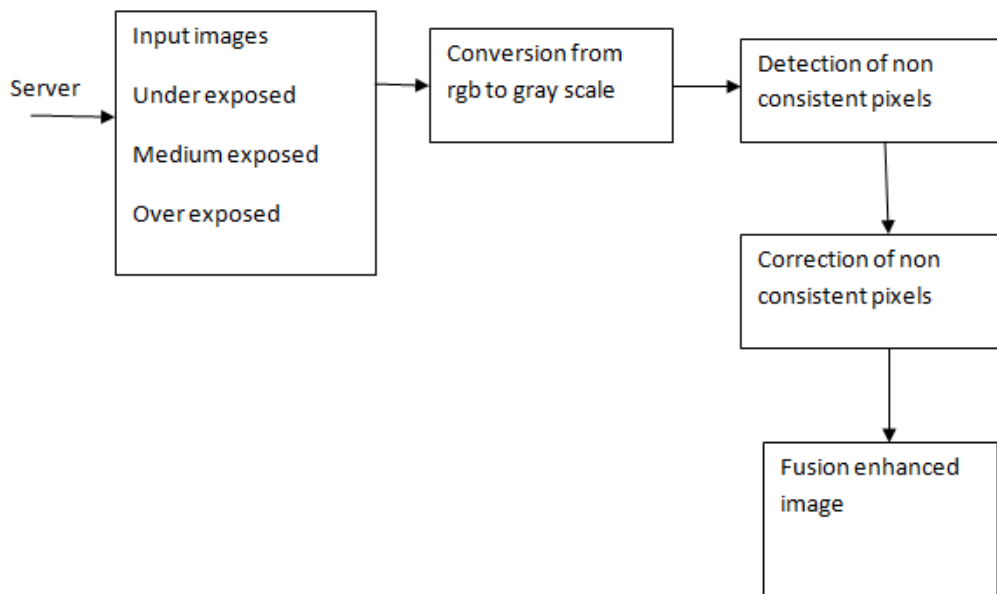


Figure 1 Block diagram of exposure fusion system

Working of exposure fusion is given below:

1) Input images are captured or recorded by adjusting different shutter speed keeping aperture and iso[1] constant and stored in directory .

images obtained are under exposed ,medium exposed and over exposed.

Over exposed images has loss of brightness details (bright areas) and bright areas appear to be washed out .

Under exposed images has loss of dark details and those areas appear indistinguishable from black.

2) input images are transformed from rgb to gray scale gray scale[5] which has brightness information .conversion is done to achieve compression and reduce bandwidth required.

3)ghost removal unit

- detecting non consistent pixels

here reference image taken is medium exposed image or middle image choosing reference image is very significant .some defined value is taken (threshold).input images are compared with reference image .difference is taken between input image and reference image pixel by pixel .difference value is larger than the defined value it is non consistent else it is consistent .

- correcting non consistent pixels.

Difference value taken between reference and image input image pixel by pixel. if the value obtained is more it is added to reference image if it is less it is subtracted from the reference image .and we get corrected image .

4) Fusion unit:

Estimation of intensity of three input images

Corrected images gray scales are saved in coarse and fine scale and estimation of intensity is done[6].

Normalization of intensity of three input images. (Contrast stretching).

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It is one of the enhancement procedures to upgrade the contrast by spreading the range of pixel values to given specified range. for coarse and fine scale for three input images it is normalized [7].

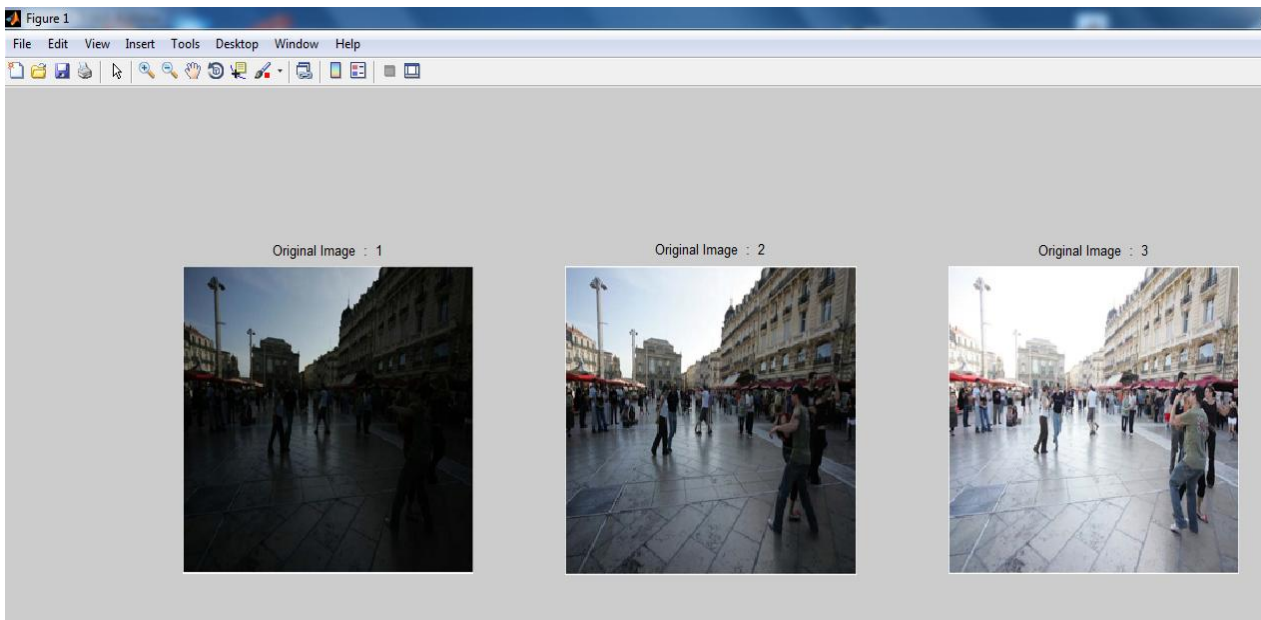
Gamma correction

It upgrades the brightness of the images.

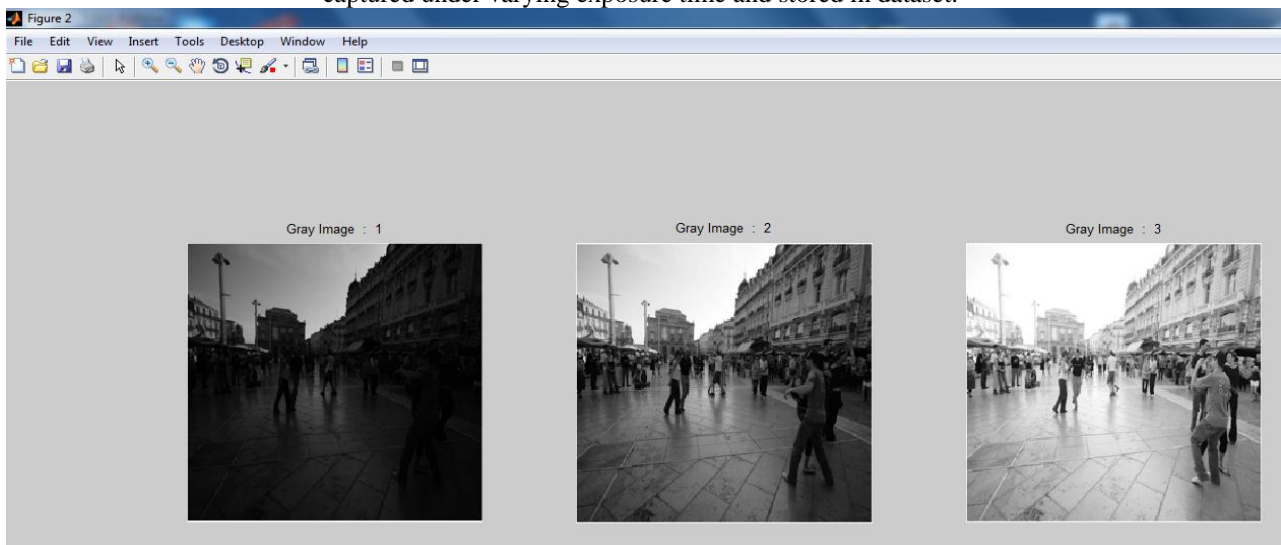
Contrast enhancement

Gamma corrected output is subtracted for normalized output the differences obtained is contrast enhancement[8]. over all contrast of the image is improves and brighter and darker part of the image can be identified. Final coarse scale and final fine scale is obtained and merged together to give final image it is converted back to rgb image.

IV. RESULTS



Original 1 is under exposed image ,Original 2 is medium exposed image,Original3 is over exposed images .images are captured under varying exposure time and stored in dataset.



Rgb images converted to grayscale.

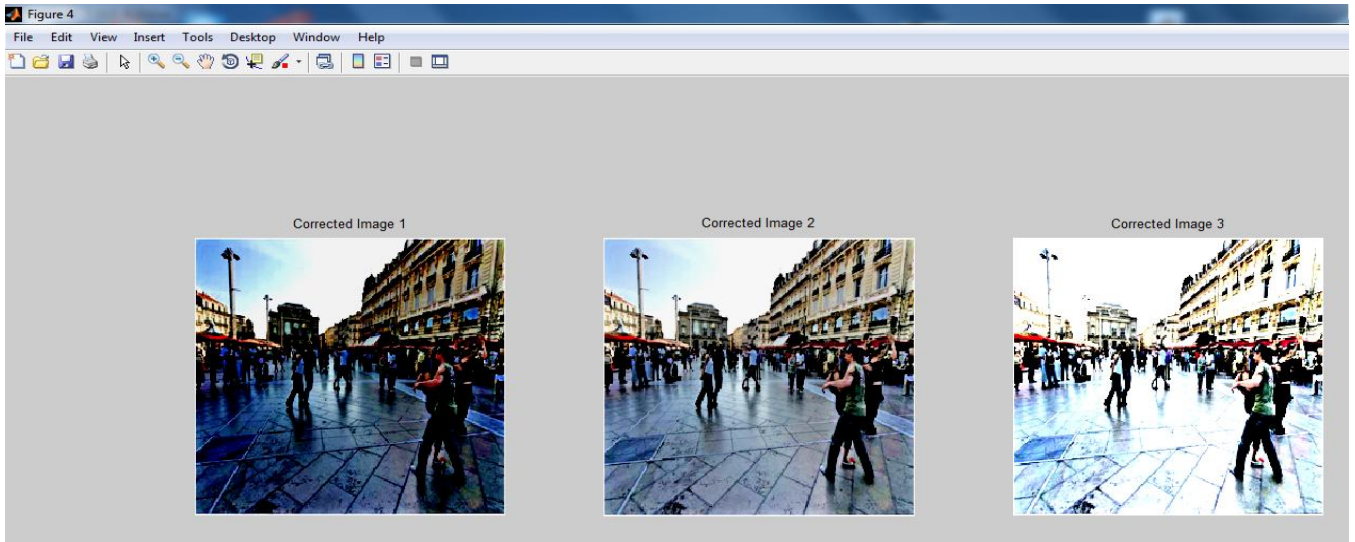


ISSN (Print) : 2320 – 3765
ISSN (Online): 2278 – 8875

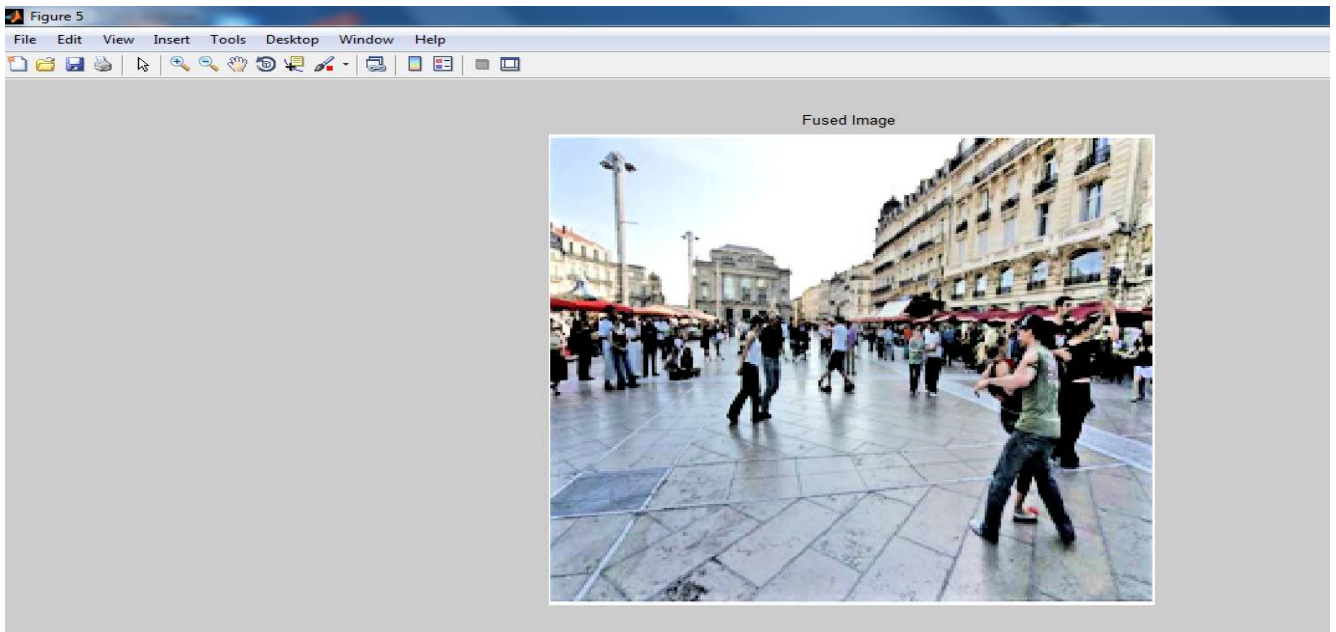
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Corrected images

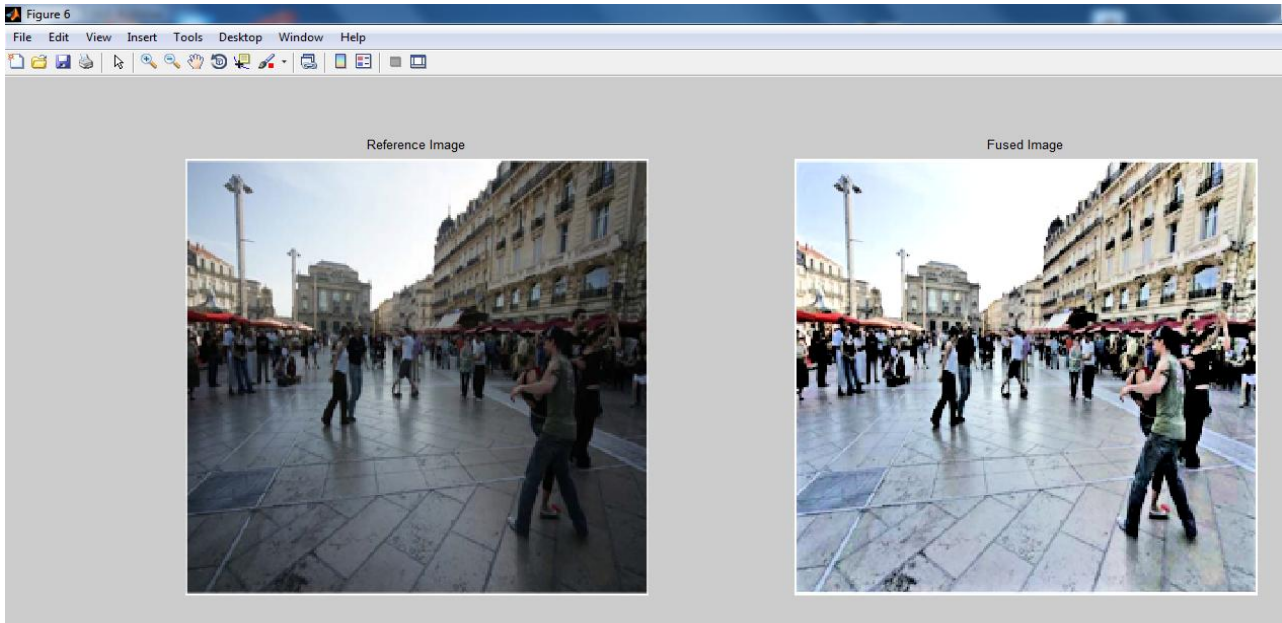


Fused image .

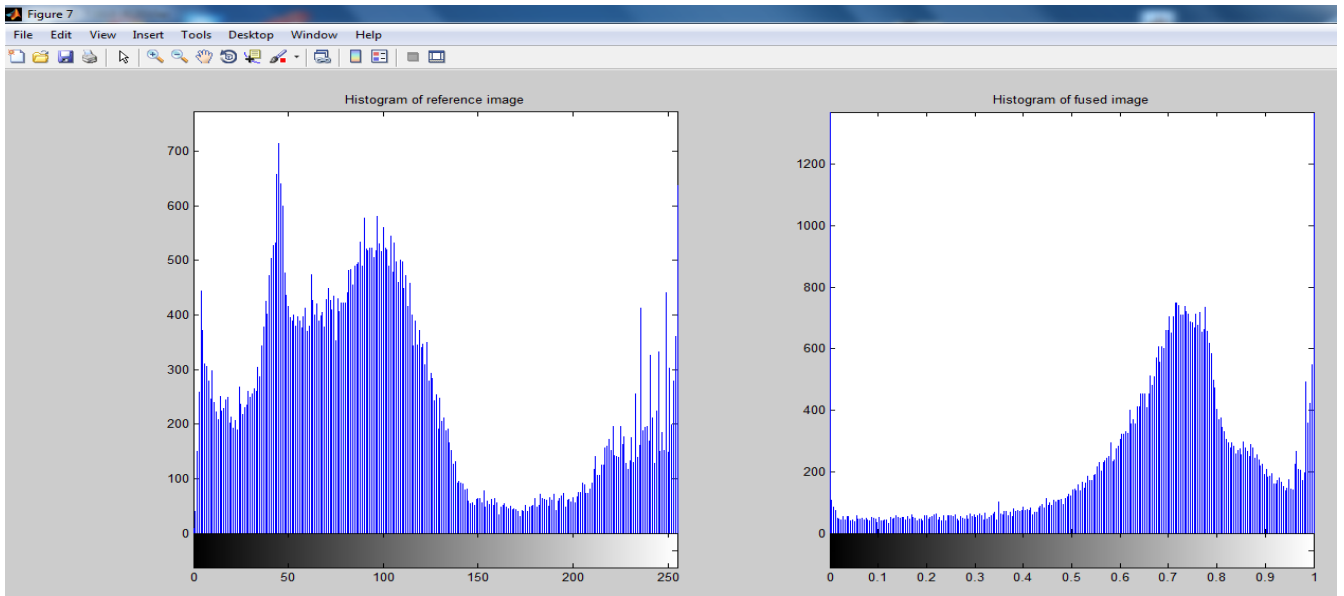
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Comparison of reference with fused image



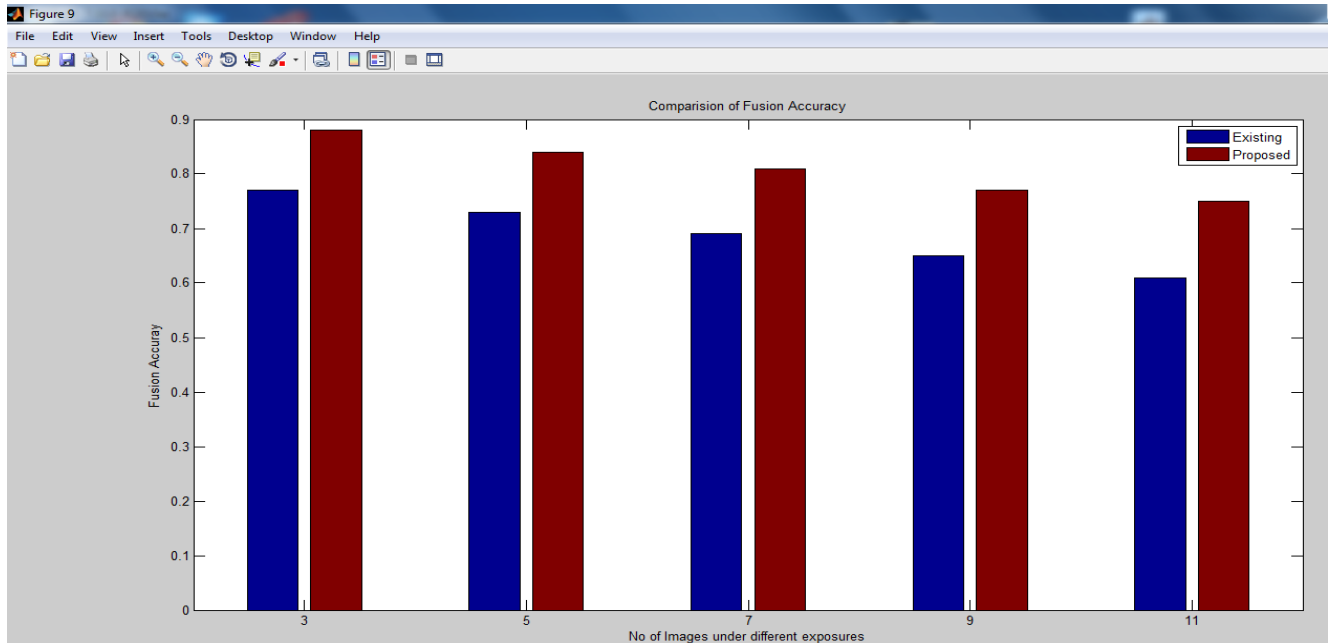
Histogram of reference and fused image



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Comparison of fusion accuracy

V. CONCLUSION

Ghost artefacts have become major problem due to motion of the objects . In order to overcome ghost effects in final image . exposure fusion process is proposed which fuses the set of ldr images into more detail upgraded ldr image .this process can be used with cell phones which has small computation.

REFERENCES

- [1]Exposure by John M. Setzler, Release 1.11 – May 31, 2004..
- [2]R. C. Gonzalez and R. E. Woods, *Digital Image Processing*.Englewood Cliffs, NJ, USA: Prentice-Hall, 2002.
- [3]Baba Fakruddin Ali B H, Suresha D Kareemunisa S “Study on Detection and Removal of Ghost Artifacts in HDR Image “,in International Journal of Advanced Research in Computer Science and Software Engineering Volume 3, Issue 6, June 2013.
- [4]Fabrizio Pece , Jan Kautz ,”Bitmap Movement Detection: HDR for Dynamic Scenes” in Journal of Virtual Reality and Broadcasting, Volume 10(2013), no. 2.
- [5]Korba’s, Aleksandra Kawala-Janik YUV vs RGB – Choosing a Color Space for Human-Machine Interaction Michal Podpora Grzegorz Pawel Position papers of the 2014 Federated Conference on Computer Science and Information Systems pp. 29–34.
- [6] Z. Farbman, R. Fattal, D. Lischiski, and R. Szeliski, “Edge-preserving decompositions for multi-scale tone and detail manipulation,” *ACM Trans. Graph.*, vol. 27, no. 3, p. 67, Aug. 2008.
- [7]Prasad Nagelli , C. Lokanath Reddy and B.T.R. Naresh Reddy Blurred Image Enhancement Using Contrast Stretching, Local Edge Detection and Blind Deconvolution International Journal of Information and Computation Technology. ISSN 0974-2239 Volume 4, Number 3 (2014), pp. 247-252
- [8]S.Gayathri , N.Mohanapriya , Dr.B.Kalaavathi, Survey on Contrast Enhancement Techniques International Journal of Advanced Research in Computer and Communication Engineering Vol. 2, Issue 11, November 2013.