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CONTENTS

Sr. No.	TITLE & NAME OF THE AUTHOR (S)	Page No.
1.	BUDGETARY TRADE-OFFS BETWEEN MILITARY AND EDUCATION/HEALTH EXPENDITURES IN DEVELOPING COUNTRIES: A PANEL DATA ANALYSIS <i>A. K. M. SAIFUR RASHID & MD. ZAHIR UDDIN ARIF</i>	1
2.	AN ANALYSIS ON CRITICAL SUCCESS FACTORS FOR NEW PRODUCT DEVELOPMENT IN SMEs OF IRAN'S FOOD AND BEVERAGE INDUSTRIES <i>HOSSEIN SAFARZADEH, REZA TALEIFAR, DR. YASHAR SALAMZADEH & FARHANG MOHAMMADI</i>	7
3.	COMPARATIVE STUDY AND NUMERICAL MODELING OF A CUPOLA FURNACE WITH HOT WIND <i>MICHEL LISSOUCK, FRANÇOIS NJOCK BAYOCK & ARIANE KAMEWE</i>	15
4.	AN ANALYSIS ON THE IMPACT OF QUALITY SERVICE PROVISION ON CUSTOMERS' SATISFACTION IN MICRO- FINANCE INSTITUTIONS IN RWANDA FROM THE CUSTOMER'S PERSPECTIVE - USING THE SERVQUAL MODEL <i>MACHOGU MORONGE ABIUD, LYNET OKIKO & VICTORIA KADONDI</i>	21
5.	FOREIGN AID AND DEVELOPMENT IN AFRICA: IMPLICATION FOR THE MILLENNIUM DEVELOPMENT GOALS (MDG'S) <i>NDUONOFIT, LARRY-LOVE EFFIONG & ONWUKWE, VIVIAN CHIZOMA</i>	27
6.	THE IMPACT OF HRM PRACTICES HAVING A MEDIATING EFFECT OF ORGANIZATIONAL COMMITMENT ON ORGANIZATIONAL PERFORMANCE <i>IFFAT RASOOL & JAMILA KHURDHID</i>	33
7.	ENTREPRENEURSHIP DEVELOPMENT THROUGH HUMAN RESOURCE MANAGEMENT PRACTICES <i>P.MALARVIZHI & DR. P.UMA RANI</i>	37
8.	SELF-MEDICATION IN YOUTH: A SURVEY IN JAIPUR <i>SMRITI OJHA & DR. SUNIL JAKHORIA</i>	41
9.	CUSTOMERS' PERCEPTION TOWARDS SERVICE QUALITY OF INTERNET BANKING SERVICES IN COIMBATORE DISTRICT, TAMIL NADU, INDIA <i>NEETA INDORKER, DR. N. AJJAN, DR. S. D. SIVAKUMAR & D. MURUGANANTHI</i>	45
10.	ECONOMIC PERSPECTIVE OF CHILD LABOR - IT'S IMPLICATIONS AND PREVENTIVE MEASURES: A STUDY ON UNORGANIZED SECTOR IN VISAKHAPATNAM, A.P., INDIA <i>DR. M.V.K. SRINIVAS RAO & B. OMNAMASIVAYYA</i>	50
11.	HAZARDOUS WASTES: INDUSTRIAL CONCENTRATION AND POLLUTION INTENSITY IN ANDHRA PRADESH <i>DR. PRABHA PANTH</i>	55
12.	CHANGING WORK SCENARIO- A CAUSE FOR STRESS AMONGST BANK EMPLOYEES <i>VISHAL SAMARTHA, DR. MUSTIARY BEGUM & LOKESH</i>	62
13.	A STUDY ON CONSUMER BEHAVIOUR OF MINI PUMPS IN DOMESTIC SECTOR <i>G. DEVAKUMAR & DR. G. BARANI</i>	67
14.	SHOPPING MOTIVES OF CONSUMERS TOWARDS ORGANIZED RETAIL SECTOR IN ODISHA <i>CHINMAYEE NAYAK & DR.DURGA CHARAN PRADHAN</i>	74
15.	CURRENT STATUS AND CHALLENGES IN IMPLEMENTING INFORMATION AND COMMUNICATION TECHNOLOGY INITIATIVES IN EDUCATION IN INDIA <i>JAYASHREE SHETTY & DR. FAIYAZ GADIWALLA</i>	78
16.	USING WEB SERVICES IN ENTERPRISE COMPUTING AND INTERNET APPLICATION DEVELOPMENT <i>DR. PANKAJ KUMAR GUPTA</i>	84
17.	TEXT CATEGORIZATION USING FPI METHODOLOGY <i>M. PUSHPA & DR. K. NIRMALA</i>	87
18.	APPLYING AND EVALUATING DATA MINING TECHNIQUES TO PREDICT CUSTOMER ATTRITION: A SURVEY <i>AFAQ ALAM KHAN, NASIR HUSSAIN & PARVEZ ABDULLAH KHAN</i>	90
19.	IMAGE EDGE DETECTION USING MORPHOLOGICAL OPERATION <i>PADMANJALI. A.HAGARGI & DR. SHUBHANGI.D.C</i>	97
20.	PERFORMANCE AND EVALUATION OF CONSUMER FORUMS – A CASE STUDY OF WARANGAL DISTRICT <i>T. VIJAYA KUMAR & M. RADHA KRISHNA</i>	102
21.	PROSPECTS OF TRADITIONAL THERAPY: CONSUMER'S PERCEPTION - AN EMPIRICAL STUDY OF RURAL MARKET WITH SPECIAL REFERENCE TO INDORE DISTRICT <i>SWATI KEWLANI & SANDEEP SINGH</i>	108
22.	STATE FINANCIAL CORPORATIONS AND INDUSTRIAL DEVELOPMENT: A STUDY WITH SPECIAL REFERENCE TO RAJASTHAN FINANCIAL CORPORATION <i>SUSANTA KANRAR</i>	112
23.	A STUDY OF CUSTOMER LOYALTY WITH REFERENCE TO PRIVATE AND PUBLIC SECTOR BANKS IN WESTERN MAHARASHTRA <i>NITIN CHANDRAKANT MALI</i>	118
24.	ANALYSIS OF EARNINGS QUALITY OF SELECTED PUBLIC, PRIVATE AND FOREIGN BANKS IN INDIA <i>SAHILA CHAUDHRY</i>	126
25.	SOLUTION OF MULTICOLLINEARITY BY RIDGE REGRESSION <i>R. SINGH</i>	130
26.	AN IMPACT OF CELEBRITY ENDORSEMENT ON THE BUYING BEHAVIOR OF YOUTH <i>RAVINDRA KUMAR KUSHWAHA & GARIMA</i>	136
27.	A STUDY ON ANALYSIS OF SHARE PRICE MOVEMENTS OF THE SELECTED INDUSTRIES BASED ON NIFTY STOCKS <i>C. SOUNDAR RAJAN & DR. S. SANGEETHA</i>	142
28.	INCREASING NETWORK LIFETIME WITH ANGLED-LEACH PROTOCOL IN WSNs <i>DEEPTI GARG & ROOPALI GARG</i>	147
29.	THE IMPACT OF CONTENTS ON NATIONAL AND INTERNATIONAL UNIVERSITY WEBSITES NAVIGATION BEHAVIOUR <i>SUNITA S. PADMANNAVAR & DR. MILIND J. JOSHI</i>	152
30.	ULTRA SOUND BREAST CANCER IMAGE ENHANCEMENT AND DENOISING USING WAVELET TRANSFORM <i>K. HAKKINS RAJ.</i>	158
	REQUEST FOR FEEDBACK	162

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IMAGE EDGE DETECTION USING MORPHOLOGICAL OPERATION

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ABSTRACT

Edges define the boundaries between regions in an image, which helps with segmentation and object recognition. The usual existing edge detection methods like LoG, Canny, Sobel, Prewitt etc. They make use of maximal gradient value or zero-crossing point of second-order derivatives operator or appropriate threshold value obtain image edge. They all belong to high pass filter and unsuitable to detect the noise corruption of the medical image, because noise and edge are located in high frequency domain. Morphological edge detectors involve simple addition/subtraction operations and max/min operations. Since different edge detectors work better under different conditions, it would be ideal to have an algorithm that makes use of multiple edge detectors, applying each one when the scene conditions are most ideal for its method of detection. In order to create this system, it is first required to know which edge detectors perform better under which conditions. Clear edges can show where shadows fall in an image or any other distinct change in the intensity of an image. The process of extraction of these feature points is called edge detection.

KEYWORDS

edgedetection; multi-scalestructure element; Magnetic Resonance Images; Mathematical Morphology.

I. INTRODUCTION

Image edge detection is an important work for modern medical image process. The purpose of edge detection confirms the edge of objective contour in noise image. The result of edge detection affects the next diagnoses and therapy [1]. The usual methods are: Log operator, Canny operator, Sobel operator, Prewitt operator etc. They make use of maximal gradient value or zero-crossing point of second-order derivatives operator or appropriate threshold value obtain image edge. They all belong to highpass filter and unsuitable to detect the noise corruption of the medical image, because noise and edge are located in high frequency domain. In practical application medical image usually includes objective edge, objective shadow and noise, so it is difficult to separate edge from noise and the other jamming. Morphological edge detectors involve simple addition/subtraction operations and max/min operations. Since different edge detectors work better under different conditions, it would be ideal to have an algorithm that makes use of multiple edge detectors, applying each one when the scene conditions are most ideal for its method of detection. In order to create this system, it is first required to know which edge detectors perform better under which conditions. In this paper, a new morphological method based multiscale edge detection is proposed to detect edge. It gains the better image edge via changeable structure elements. The experimental results show that the new algorithm is more efficient.

II. THE TRADITIONAL MORPHOLOGICAL EDGE

DETECTION OPERATION

The corrected resistances to noise operations are:

$$OME1 = (f \bullet B) \circ B - (f \bullet B) \odot B \quad (1)$$

$$OMD1 = (f \circ B) \oplus B - (f \circ B) \bullet B \quad (2)$$

When the corrected resistance to noise operations OME1 and OMD1 detect edge, responses are all zero for positive and negative pulse to filter noise effectively. But blurred edge is gained [9]. To decrease edge fuzzy performance, to gain better image edge details and restrain capacity of noise, the modified morphological edge detection operations are shown as follow:

When the corrected resistance to noise operations OME1 and OMD1 detect edge, responses are all zero for positive and negative pulse to filter noise effectively. But blurred edge is gained [9]. To decrease edge fuzzy performance, to gain better image edge details and restrain capacity of noise, the modified morphological edge detection operations are shown as follow:

$$E_{min} = \min \{ OME1, OMD1 \}$$

$$E_{max} = \max \{ OME1, OMD1 \}$$

$$E_d = E_{max} - E_{min} \quad (3)$$

Improved morphological edge detection operation is defined by the expression:

$$ED = OMD1 + E_d \quad (4)$$

Fuzzy edge is decreased by iterating some edge details of the improved operation. The increased ability of noise rejection and the better edge image lie on the changeable structure elements.

III. THE NEW ALGORITHM OF MORPHOLOGICAL

EDGE DETECTION

A. Algorithm Description

The result is directly influenced by the selected structure element [10-12]. In this paper original image is divided into two parts: objection f' and background f_2 . The part which is larger than the threshold uses large-scale structure element to detect the edge, and uses small-scale structure element for the part less than the threshold. The large-scale structure element is obtained via dilating small-scale structure element and MSE (Mean-Squared Error) and PSNR (Peak Signal-to-Noise Ratio). It can be defined as in (11) and (12):

$$MSE = \frac{\sum_{0 \leq i < M} \sum_{0 \leq j < N} (f - f')^2}{M \times N} \quad (5) \quad (10)$$

$$PSNR = \frac{10 \log_{10} 256 \times 256}{MSE} \tag{6}$$

Where the adjusting factor is a , f' is original image and processed image respectively, M and N is image size. Edge image is obtained via large and small-scale morphological operations additive combination:

$$f'(x, y) = w_1 * ED_1(x, y) + w_2 * ED_2(x, y) \tag{7}$$

Where $f(x, y)$ is the combined edge image, w_1 and w_2 are weights.

B. Methodology Overview

Based on foregoing analyses, the better image edge is obtained in terms of algorithm which is shown as below:

- 1) *Select threshold:* Firstly, we estimate an approximate threshold to be regarded as initial value; secondly, segment the image to gain sub-image, then select a new threshold via character of sub-image. The image is segmented by the new threshold after several iterations; finally, the result including the less false partition is gained. The method is better than direct partition for initial threshold. The key is that update threshold. .
- 2) *Select limited structure element B:* B_i is the large-scale structure element which is obtained from dilating small-scale structure element B : $B_i = B \circ \dots \circ B$, ($i = 2, 3, 4, \dots, n$)
- 3) *Compute MSE and PSNR on the basis of (6) and (7):* If $MSE < M$ (M is expected value), continue to step 4, or $i=i+1$ to step 2
- 4) *Detect the edge ED_1 and ED_2 of f' and f_2 in terms of step 2*
- 5) *Additive combination ED_1, ED_2 to gain edge image based on formula (7):*

In this paper non-mean weight is adopted to detect the better edge image and filter noise. Different scale possesses different ability of noise rejection to confirm the weight w_1 and are w_2 in (7) [13]:

1) *The synthetic operations of open-close filter noise using the structure element in step 2:*

The respective mean image is obtained:

$$e_1 = \frac{f \circ B \circ B + f \circ B \bullet B}{2}$$

$$e_2 = \frac{f \bullet B_i \circ B_i + f \circ B_i \bullet B_i}{2}$$

2) *Compute image standard deviations:*

$$\Delta 1 = |f - e_1| \quad \Delta 2 = |f - e_2|$$

and variances

$$\Delta 1^2 = |f - e_1|^2 \quad \Delta 2^2 = |f - e_2|^2$$

3) *Confirm weight in terms of standard deviations and variances of different scale image:*

$$W_1 = \frac{\Delta 2}{\Delta 1 + \Delta 2} \quad \text{or} \quad W_1 = \frac{\Delta 2^2}{\Delta 1^2 + \Delta 2^2}$$

$$W_2 = \frac{\Delta 1}{\Delta 1 + \Delta 2} \quad \text{or} \quad W_2 = \frac{\Delta 1^2}{\Delta 1^2 + \Delta 2^2}$$

That is, in inverse proportion to the difference between selected weight and corresponding image. The weight of large-scale is larger than small-scale.

IV. EXPERIMENT

The source image used for simulating experiment is shown in Fig.2 (a). It is MRI (Magnetic resonance image) of brain tumor; the size is 467 X 529. The proposed algorithm as above detects Gaussian and salt & pepper noise corrupted image edge. The selected structure element is 3 X 3 cross.

FIGURE 1: a) ORIGINAL IMAGE

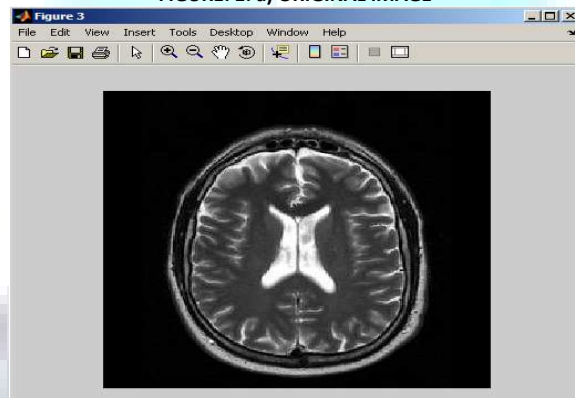
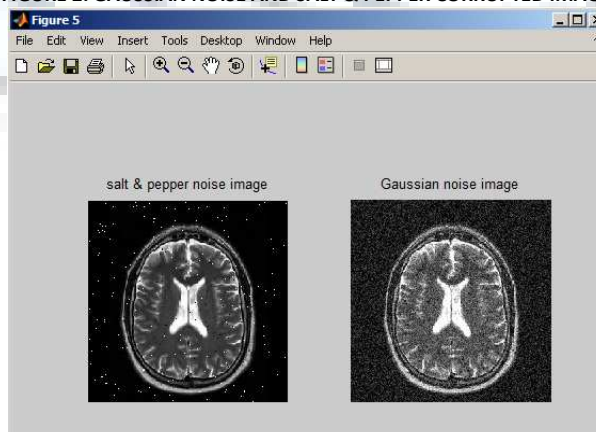


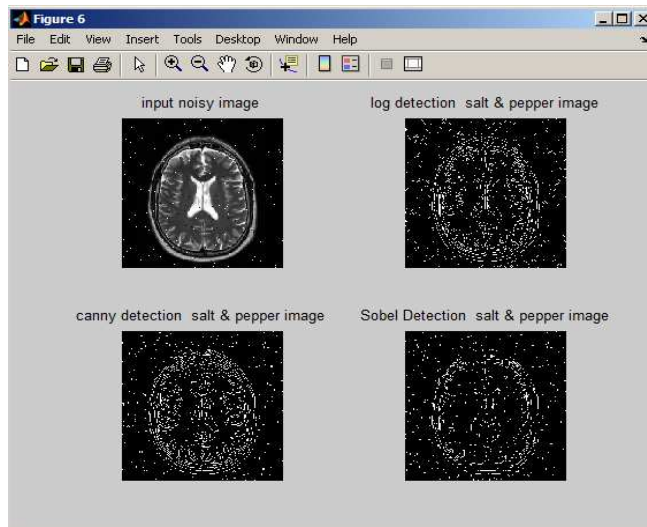
FIGURE 2: GAUSSIAN NOISE AND SALT & PEPPER CORRUPTED IMAGE



A. Comparison with widely known methods

To testify the effectiveness of the proposed algorithm, we detect edge for Gaussian and Salt & pepper noise corrupted image using the traditional gradient-based operations: Canny, Laplacian of Gaussian and Sobel methods and the proposed method in the study. The result is shown as follow:

FIGURE 3: RESULTS OF SALT & PEPPER CORRUPTED IMAGE DETECTION



B. Noise corrupted image detection

From the experimental results Fig.2 and Fig.3, we think that the better edge is gained, the more dilation numbers, the focus of infection is clear. It helps doctor to make sure the state of illness ponderance and confirm how to cure. Circular iteration is needed in dilation. This increases the computational time of processing. It is very important to select suitable dilation times. Different image selects different dilation times to gain better detection edge. Image. The dilation results are as follows:

FIGURE 4: FIRST DILATION OF IMAGE

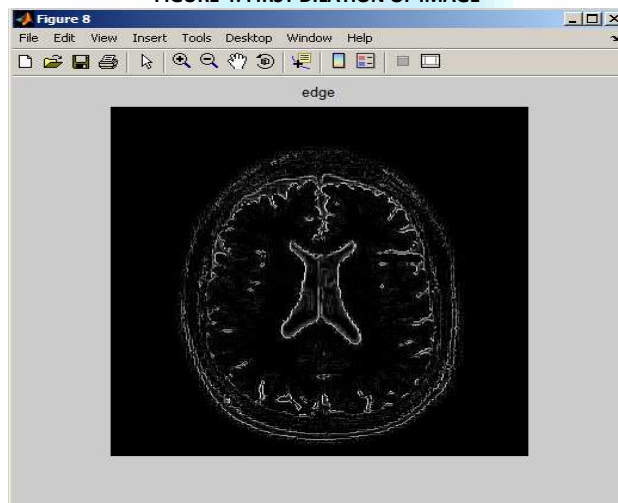


FIGURE 5: SECOND DILATION OF IMAGE

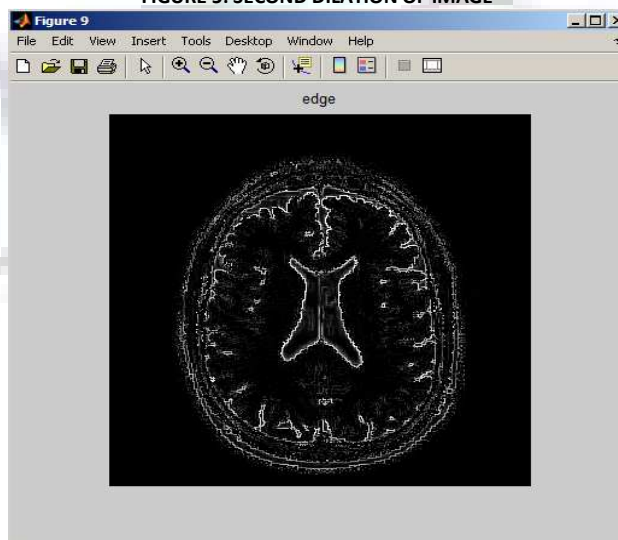
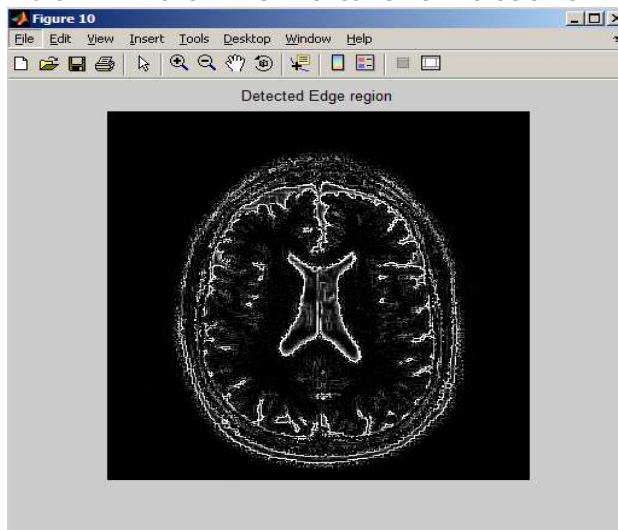


FIGURE 6: CLEAR DETECTION IMAGE EDGE USING MORPHOLOGICAL OPERATION



C. Computational comparisons

The comparisons of widely known methods is compared using our algorithmic method is an shown in the graph for both salt & pepper and Gaussian noised images:

FIGURE 7: THE RESULTS OF GAUSSIAN CORRUPTED IMAGE DETECTION

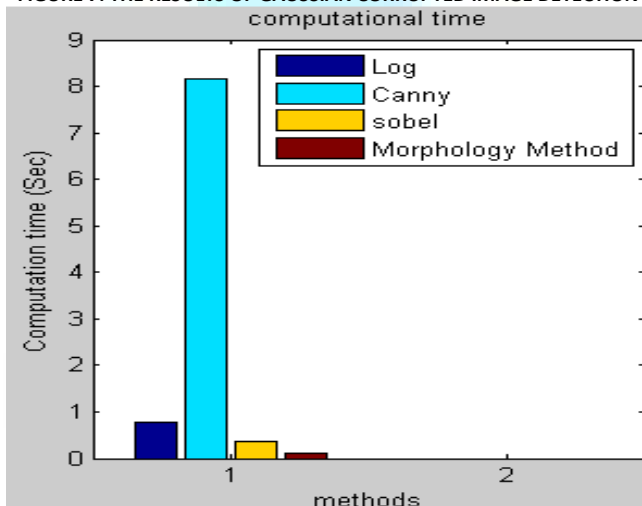


FIGURE 8: THE RESULTS OF SALT & PEPPER NOISE CORRUPTED IMAGE DETECTION

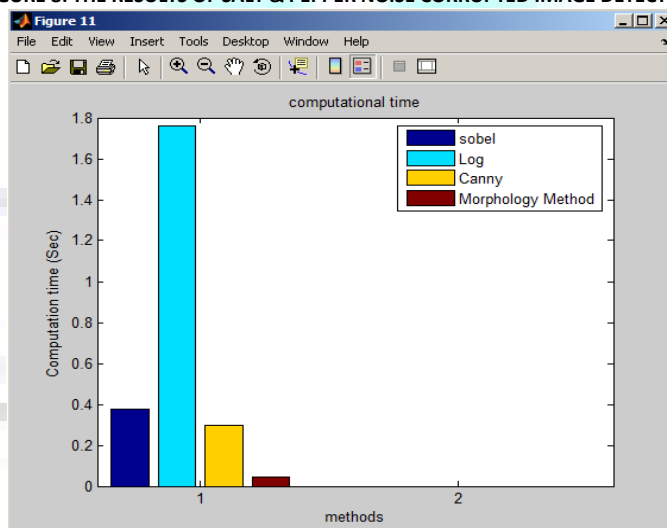


Fig.1a is noise corrupted image. Fig.3 show the results obtained with Log edge detection, Canny edge detection, Sobel edge detection and our proposed method is as shown in fig.4,5 & 6 as first dilation second dilation and finally the detected edge. It is can be seen from these figures that the edge image obtained with our method detected clearer edge which is not detected by Canny method, Log method and sobel method. It is sensitive to noise for widely known methods. The edge obtained with Sobel that is not integrated; Log has weak edge location; Canny detects the thinner edge and discontinuous focus of infection. All of them are not benefit for the research of infection focus. Our proposed method can obtain clearer edge for infection focus where the two noises corrupted (Gaussian and Salt & pepper noise) image. It is not sensitive to noise and in favor of analyzing state of an illness and later cure. It is can be seen from these figures and under noisy condition, our method can still get better image, and less the calculation time, than the well-known Canny, Laplacian of Gaussian and Sobel methods.

V. CONCLUSION

Image edge is not clear for some pathology or any other field in special reason. The clear edge is important to cure illness. In this paper original image is divided into two parts: objection and background. The part which is larger than the threshold uses large-scale structure element to detect the edge, and uses small-scale structure element for the part less than the threshold. Large-scale structure element is obtained by dilating small-scale structure element.

The experimental results show in fig.3, is that the algorithm is more efficient for even medical image denoising and edge detecting than the usually used gradient-based edge detection algorithms such as Log operation and Sobel edge detector, and Canny operation and is very efficient method as shown in the fig 7& 8 for Gaussian and Salt & pepper corrupted image.

Edge detection is an important task in any image analysis system. The response of the conventional edge detectors are largely dependent on the size of spatial filters (area of support) and the threshold (cut off level) used. The choices of those parameters remain heuristic due to the absence of proper image model. This problem is greatly reduced when a multi-scale approach for integrations of edge information, obtained from various size of filters, is used. The present work proposed morphological operation based on multi-scale edge detector.

It is shown that the proposed detector has better noise immunity and orientation and positional response compared to most of the conventional morphologic edge detectors. This present work is computationally less expensive and is more efficient and effective than sophisticated edge detectors like Log, Canny and Sobel edge detector, with comparable result. They all belong to high-pass filter and unsuitable to detect the noise corruption of the medical image, because noise and edge are located in high frequency domain.

The proposed work detects fine edge with cleared Gaussian and salt & pepper noise corrupted image which is very helpful for any practical applications

VI. FUTURE SCOPE

The present work can be extended to work with different types of noises. It can be enhanced to work more with natural image segmentation. It can be implemented in many practical applications like to help doctors to make sure the state of illness and confirm how to cure detect any bone fracture. This work in future can also be used to work in most Image Processing applications to obtain information from frames as precursor step to feature extraction and object segmentation. It can be extended to work on many different practical applications of image edge detection.

- Multi-Scale edge detection in Machine Vision Gauging applications such as inspection for missing parts, measurement of critical part dimensions using gauging, and identification and verification of electronic user interface displays.
- This technique is also used in a Mobile Robot Vision System, it is of vital importance to separate objects from the background. This needs firstly to extract edges from the images collected by the mobile robot

VII. REFERENCES

1. A P Richard. "A New Algorithm for Image Noise Reduction Using Mathematical Morphology" .IEEE Transaction on Image Processing. 1995:4(3),554-568
2. Bob Fisher, Simon Perkins, Ashley Walker, Erik Wolfart, "Sobel Edge Detector." Internet: <http://www.cee.hw.ac.uk/hipr/html/sobel.html>, 1994, [cited 2007 June 13].
3. Harris, C. and M. Stephens. "A Combined Corner and Edge Detector". Fourth Alvey Vision Conference, pp.147-151, 1988.
4. J. F. Canny. "Finding edges and lines in images. Master's thesis", MIT. AI Lab. TR-720, 1983.
5. J. F. Canny. A computational approach to edge detection. IEEE Trans. Pattern Analysis and Machine Intelligence, 8(6):112-131, 1986.
6. John C. Russ, "The Image Processing Handbook", Chapter 3,4,6,7.
7. Kenneth R. Castleman, "Digital Image Processing", Chapter 6,7,18.
8. Kovesei, Peter, "Edges are not just steps", Department of Computer Science, University of Western Australia, January 2002, <http://www.cs.uwa.edu.au/pub/robvis/papers/pk/ACCV62.pdf>
9. LIU Xun; YOU Zhi-sheng. An Image Edge Detection Method Based on Multi-Scale Morphology [J]. Opto-electronic Engineering. 2003, 30(3):56-58Vol. 17, 1996, pp. 1057-1063.
10. Lu Guanming Li Shuhong. Multiscal Morphological Grodient Algorithm And Its Application In Image Segmentation [J]. Signal Processing, 2001, 2(7):37-41
11. Marr and E. C. Hildreth. Theory of edge detection. Proceedings of the Royal Society, London B, 207:187-217, 1980.
12. R. A. Owens, S. Venkatesh, and J. Ross. Edge detection is a projection. Pattern Recognition Letters, 9:223-244, 1989.
13. Robyn Owens, "Mathematical Morphology." Internet: http://homepages.inf.ed.ac.uk/rbf/CVonline/LOCAL_COPIES/OWENS/LECT3/node_3.html, 1997, [cited 2007 June 13].
14. Sonka, Milan, "Digital Image Processing: Chapter 5, Part 1 Segmentation: Thresholding", University of Iowa, Class 55:148 Digital Image Processing. Lecture Notes, <http://www.icaen.uiowa.edu/~dip/LECTURE/Segmentation1.html>
15. William Green, "Edge Detection Tutorial." Internet: <http://www.pages.drexel.edu/~weg22/edge.html>, 2002, [cited 2007 Apr 5].
16. Woods, Richard, Gonzalez, Rafael, "Digital Image Processing", Second Edition, Prentice Hall, 2002
17. Yang Shubin, Peng Fuyuan Application of Morphological Edge Detectors in Image Corrupted by Noise [J]. Computer Engineering and Applications. 2002, 30 (17): 91-92.
18. Zhao Yu-qian, Gui Wei-hua, Chen Zhen-cheng, Tang Jing-tian and Li Ling-yun, "Medical Images Edge Detection Based on Mathematical Morphology," in Proc. IEEE-EMBS, 2005, pp. 6492-6495.

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