

Performance Analysis of Skin cancer Classification

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Abstract: Skin cancer is one of the diseases in the modern world which causes death to quite a few number of patients. Medical professionals and researchers are trying to find the root cause of the disease and produce effective medicines for the same. Most of the patients don't know about their skin cancer till it is in final stages.

Recent work has shown that skin cancer recognition from images is possible via supervised techniques such as combined with feature extraction techniques. Other supervised classification techniques, such as k-nearest neighbors also group pixels based on their similarities in each feature image can be used to classify the normal/abnormal images. Therefore image processing become our choice for an early detection of the skin cancer, as it is non-expensive technique.

Keywords: Skin cancer, health problem, diseases, radiation, Melanoma.

I. INTRODUCTION

This research work is fruitful for medical experts as well as patient of cancer. This research work is helpful in detection of cancer disease in early stage, better diagnosis, and provides preventive measure before the situation becomes critical [1]. This research work uses data mining approach and beneficial for cancer patient medical experts of society. Although the outlook for surviving cancer is often very good, it almost always requires medical intervention. The most common treatment modalities for cancer are surgery, radiation therapy, and systemic therapy (i.e., drugs) [2]. These medical interventions have documented survival advantages, but the implications for QOL are not trivial. Surgery is performed on about 60% of cancer survivors [3]. Depending on the location and extent of the operation, significant morbidity can occur (e.g., wound complications, infections, loss of function, decreased range of motion, diarrhea, dyspnea, pain, numbness). Over 50% of cancer survivors may undergo radiation therapy at some point during the treatment process [4]. Radiation therapy is typically delivered in repeated small doses (i.e., Fractions) over a 5- to 8-week period to maximize the killing of cancer cells and minimize the damage to normal cells. Nevertheless, toxicity to normal tissue does occur but is dependent on the site that is irradiated (e.g., pain, blistering,

reduced elasticity, decreased range of motion, nausea, fatigue, dry mouth, diarrhea, lung fibrosis, and cardiomyopathy) [5,6].

II. PROPOSED WORK

Image pre-processing is an essential step of detection in order to remove noises and enhance the quality of original image [7]. It required to be applied to limit the search of abnormalities in the background influence on the result [8]. The main purpose of this step is to improve the quality of melanoma image by removing unrelated and surplus parts in the background of image for further processing. Good selection of preprocessing techniques can greatly improve the accuracy of the system [9]. The total framework of techniques followed in preprocessing stage of medical image processing is illustrated in Fig. 1.

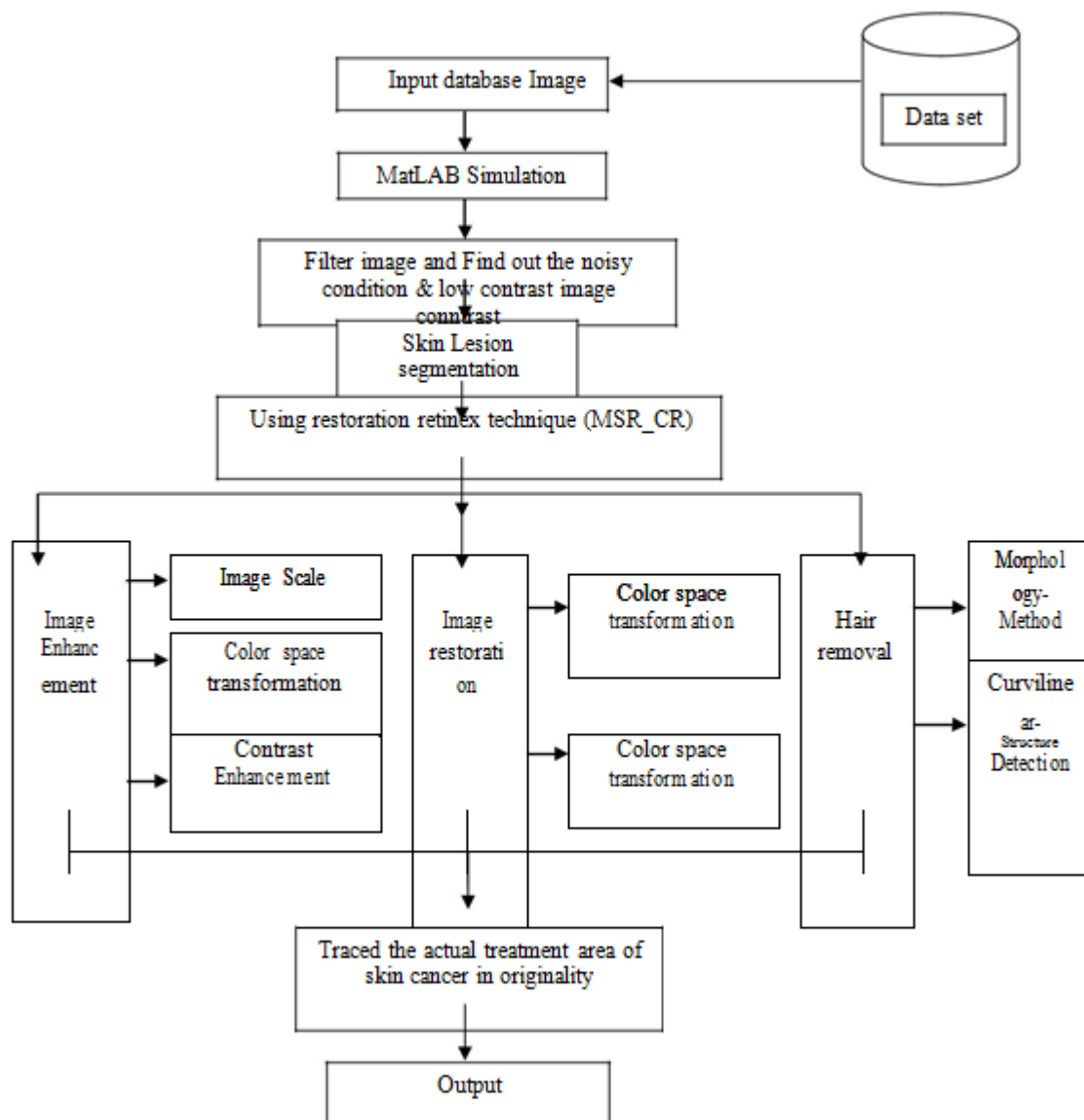


Fig.1: Flow Diagram of Image Pre-Processing is an Essential Step Skin Cancer System.

III. IMPLEMENTATION

The proposed colour and contrast enhancement scheme is simulated on standard color images of improved skin lesion segmentation such as peppers and also on few real time images[10]. Low contrast images were subjected to the retinex based enhancement techniques i.e. MSRCR and SSR. It was observed experimentally that SSR scheme is able to enhance to a much better extent than MSR. The image results obtained using SSR contains much higher image details such as edges and color information are preserved even under noisy conditions [11]. Since there is no standard objective criteria for comparing the results subjective results are presented below. The simulation work is based on MATLAB and it is therefore included the survey of research work where MATLAB based simulation is implemented [12].

Image denoising is an essential step in preprocessing of an image. It is extremely difficult to apply an effective denising algorithm for different types of noisy images[13]. The essential property of a good image denoising method is to suppress the noise as well as preserving the edges[14].

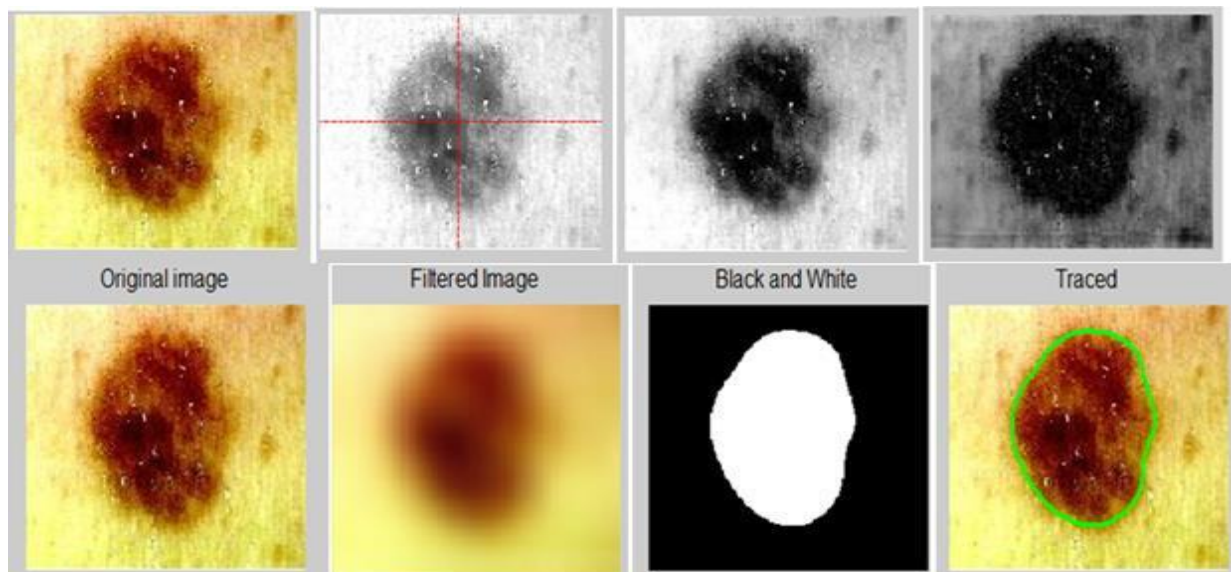


Fig.1.1. Original Image, Adaptive Histogram Equalization, Histogram Equalization, Unsharp Masking, original image, filtered image, black and white, traced skin cancer image.

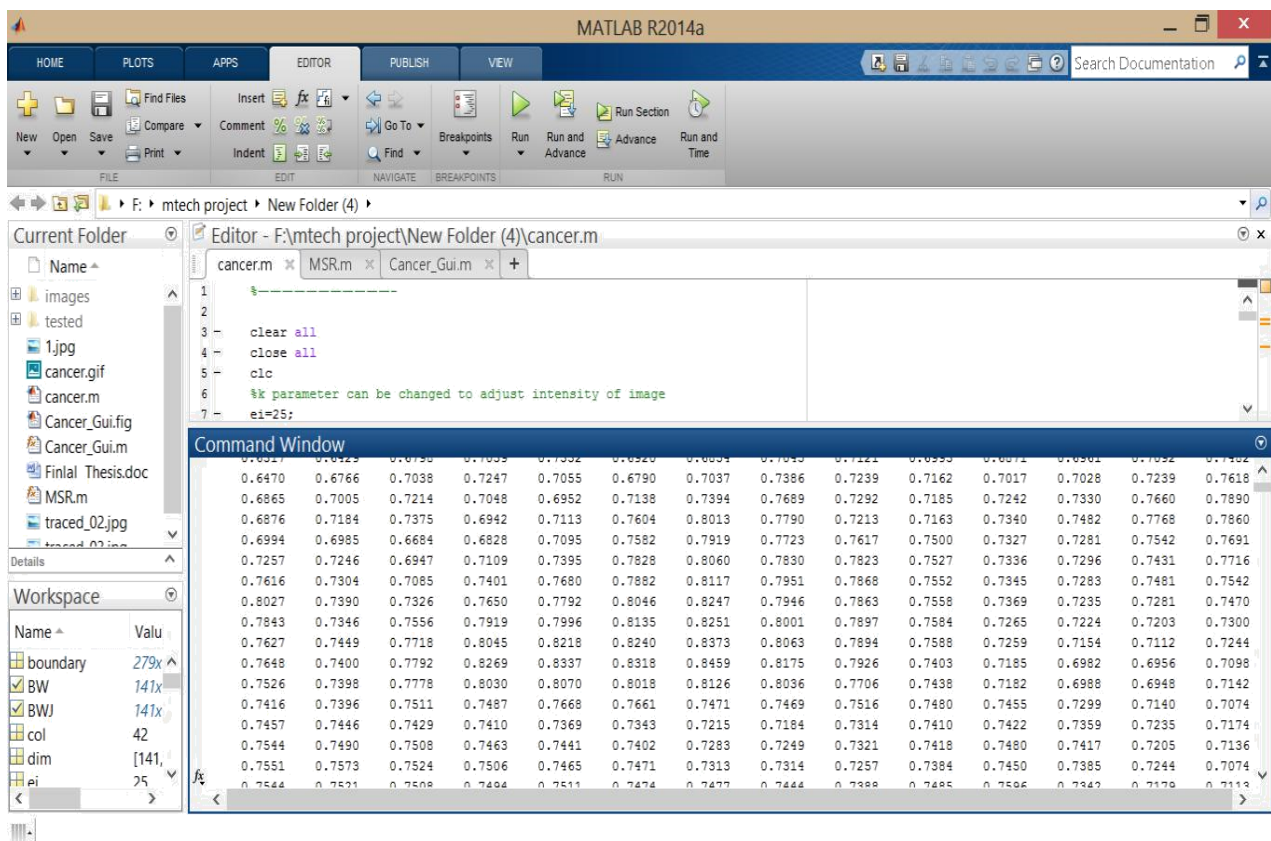


Figure 1.2: boundary value calculation.

Image Restoration is defined as the procedure to recover the degraded image from a blurred and noisy one [15]. It can restore the degraded images in different ways. The image degradation can happen by various defects such as imperfection of imaging system, bad focusing, motion and etc. which make an image usually noisy or blur [16]. Since the corrupted images lead to fault detection, hence, it is essential to know about noises present in an image to select the most appropriate denoising algorithm. The image noises can be divided into four groups of Gaussian, Salt and Pepper, Poisson and Speckle [17].

IV. RESULTS ANALYSIS

The proposed enhancement scheme is simulated on standard color images such as hospital and also on few skin cancer images[18]. We acquire the image from any external source like digital camera medical equipment etc. Then some possibility occurs for images degradation which causes features cannot be calculated more precisely [19]. Low contrast images were subjected to the retinex based enhancement techniques i.e. MSRCR and SSR. It was observed experimentally that SSR scheme is able to enhance to a much better extent than MSR[20,21]. The image results obtained using SSR contains much higher image details such as edges and color information are preserved even under noisy conditions [22]. Since there is no standard objective criteria for comparing the results subjective results are presented below.

V. CONCLUSION

The medical profession mentions the increasing epidemic of skin cancer but the unique nature of the visibility and accessibility of the skin allows easy and rapid assessment of potentially malignant lesions [23]. The only tools required are clinical acumen and a thorough knowledgeable approach. If more medical professional practice these strategies regularly and routine, a reduction in this epidemic is certainly an achievable goal[24].

- The developed s/w will be for the detection a Cancer / Calculation a boundary area / apply / retinex technique for enhancement of the system performance.
- To apply retinex theory MSR-CR Algorithm for enhancing image quality.
- This will be helpful in finding out better results for poor quality of images.
- This will be helpful for Low cost quality treatment.

VI. FUTURE WORK

A Proposed work used Retinex theory it is done by simulation process with using of MATLAB .So in future it was Develop of parallel algorithms MSRCR can also be done to automated colour calibration method for Dermoscopy image.

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