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Detection of improvement in the treatment for skin cancer using image processing techniques

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ABSTRACT

This paper presents an innovative idea for identifying the improvement in the treatment for skin cancer from the sequence of photographs of cancer affected area for the patient's who are having sodium bicarbonate as medicine as suggested by the Doctor. The proposed scheme uses two methods for classification of skin cancer. These methods are compared for their effectiveness. The improvement in the treatment was also tested and proved.

Indexing terms/Keywords

Feature extraction, Skin cancer, Principal Component Analysis, Segmentation, sodium bicarbonate, ABCD

Academic Discipline And Sub-Disciplines

Biological Image Processing and Skin Cancer Detection

SUBJECT CLASSIFICATION

Computer Sceince and Engineering

TYPE (METHOD/APPROACH)

Experimental approach to detect the improvement in treatment for skin cancer

1. INTRODUCTION

Skin cancer can be defined as skin expansion with conflicting causes and a variety of degrees of malignant cells. Skin cancer can be seen since it develops on skin. The major reason for Skin cancer is UV radiations coming from the sun. This is because of the fair skin tone of the skin and so less melanin. It has been statistically verified that people with fairer skin tone are greatly prone to tanning and is prone to skin cancer. Cancer is the common name for a collection of more than 100 diseases. Even though there are different types of cancer, all cancers happen due to the uncontrolled growth irregular cells. Untouched cancers can cause serious illness and death. Skin cancer is the generally happening cancer. Skin cancer develops on skin through skin cells. Skin cancer is classified into basal cell cancer, squamous cell cancer and Melanoma based on the type of skin cells.

2. METHODOLOGY AND IMPLEMENTATION

Based on the research done and presented by the authors of the article [1], preprocessing is an image enhancement technique to improve the quality of an image prior to the analysis of the indication. The following methods are mixed up in preprocessing.

- Edge detection
- Segmentation
- Canny method
- Sobel Edge Detection Filter
- Water Shed Method
- Principal Component Analysis

Fig 1 represents the classification by ABCD / PCA model. Fig 2 represents an input image of a skin cancer and the skin cancer image is segmented by using watershed method, then edge detection was carried out. Edge detection was done by canny method and filtering is done for removing noises from the given image using Sobel filter to get the clear edges as in Fig 3.

Fig 4 represents the fractal dimensions of the original image and Fig 5 represents the fractal dimensions of the edge detection image. After that the classification is done using ABCD method. Many input images are classified here. But only 5 images values are tabulated. Table 1 represents benign images and suspicious by extracting the features of ABCD and TDS score. Table 2 represents Malignant images values for the given input images. Second classification uses Principal component Analysis method. In that A,B,C,D values are given for training and testing is done. By using MATLAB tool, the result of PCA was compared. If the value is 1 then it is malignant. If it is less than 1 then it is benign.

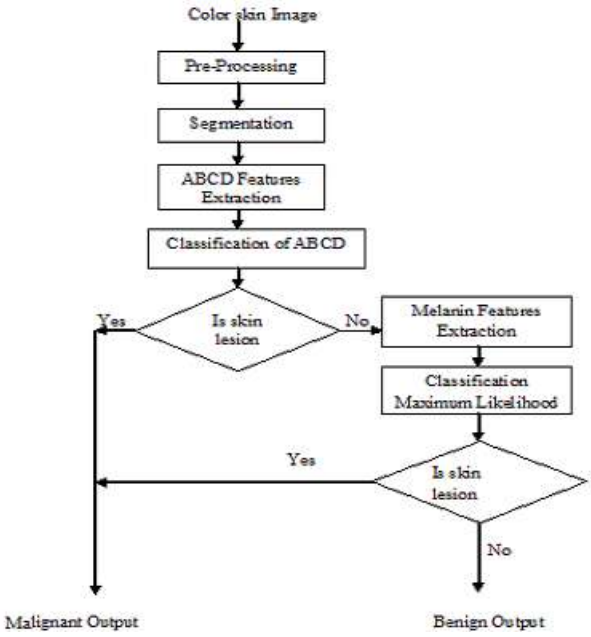

Fig 1. Classification by ABCD / PCA Method

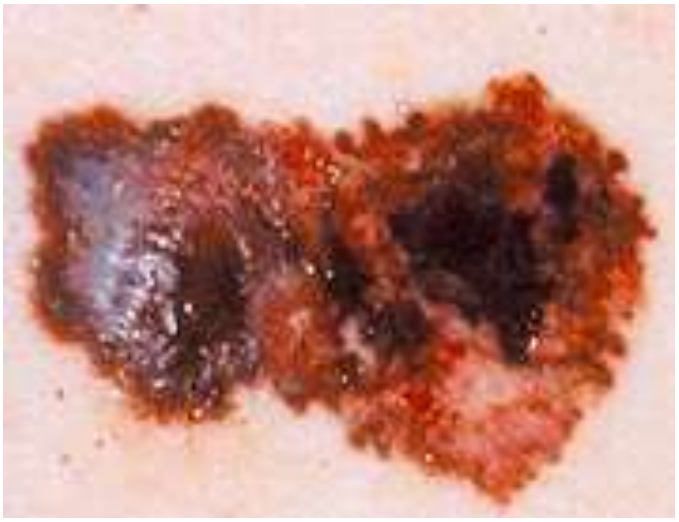

Fig 2: Input Image

Fig 3: Edge detection of Fig 2

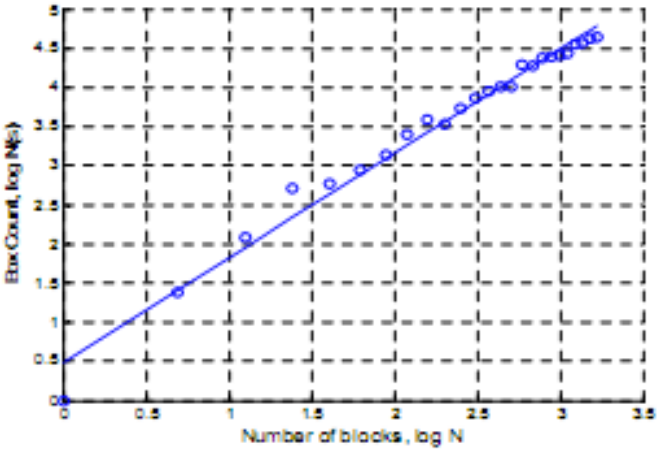

Fig 4: Fractal dimensions of original image

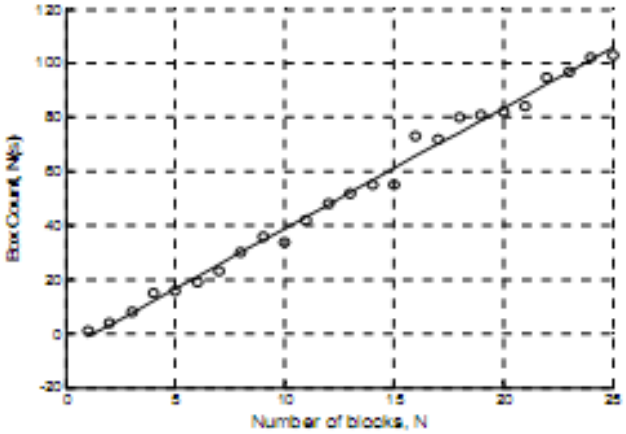

Fig 5: Fractal dimensions of edge detection image

	1	2	3	4	5
A	0.0556	0.1580	0.0867	0.3679	0.2071
B	0.3727	0.4134	0.3326	0.7130	0.9031
C	2.0000	2.0000	1.5000	1.5000	1.5000
D	2.5000	2.5000	2.5000	2.5000	2.5000
TDS	4.9283	5.0714	4.4193	5.0809	5.1102

Table 1: Results of Benign

	1	2	3	4	5
A	0.2321	0.1305	0.1653	0.2071	0.1904
B	1.6255	0.4154	0.5210	2.6387	1.7511
C	3.0000	3.0000	3.0000	2.5000	2.0000
D	2.5000	2.5000	2.5000	2.5000	2.5000
TDS	7.3576	6.0459	6.1863	7.8458	6.4415

Table 2: Results of Malignant

3. TREATMENT METHOD

Dr. Simoncini [2] invented that the reason of this horrible infection is a fungus and aimed hard to convince scientists how mistaken are the authentic theories on cancer. His treatment based on the powerful antifungal essence (sodium bicarbonate) is risk-free, very effective and must be taken up all over the world.

The finest method to strive to eradicate a cancer is to carry it into get in touch with sodium bicarbonate as intimately as possible i.e. using enemas for the rectum, oral administration for the digestive tract, intravenous vaccination for the lung and the brain, douching for the vagina & uterus and gasp for the higher airways. Subcutaneous lumps, breasts and lymph

nodes can be given treatment with limited perfusions. The internal organs can be given treatment with sodium bicarbonate by positioning appropriate catheters in the blood vessels or in the hollow spaces.

It is vital to treat each and every kind of cancer with the accurate quantity. 500 cc at 5 % or 8.4% is required for a phleboclysis. It is sufficient to tang if the solution is salty for exterior administrations. Occasionally, it is cautious to mingle different administrations. Take into contemplation for every treatment that cancer gatherings retreat between the 3rd & 4th day and crumple between the 4th and 5th with the intention that a six day supervision is adequate.

An absolute effectual cycle is fabricated of six treatment days on and six days off that is repeated for four times. The most significant undesirable effects of this care system are dehydration and weakness.

A 7% iodine tincture must be stretched on the infected area for skin cancer for 20 to 30 times in a day with the intension of fabricating a number of layers of shells. The cancer will be disappeared and stay away evermore after this treatment.

4. RESULTS AND DISCUSSION

Some of the skin cancer patients were identified. Initially, the skin affected images of all the patients have been collected and the methods specified in [1] have been implemented on those images. The result shows the initial stage of skin cancer. The initial stage was malignant.

The treatment mentioned by Dr. Simoncini has been started for the patients. In a regular interval (once in 2 weeks), the images of skin affected area, where the treatment was applied, are collected from all the patients and the results were obtained from the recently collected images. The results were compared with our previous results. It was identified that there was an improvement clinically in the skin affected area. The same was done for 6 times (for 12 weeks). It was unpredicted result that the malignant became benign. As in Fig 6, the reduction in value shows the improvement in skin cancer.

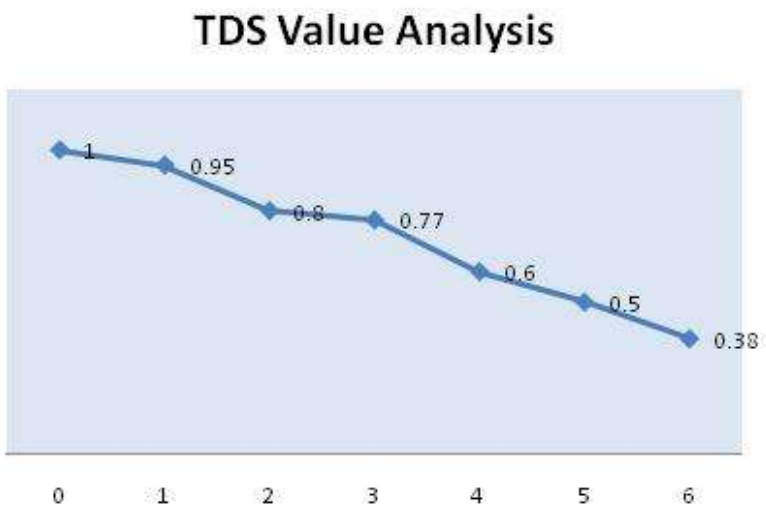

Fig 6. Result comparison of a patient

5. CONCLUSION

In this paper, two techniques for classification of skin cancer image into benign and malignant were presented. Using these two methods, images of the skin affected patients were tested initially and for 6 times once in 2 weeks by giving the treatment suggested by Dr. Simoncini. It was identified that the patient who have the malignant initially was improved as benign after this treatment.

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Author' biography with Photo

Dr. Valayapalayam Kittusamy Senthil Ragavan obtained his B.Sc. Computer Science from Sri Vasavi College, Erode, MCA from JJ College of Arts and Science, Pudukkottai, M.Phil. from Bharathiar University, ME CSE from Kongu Enginneering College, Erode, Tamilnadu, India and Ph.D. from Anna University, Chennai in the area of Facial Expression Analysis. Also awarded with D.Sc. in computer Science by Corllins University. He has 16 years of teaching experience and 1 ½ years of industry experience. He has published 15 papers in National conferences and journals, 11 papers in International Conferences and Journals. Also, he has published a book. He is a member of ISTE, IETE and IEEE. He received best project award by Corllins University during 2010.

Dr. Chakrapani Venkatesh, graduated in ECE from Kongu Engineering College in the year 1988, obtained his master degree in Applied Electronics from Coimbatore Institute of Technology, Coimbatore in the year 1990. He was awarded PhD in ECE from Jawaharlal Nehru Technological University, Hyderabad in 2007. He has a credit of two decade of experience which includes around 3 years in industry. He has 22 years of teaching experience. He is supervising 12 Ph.D., research scholars. He is a Member of IEEE, CSI, ISTE, FIE and Fellow IETE. He is a Member of International Association of Engineers(IAENG), an Editorial Board Member of International Journal of Computer Science and Management Research (IJCSMR), a Chief Technical Advisory Board Member of International Journal of Soft Computing and Engineering (IJSCE), an Editorial and Review Board Member of International Journal of Electronics and Computer Science Engineering (IJECSE), an Advisory Committee Member of International Journal of Engineering Research and Applications (IJERIA), an Editor in International forum of researchers Students and Academician (IFRSA) and International Journal of Computer Science and Network (IJCSN). He has Published 48 papers in International and National Journals and 52 Papers in International and National Conferences. His area of interest includes Soft Computing, Sensor Networks and communication.