

SMART Real-time Skin Cancer Identification

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ABSTRACT

Skin cancer is a disease in which skin cells lose the ability to divide and grow normally.

When abnormal cells originate in the skin, the mass is called a skin tumor. Melanoma is a malignant tumor of melanocytes. Malignant melanoma is named after the cell from which it presumably arises, the melanocyte. Melanocytes are the skin cells, which produce the dark protective pigment called melanin, a natural sunscreen. Melanoma cells usually continue to produce melanin, which accounts for the cancers. Early detection of melanoma is the most important factor affecting the survival of the patient.

In this paper, we are basically concentrating on the Real time Skin cancer detection using the GSM technology and Stolz algorithm.

Keywords

Cancer Detection, Real-time, GSM, Stolz Algorithm.

1. INTRODUCTION

Skin cancer is one of the primary types of cancer and one of the most treatable if caught early. As such, it is important to pay attention to changes in the skin and have them removed. While family history plays an important role in getting skin cancer, can also minimize the risk of limiting sun exposure. It is well known that people with fair skin are more potential to evolve skin cancer. Other types of skin can get skin cancer, so even very dark-skinned people contract the disease. Sun protection is important for everyone to help prevent cancer affecting the skin. We ask that authors follow some simple guidelines. In essence, we ask you to make your paper look exactly like this document. The easiest way to do this is simply to download the template, and replace the content with your own material.

Our main Objective towards this project includes illustrating the use of MATLAB for potentially Malignant Melanomas. Through this project we would be introducing a new, simple and fast algorithm for detecting effectively and automatically the different parameters used for the diagnosis of Skin Cancer.

Also we are automation the whole process of cancer detection by using the GSM module. Hence the operator interface will be reduced and the technology will be used by the common people.

Using the GSM technology everyone can use the facility with reduced cost and from part of the INDIA.

2. LITERATURE SURVEY

Skin cancer, particularly melanoma, is an important health problem in New Zealand. Melanoma incidence and death rates are among the highest in the world. In 2002, melanoma was the third most common type of cancer registration for both males and females. While melanoma registrations are relatively common (1842 new registrations in 2002), mortality is considerably lower (235 deaths in 2002), indicating that treatment can be effective. In the last 30 years melanoma death rates have been stable, despite a steep increase in incidence during the 1970s and 1980s and a levelling off in the 1990s.

In contrast to melanoma, basal cell and squamous cell skin cancer (nonmelanoma skin cancers, or NMSC) are very common, especially in the elderly. However, mortality is lower compared to mortality from melanoma, being 111 as compared with 235 deaths respectively in 2002.

3. AUTOMATION OF SKIN CANCER DETECTION

Automation of skin cancer detection can reduce the false positive or false negative clinical diagnosis. The common approach to skin lesion early detection is divided into five Stages of Sending, Receiving, Process, Reply and Storing and Further processing.

3.1 Sending

In part of Send a user is responsible of sending MMS using any Mobile. The user takes the real time image of cancer suspicious skin and sends to the respective / defined number for processing. The multiple users can also send the images for the processing.

3.2 Receiving

Image is received by the GSM module and store in the Server for further processing. The image format will be depends on the user sends (JPEG, BMP or TIFF). The Server stores the incoming images in the serial manor. Multiple images will be handed by sequential numbering. The USB interface will be used depending on the requirement.

3.3 Process

The received image will be processed by the MATLAB program. For processing the images Stolz algorithm

will be used. We can tell the difference between a normal mole and one that could be more dangerous by using the "ABCDE" rule. The letters A, B, C, D, and E stand for different aspects of mole appearance that serve as warning signs that the mole may be cancerous.

In the stolz Algorithm the digital image is taken and characteristics of the lesion are observed by the automated machine. The elements of ABCD rule enumerate four main

symptoms of an investigated lesion, and at the same time these elements are used to compute the TDS (Total Dermatoscopy Score) parameter , using the equation presented below:

$$TDS = 1.3 * Asymmetry + 0.1 * Border + 0.5 * \sum Color + 0.5 * \sum Diversity\ of\ Structure$$

Table 1. Classification of skin lesion using TDS value

TDS value	Lesion classification
TDS < 4.76 and lack of color blue	Begin nevus
TDS < 4.76 and color blue is	Blue nevus
4.76 <= TDS < 5.45	Suspicious nevus
TDS >= 5.45	Malignant melanoma

3.4 Reply the Result

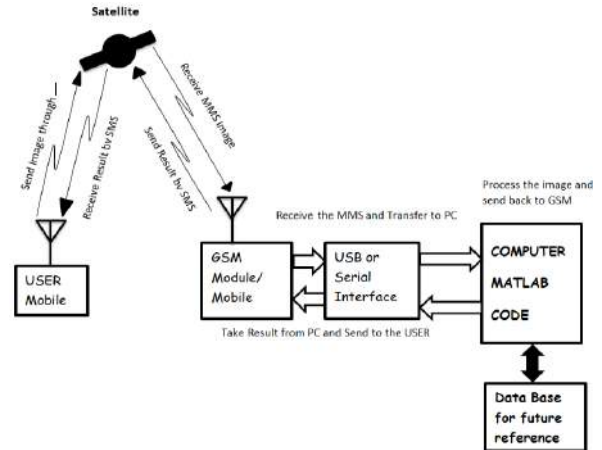
Depending on the TDS value the cancer will be detected and the user will be getting the reply from SMS. For the sending the status GSM module will be used for SMS processing.

3.5 Storing and further processing.

The images which are not process and get the output will be stored in the Server for further process. When the software is unable to find the correct output then image will be stored with the mobile number and intimation will be send to respective person.

4. FIGURES/CAPTIONS

The below shows the block diagram of over all process.



5. CONCLUSION

As the importance of early detection of skin cancer in treatment, this paper proposed a method on automatic skin cancer detection. In each step, the techniques and methods which are useful in the process were mentioned. The automated skin cancer system can be well designed as a substitute of clinician in melanoma diagnosis. In this paper, a skin cancer recognition system was proposed based on a Stolz algorithm. By using this method the error rate is reduced.

6. REFERANCE

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