DIGITAL SEGMENTATION OF SKIN DISEASES

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MARCH 2004

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Abstract

RGB colour variegations are useful features used by the domain's experts in their morphological learning method for skin disease classification. With the advancement of the computer vision technology, not only these features can be quantified in the digital image restoration and enhancement but also can be used as input parameters of an intelligent diagnostic system. In this report, several psoriasis lesion group are been studied for grayscale color features extraction. The experimental work involved clinical guttate lesion images where they are processed to produce the average Gaussian mean and standard deviation indices using the conventional algorithm. Normal and differential quantified indices gained under controlled environment are then mapped with another set of images from the same and other groups of the psoriasis lesion. The grayscale clustering plots together with each scale index distance from the reference indices are observed and analyzed. Finally, inference statistical tests are applied to conclude the findings. Outcome of the results show only guttate and erythroderma are distinguishable in grayscale mode. .

CHAPTER 1

INTRODUCTION

1.1 Introduction

Dermatology is about medical study on skin diseases or lesions. The fundamental concept of learning in dermatology is by looking at the skin lesion and tries to match its appearance to the closest appearance photo from a library text [1]. Then, morphological learning method is applied and an experienced dermatologist will use differential diagnosis steps to identify the disease. However, both of these methods sometimes still need conventional clinical photos or images from reference text as guidance for the diagnosis. Since lesion presentation also includes color variation and variegation, therefore color difference conveys important diagnostic information for a lesion. Their quantitative measurements are very helpful when investigating the lesion especially when early diagnosis is crucial as in detecting malignant melanoma [2]. Besides that, color information might also be useful in discriminating different types of papulosquamos lesion which includes psoriasis.

This work is focused on psoriasis skin lesion's images. Psoriasis is a chronic scaling disease of the papulosquamos diseases group of skin disorders that comes in different forms and varying levels of severity. Psoriasis is a condition that affects human skin and causes thick red marks that look like scales to form. The thick scaling is probably due to an increase in the number of skin cells. It is prevalence worldwide effecting 1% to 2% and more than 4.5 million of the United States (US) population and 3% of the Malaysian population. In the US, on