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Implementing DEWA Framework for Early Diagnosis of Melanoma

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Abstract

This paper proposes a simple yet effective and integrated computer vision algorithm used for detecting and diagnosing the earlier stage of melanoma. The framework is built based on three steps of integrated multi aspect approach: segmentation, filtering and localization steps. In the first step, user can select several color spaces and apply leaning and non-learning methods to segment the object. In the filtering step, morphological filter has been applied for image noise removal. In the localization step, connected component labelling and K-means technique are used for objects classification. Type of cancer malignancy is determined based on a score calculated from ABCD characteristics. Experiment has been conducted successfully using skin cancer images taken from internet. This result proved that the developed framework can be used for supporting the early diagnosing of cancer. In general, this research can contribute to the computer science knowledge especially in field of computer vision.

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1. Introduction

Melanoma is one of type of skin cancer which is known as the deadliest one. It is reported that the number of people infected are increasing year by year and are geographically distributed world wide¹. If the malignant of melanoma can be detected in its early stage, there will be possibilities to reduce the dangerous effect of the disease which can decrease the number of deaths in a society.

However, there are some problems related with early stage of skin cancer diagnosis². The diagnosis process mainly depends on the experience, knowledge, and skill of a physician during observation. It is reported that by using simple visual analysis of a cutaneous lesion, there is 1 of 3 incorrect diagnosis. To obtain an accurate diagnosis, other exams are necessary, for example biopsies, which are expensive and painful. Another matter is the minimum periodic

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