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Computer-Assisted Diagnostic Tool Package for Real-Time Analysis of Skin Disorder

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Abstract:
Skin cancer constitutes one of the most common types of cancer, and according to the World Health Organization, one in five people will develop skin cancer before the age of 70. More than 3.5 million new cases occur annually in the USA, and that number continues to rise. The crucial point for treating skin cancer is early and accurate detection. For this purpose, a standalone diagnostic software tool package with a computer-aided effective system and a real-time classifier using machine learning and deep learning algorithms to classify the skin disorders based on their physiological features through A(asymmetry), B(boundary), C(color), D(diameter) which is deployed in this tool. A combined model of learning algorithms is defined for the detection of different skin disorders to improve efficiency. Thus, a software tool package with systemic learning algorithms of 98% efficiency is developed for the detection of different skin disorders.

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Contents

I. Introduction

The skin is the largest organ in the body that protects it from heat, light, and infection. Skin also helps control body temperature and conserves fat and water. One of the most important skin problems in the body is the risk of infection with skin cancer. Skin cancer begins in cells, the main components that make up the skin; skin cells grow and divide to form new cells. These additional cells form a mass of tissue called a tumour. Melanoma is the most malignant and most serious type of skin cancer and is the reason for most skin cancer deaths. The underlying cause of melanoma is unknown. However, several factors, including genetic factors, ultraviolet radiation, and environmental contact, are involved in the cause of the disease.Skin cancers are the most common group of cancers diagnosed worldwide, with more than 1.5 million new cases estimated in 2020 [1]. In 2020, an estimated 325,000 new cases of melanoma were diagnosed worldwide and 57,000 people died from the disease. The differentiation between each skin cancer image obtained from the dermoscopy technique needs much more skills and expertise. So, computer-assisted tools can help in differentiating skin disorders and identifying whether it is benign or malignant.
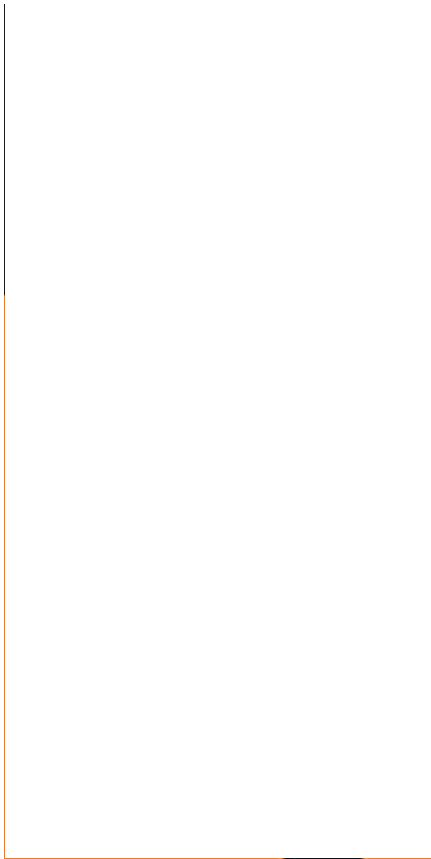
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