

Chapter 9

Classification of Melanoma Skin Cancer Based on Transformer Deep Learning Model

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ABSTRACT

An increasing number of genetic and metabolic anomalies have been determined to lead to cancer, which is generally fatal. Cancerous cells may spread to any body part, which can be life-threatening. Skin cancer is significant cancer, and its frequency is increasing worldwide. The main subtypes of skin cancer are squamous and basal cell carcinomas and melanoma. The deep learning methods were used to detect the two primary types of tumours, malignant and benign, by using the MELANOMA dataset. The proposed system utilizes a convolutional neural network (CNN), transformer, and InceptionV3 architecture to learn and extract meaningful features from skin lesion images. The CNN model was trained on a large dataset of dermoscopic images of melanoma and benign lesions. The transformer model in deep learning refers to a neural network architecture based on the transformer architecture specifically designed for image classification tasks. Inception is an image recognition model that has been shown to attain greater than 78.1% accuracy on the ImageNet dataset.

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INTRODUCTION

When cells in the body develop slowly and divide uncontrollably, creating tumours, that condition is known as cancer. Skin cancer is a condition in which uncontrolled growth of aberrant skin cells might result in tumours. One type of skin cancer is called melanoma. The most dangerous kind, it can quickly spread to other bodily areas. Tumours come in two main categories: benign and malignant. Benign tumours don't spread to other body parts; they remain in their original place. They don't disperse to far-off areas of the body. Benign tumours have defined borders and a modest rate of growth. People rarely have problems with benign tumours. Tumours form as the body's cells divide and enlarge at their fastest speed. The body usually manages to keep cell division and development in check. Damaged cells are automatically replaced by new, healthy cells when they die.

Figure 1. Benign tumours



Basal and squamous cell carcinomas make up the majority of skin cancer cases. Despite being cancerous, if treated right away, they can readily spread to other body parts. If they aren't handled in time, they might sustain local injuries. Malignant melanomas are one kind of skin cancer that is uncommon but distinct. Melanoma

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