AUTOMATIC DIAGNOSIS OF SKIN MELANOMA WITH MAYFLY OPTIMIZER TUNED ATTENTION BASED CNN

A potentially fatal condition known as skin melanoma develops on body parts that are exposed to greater sunlight. Skin mortality rate has been progressively rising in recent decades as a consequence of ageing populations and high susceptibility to harsh external conditions. The survival percentage of fatal skin tumours like melanoma is greatly improved by early diagnosis. Unfortunately, many patients might lack easy access to qualified dermatologists, especially in underdeveloped nations. Hence, dermoscopic images-based automated screening helps increase recognition rate and treatment results for patient risk populations. Biomedical imaging is crucial in understanding the aberrant cell development on the skin. The burden of dermatologist performing skin cancer analysis is made easier by an automated skin lesion segmentation algorithm, which also offers a forum for early diagnosis. Accordingly, the proposed research on deep learning to detect skin lesion based on image processing strategy. Firstly, Anisotropic Diffusion Filter (ADF) is engaged as a preprocessing technique that aims to reduce imaging noise without deleting substantial portions of image's content, usually edges, arcs, or other elements that are crucial for understanding the image. After preprocessing, Deep Residual U-Net (DRU-Net) is introduced for segmentation tasks, thereby aids to enhance image complexity reduction for easier image processing and analysis. The segmented output image features are then extracted by means of Scale-Invariant Feature Transform (SIFT), to find and describe local characteristics in digital images. Also, it finds specific important spots and provides quantitative data. Finally, categorizing and identifying sets of pixel or vector inside an image is accomplished by Attention Base Convolutional Neural Network (ACNN), in accordance with predetermined rules. Next, for attaining optimal predictive accuracy, hyper parameter tuning is performed, which is achieved by applying Mayfly Optimization Algorithm (MOA). The model's performance reduces the predetermined loss function and results in improved prediction results with minimized error. Hence, it is concluded that, the proposed research offers the possibility for enhancing the accuracy of deep-learning based melanoma prediction.