

Melanoma and Non-Melanoma, Skin Lesion Classification, Using a Deep Learning Model

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Abstract : Skin diseases are considered the fourth most common disease, with melanoma and non-melanoma skin cancer as the most common type of cancer in Caucasians. The alarming increase in Skin Cancer cases shows an urgent need for further research to improve diagnostic methods, as early diagnosis can significantly improve the 5-year survival rate. Machine Learning algorithms for image pattern analysis in diagnosing skin lesions can dramatically increase the accuracy rate of detection and decrease possible human errors. Several studies have shown the diagnostic performance of computer algorithms outperformed dermatologists. However, existing methods still need improvements to reduce diagnostic errors and generate efficient and accurate results. Our paper proposes an ensemble method to classify dermoscopic images into benign and malignant skin lesions. The experiments were conducted using the International Skin Imaging Collaboration (ISIC) image samples. The dataset contains 3,297 dermoscopic images with benign and malignant categories. The results show improvement in performance with an accuracy of 88% and an F1 score of 87%, outperforming other existing models such as support vector machine (SVM), Residual network (ResNet50), EfficientNetB0, EfficientNetB4, and VGG16.

Keywords : deep learning - VGG16 - efficientNet - CNN - ensemble - dermoscopic images - melanoma

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