Skin Lesions Classification using Computer Vision and Convolutional Neural Networks

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Abstract:

Skin cancer effects many people around the world, it is the most common malignancy in humans, So, identifying someone with or at a risk of skin cancer could help to take measures right away to lower their risk or destroy any cancer (if developed) at an early stage. Therefore, building an automatic system for the classification of skin lesions would help detect a malignancy. In the project, we are using Convolutional Neural Networks (CNN) to accurately classify pigmented skin lesion in dermoscopic images to detect the malignant skin lesions as early as possible. Two convolutional neural networks with varied architecture and/or depth, as well as data pre-processing methods, are examined in the project to see how they affect classification performance of skin lesions. The models used are CNN architecture VGG16Net and InceptionNet-V3. Both the models were able to predict Melanocytic nevi correctly while predicting other skin lesion it failed sometimes.

The performance results for both the models are as follows:

CNN models	**Accuracy**	**Precision**	**Recall**
VGG16Net	0.722892	0.522572	0.722892
InceptionV3	0.721553	0.550818	0.721553

Table 1: Performance evaluation of VGG16Net and InceptionV3 models