Structured Abstract with Key Images

Context

Skin cancer is one of the fastest-growing diseases in the world and, the projected rise in skin cancer cases from 2018 - 2040 is 17 million to 26 million. Considering the limited availability of resources, early detection of skin cancer is highly important. This can be done using artificial intelligence by training deep learning models over large datasets.

Objective

This project aims to train convolution neural networks using the kaggle skin cancer dataset HAM10000 for image classification. It classify the images in 7 different types of skin cancer class.

Method

VGG16 and ResNet50v2 architecture were used with pre-trained weight of imagenet database. The image data was cleaned, and exploratory data analysis done using Python. The model was built on google colab along with the simultaneous use of GitHub and colab history for version control.

Result

Sticking to better accuracy can create illusion of model performing well whilst it is better to have balance between the metric's which justify our use case. ResNet50v2 with image augmentation had the better predictions across the classes although without augmentation it had the highest validation accuracy of 86%. However, there were no promising results in these learning algorithms.

Novelty

This project provides insight between the differences of the two models used, and paves a way to use transfer learning more aptly by using bilinear approach composed by the ResNet50 and the VGG16 architecture. Encouraged by these outcomes, future work can include the improvement of prediction result and classification accuracy.

Key Images

Confusion Matrix for ResNet50V2

Confusion Matrix for VGG16