Melanoma Detection Assignment.

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General Information

- ➢ *Problem statement:* To build a CNN-based model which can accurately detect melanoma. Melanoma is a type of cancer that can be deadly if not detected early. It accounts for 75% of skin cancer deaths. A solution that can evaluate images and alert dermatologists about the presence of melanoma can potentially reduce a lot of manual effort needed in diagnosis.
- ➢ The current analysis is based on the "Skin cancer ISIC The International Skin Imaging Collaboration" dataset

Conclusions

We managed to eliminate overfitting and managed to reach a decent accuracy by using:

- ➢ Data augmentation
- ➢ Managing Class imbalance
- ➢ Using Dropout Layers

Model 1

- The model clearly overfits.
- The training accuracy is skyrocketing while the validation accuracy is around 50%.
- The loss on the training set decreases after each epoch but in the case of the validation set it climbs back again after the 5th epoch.
- The model memorized the data instead of generalizing and learning real features and general relationships

Model 2

- The application of data augmentation and dropout layer clearly reduced the overfitting
- Results on training and validation datasets are closer signalizing that the model - instead of memorizing the dataset - managed to generalize well.
- The overall accuracy is not that high and still there is a significant difference between the training and validation accuracy

Model 3

- Class rebalances helped us to get rid of the overfitting. The performance of the model is similar in both training and validation data
- Both training and validation accuracy has been increased

- Added one more conv-pooling-dropout "layer"

Technologies Used

- ➢ Keras
- ➢ TensorFlow
- ➢ Python 3
- ➢ Pandas, Numpy, Matplotlib,
- ➢ Augmentor