Assignment

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github link.

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Age and Gender Classification

Age and Gender Classification Using Convolutional Neural Networks

The Goal of this assignment is to develop a model capable of classifying Age and Gender of the person with on their images. However, unlike most image classifying tasks, where binary or multiclass labeling is considered, in this assignment each image has two labels (one for gender and other for age) . I am using The IMDB-WIKI dataset to train my model. The dataset has 171852 images with 101 different values for age and Male/Female as Gender Category.

Evaluation Metrics

I have used accuracy as evaluation metrics for both gender and age.

Model Evaluation and Validation

I believe that the final model is reasonable and aligning with solution expectations, it gives a good validation score on validation and test data this indicates that the final model genelizes well with the unseen data.

I used transfer learning to build my model and the trained model I used can be found here. Then over the top of this model I stacked two Dense_layers with 'Softmax' activation function with the no. of output 2 for gender classification and 101 for Age classification. The difficulty here was to choose a good learning rate , activation, loss function and optimizer. So, I experimented with different sets of functions and values and finally used the the set which gave me good results.

So, I used learning rate of 0.001, softmax activation for the last layers, categorical_crossentropy as loss function and 'adam' as optimizer for both Gender and Age, and trained only the last 5 layers of the model as the original model was trained on the similar dataset. Here I used 17186 image samples for testing my model against unseen data and got the test accuracy of 91.43% on Gender classification and more than 9% on age classification.

Improvement

The accuracy of the model can be improved by adding more training data and by reducing the no. of classes for age classification by (1-10, 10-20, 20-30, 30-40, 40-50, 50-60, 60-).