Homework 6 -Group 37

1. Overfitting

The model showed signs of overfitting because the training loss was decreasing but the validation or test loss was increasing or plateauing showing no signs of decreasing which are signs of bad generalization by the model and overfitting.

2. Optimization techniques

L1 and L2 regularization are used simultaneously to reduce overfitting by reducing impacts of insignificant features and adequately simplify the model to better generalize the model on unseen data.

Random Normal Initializer is used to better initialize the weights with a specified mean and standard deviation and it prevents neurons from learning the same features.

Dropout randomly sets some inputs to zero and helps generalize by reducing the number of features to prevent overfitting. The loss also decreases as a result.

Batch Normalization between layers deals with vanishing or exploding gradients by making sure the input distribution is always the same and reduces internal covariance shift thus the model has better generalizing capabilities as neurons do not need to continuously adapt and retrain on changing input distribution.

Label smoothing in the loss function is a form of output distribution regularization that prevents overfitting by softening the ground-truth labels in the training data in an attempt to penalize overconfident outputs.

accuracy

accuracy
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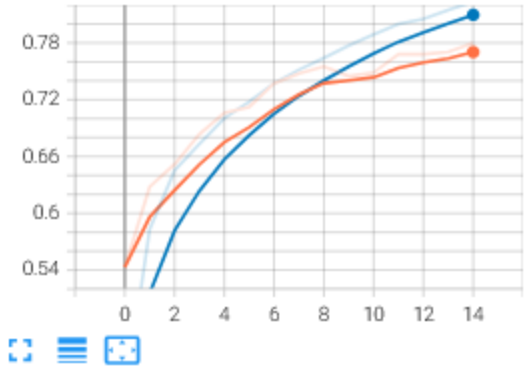

loss

loss
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