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# AdaGrad Private Limited

## Weight and Unit Pruning Assignment

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# Results

Pruning of Weights as per the requirements was done successfully and pruned weights as plotted i which one can clearly observe the percent sparsity is achieved.

Unit Pruning is also achieved as per the requirements and the model weights after unit pruning decreased by great extent . Weights after unit pruning are also plotted and one can observe the decrease in number of weights after unit pruning.

# Insights

After Weight Pruning with percent sparsity of [0, 25, 50, 60, 70, 80, 90, 95, 97, 99] I found that while pruning the model until 70 % we didn't get a trade-off between pruning and accuracy. But after that when we did 80 or 90% pruning of weights the accuracy was gradually decreasing and model was not performing well.

After Unit Pruning the number of weights decreased accordingly and the model became corresponding to the percent pruning. Unfortunately I was not able to run the model after unit pruning since the shape of tensors was changed. After all Unit Pruning was achieved successfully.

# Hypothesis

We can achieve nearly similar accuracy with approximately 80% of model pruning that means we can turn off millions of parameters in very deep networks and obtain a very light model which does not require a high performing GPU.

I think we do not affect our network accuracy after that much pruning is because most of the times we choose number of units in network randomly and the same result could have been achieved with less dense network and secondly we are pruning smaller weights that means we are neglecting smaller features that our model has learnt, but at the same time our model have already learnt complex features and the smaller values usually after multiplication affects very less in a hypothesis function of logistic regression as one unit of NN works as logistic unit.