Landon Buell

Qiaoyan Yu

Pre-Meeting Notes

3 August 2020

Landon’s Notes for 3 August 2020

**Loss/Precision/Recall Figures**

The Loss, precision & recall figures have been replotted using only the 4-Pixel border depth values. This way, we get an understanding of how the Approximation vs Compensation vs. 50% Blurred vs. 33% Blurred all compare to the baseline models for just the single pixel depths. Results are also for only a single hidden layer group. Figures have been cleaned and formatted for use. I have reluctance to change “Kernel Shape” to “Granularity” though. Kernel Shape is the proper, conventional term for what is being modified, while granularity is more the function or interpretation of what that means. I can still make the changes if you would like.

**Fitting Time Differences**

Cleaned up figure, changed “Compensation” to “Compensated”, validated math behind data as well!

**Compensation Percentage**

Plotted how the time to execute a “Compensation Layer” Compares the full forward pass time of the neural network. Compensation layer execution time is plotted as a percentage of the full execution time. In the models with 1 layer group, there are 9 Layers: Input, Approximation, Compensation, Convolution A, Convolution B, Pooling , Flattening, Dense, Output.

In general, regardless of pixel width or convolution sides, the percentage of time that the compensation layer takes to execute remains consistently between 6% and 8% for the tested subset of models. This on average, is less time that the regular dense of convolution layers would take in the network – possibly because no matrix multiplication takes place, only matrix indexing for “copy & paste”