Hackathon 3

Intro to Deep Learning CSCE 879

1. I submitted multiple jobs and am good with saving models on crane. **Job id: 40315085**

2. The Dropout layer randomly sets input units (used as neurons in a Deep Neural Networks) while training of model as 0 values at each step in the dense layers. The rate defined in the dropout layer in (*tf.keras.layers.Dropout(rate)*) states that a neuron in a neural network has a probability of **rate** (in our case 0.2), that it would be dropped. Meaning that every neuron in the neural network has a certain probability (defined as rate) that model would decide during execution whether it would be activated and used for training or not. Dropout is a regularization technique which helps a model to generalize better during validation of the model on validation dataset and prevents it from overfitting. Preventing the situation where model only performs well on the training dataset and not generalizing well on the validation set. Using Dropout also normalizes the values of neurons in the network such that sum over all inputs in unchanged. Using smaller number of neurons in Dense layer (in our case - 32) affects on why the difference before and dropout is not equal to dropout proportion. Based on the functions used earlier such as tf.module and tf.function, If we use a larger number of neurons like 10e4 or 10e5 in the dense layer, than there might be a possibility that difference before and after dropout could be equal to the dropout proportion.

We need to keep in mind that Dropout layer only applies when training is set to True such that no values are dropped during inference.

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