CST 463 - Advanced Machine Learning

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# Lab: Optimizers and activation functions

Be sure to work with your lab team.

1. Using the code from [the previous lab](https://drive.google.com/file/d/1-NvF7n3Hp49aWWoVZMrJX3OQNBW0z4N8/view?usp=sharing), use the diamonds data set with price as the target value. Use all numeric columns of the dataset (except for price) as the predictors.

<https://raw.githubusercontent.com/grbruns/cst383/master/diamonds.csv>

You don't need to create a separate test set, but use a validation split when training your neural net in model.fit()

1. First, spend a few minutes deciding on how many hidden layers to use, and the number of neurons in each hidden layer.
2. Next, try playing with these things:
   * optimizer

[see https://keras.io/api/optimizers/](https://keras.io/api/optimizers/)

* + activation functions

<https://keras.io/api/layers/activations/>

* + learning rate (we've already seen how to do this)

Take note of your results with various combinations of the parameters.

1. If you have time, also try to add batch normalization. This is a little tricky, because it's usually suggested to use batch normalization between the summation part of the neuron and the activation part of the neuron.

<https://keras.io/api/layers/normalization_layers/batch_normalization/>