Title: Comparing the performance of models using Tensor Flow and the Gradient Descent Update Rule (Mathematical)

Objective:

Why I choose this?

In this semester I took Machine Learning Course and when my professor is teaching Neural Networks told us that Tensor Flow gives the best weights(coefficients). But my intuition is that Mathematical approximation (using gradient descent and backpropagation) will give the most accurate weights. One more thing is that when we use Gradient Descent we may get stuck in Local Minima sometimes and we may not get the best coefficients possible. Then how Tensor Flow finds the best coefficients possible??

Plan:

To answer these questions I took the sample dataset and started working on it.

1) First, I will consider 3-layer Neural Network - 1-input layer, 1-hidden layer and 1-output layer. Then derive all the mathematical equations and find the right parameters that maximize the output. Then I will perform the same prediction using the Tensor Flow.

2) Second, I will consider 4-layer Neural Network- 1-input layer,2-hidden layers, and 1-output layer. Then derive all the mathematical equations and find the right parameters that minimize the error. Then I will perform the same prediction using the Tensor Flow.