SYDE Coding Project 1

Description

The aim of this project is to help you develop an initial comprehension of managing noise and outliers, as many training problems stem from ambiguity within the data samples.

Format: a Jupyter notebook containing code.
Due: Jan 24th 11:59pm

Steps

1. Write an example of a line regression using pytorch with stochastic gradient descent (SGD) optimizer and MSE loss. The example should contain 100 samples.
2. Experiment with your learning rate. You should see that large learning rate will cause gradient to explode. Print a learning rate that makes the optimizer explode.
3. Make your regression into a 1-layer deep learning/MLP model using "nn.Module".
4. Visualize the data and the regression line.
5. Add an outlier sample data, and train one model with MSE loss and one model with MAE loss.
6. Adjust and experiment the outlier example in terms of input value and output value, and compare the output regression line. You should see the difference in results between models trained with MSE and models trained with MAE. Draw results from at least 3 examples and display the visual results in one graph.