CSDS 440: Assignment 3

Shaochen (Henry) ZHONG, `sxz517`

Mingyang TIE, `mxt497`

Due on 09/25/2020, submitted early on 09/18/2020

Problem 10

It depends on the task and how is the performance of the model being "worsen" on test data than training data. Say we have a task to detect fire of a building so that less people get hurt, and the model performance is lower on test data than training data due to having a lot of false positives. Such model may still be beneficial as the cost of having a false negative is a lot more expensive than having a false positive in this particular task. And even though the model might be overfitting by definition, it might perform better than a model that is less overfit but has more false negative.

    The other possible scenario include but not limited to:

- When we want to test the upper capacity of our model or we plan to compare the fitting capacity of some certain kinds of models, we usually keep models overfit for the data.

- When there is no noise in the data, we want our model to fit the pure data as precisely as possible. Under this circumstance, overfit is beneficial. For example, using least square method to fit the curve of an ideal polynomial.