Summary of the lecture

According to the lecture, using learning algorithms to solve practical problems has several core problems: 1, some problems are not mathematical. As a result, it is very hard to find a good model to solve them. 2, sometimes, even we decide to apply some machine learning method, we still get acceptable error rate.

For the first problem, it is very important to understand the domain knowledge of the problem need to be solved. Try to analyze the background mathematical features and the optimization machine learning algorithm to solve it.

For the second one, there are several key points to affect the result, such as suitable variance, bias, algorithm, objective and so on. Because they all matter, it is very difficult and time consuming to improve algorithm by trying different approaches. It is more important to run diagnostics to figure out what the problem is. And try to fix the problem.

As a result, in order to solve a machine learning problem, there are two possible ways. 1, first analyzes the background mathematical features, and then figure out the optimization algorithm. 2, try a fast-but-dirty approach first, and then through coming up with right diagnostics, error analyses and ablative analyses to have a deep insight of the problem. Finally fix the problems, and get the optimization algorithm with acceptable error rate. Even using the first approach, it is still possible to get high error rate. In a word, comparing with other ways to improve the algorithm, it is more important to analyze the error.