**Summary of Prof. Andrew Ng’s notes:**

**Advice:**

* It is good to spend time on implementing and understanding Machine Learning algorithm. Even if things are working it will be better to understand application problem. Write why this works and justify with the help of research paper.
* Another good practice is to analyze the source of error. It gives insights about the problem and give right diagnostic approach.

The key ideas to incorporate and apply machine learning algorithms lie behind these approaches as follows:

1. **Debugging Learning Algorithms:** There can be different ways to improve algorithms – by increasing training size, feature set, changing or decreasing feature set, increase iterations or change learning rate. Best approach out of these is to figure out the problem such as high variance or bias. Depending upon what the problem is, choose the correct diagnostic solutions. For e.g., getting more training examples will fix high variance problem. Also, understanding correct objective function and optimization to specific problems will help in improving many algorithms. Even if learning algorithms are working well, it is good to know what works and what not.
2. **Error Analysis:** For different learning components, error analysis for each component will help us find where exactly the error is more. Find room for improvement in that component. Other type of analysis is Abaltive analysis which finds difference between baseline performance with current performance.
3. **Getting started on Machine Learning problem:** There can be different ways of applying machine learning algorithms, which may not be inclined to the novel ways of machine learning research. And to solve these problems, there can be two ways to design the solution:
4. **Careful design:** which takes a lot of time in understanding right features and collect dataset. It gives a better scalable solution.
5. **Quick and dirty:** which might get things work quickly and require to run lot of diagnostic steps to integrate and fix errors. This helps because sometimes, it is difficult to understand what part of the problem needs to be worked on. So, if we build something quickly and then find out what part breaks, it becomes helpful in coming up to the solution of the problem. This reduces the danger of over-theorizing a problem.