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Andrew Ng's Machine Learning is one of the most popular courses on Coursera, and probably the most popular course on machine learning/AI. I enrolled it a while ago and forgot it after watching a few lectures. Recently I decided to give it another go. Surprisingly or unsurprisingly, I was fascinated by the course and completed it straightway. The course is so awesome that I think I should have a write-up about it.

I'll discuss its way of delivery and share my thoughts and feelings of learning here. I won't talk much about the content this time.

About the Course

The course is delivered in a university style: 11-week lectures with tutorials, quizzes and programming exercises. A discussion forum is provided for learners to meet others and mentors and get help. It's free to audit for a limited time and $79 for full access to the materials and assessments and the certificate.

Things I Loved

The course provides a broad introduction to the topic and discusses 9 most used models from linear regression to support vector machines to neural networks. It is the most thoughtfully designed online course I have ever taken so far.

Specific problems to solve. I loved the way the course demystifies complex machine learning concepts with application examples. For each model, it always starts with a specific problem (e.g., classifying an email as spam or not spam), then goes deep and further develops the model to improve performance or solve more complex problems (e.g., further classifying a non-spam email as important or not important). Prof. Ng is really good at explaining the intuition behind models and algorithms, which is very helpful to eliminate the "black box" sense of machine learning.

Math support. Machine learning deals a lot with math: calculus, linear algebra, probability theory, etc. It's always good to get yourself familiar with all these before getting started. But don' t worry if you don't. The course gets you covered.

For each piece of math concept introduced, Prof. Ng will first let you know if you really need to understand it or don't need to worry about it. For those important ones, Prof Ng will give you the intuition behind with plain language and examples. And you can always ask for help from other learners and mentors if you get stuck.

Comparison of confusing concepts. The course compares easy-to-confuse models and techniques to help decide what to do in practice. For example, anomaly detection problem may seem similar to some supervised learning problems but they have different properties and require different solutions. A comparison really helps to clear the confusion and misconceptions.

Pop-up quizzes. Well, I wasn't a fan of quizzes back in university. But the ones in the lecture videos are quite helpful to keep me engaged and spot important concepts. Plus, some of the quizzes are funny.

Quizzes in the lecture

Video of an autonomous vehicle from the 90s. The video of ALVINN (Autonomous Land Vehicle in a Neural Network) system in week 5 really excited me. It blew my mind watching the self-driving Army Humvee in 1989 as I thought that self-driving vehicles are a recent development. The video in the lecture has a copyright so I've found another media coverage about the project.

Things I Had Mixed Feelings

MATLAB/Octave exercises. I had mixed feelings for the programming exercises. All exercises are in MATLAB/Octave. You will need to formulate the models yourself, which is more difficult than calling functions from libraries using Python or R. And usually MATLAB/Octave is not used for production.

It's challenging but also rewarding to complete the exercises. The starter code in each exercise gives great instructions and checks each step of your work. It's a real confidence booster seeing each piece of your "matrix-coded" model gets passed the grader. I felt so good when I saw the visualization of my running models. And the course thoughtfully provides tutorials to help you get familiar with MATLAB/Octave and pick up necessary skills (e.g., vectors and matrices manipulation).

Suggestions for the Course

I think it'd be super if an option of doing the exercises in another language like Python or R is provided. I'll try to pythonize the exercises and have another write-up.