



Guidelines for Course Readings

Every week, AC 295 will have a number of reading selections including a mix of scientific papers, blog posts (e.g. Towards Data Science), and chapters from books. This document is intended to offer some friendly suggestions on how to go about reading a large volume of material and using your time efficiently.

Reading Scientific Papers

Scientific papers can be complicated and dense. It's easy to fall into one of two extremes of bogging down or skimming without understanding. At one extreme, you can try to gain a perfect understanding of every sentence, taking longhand notes as you read through the paper. If you see an equation that you don't understand, you can check every step and try to derive it yourself. The problem with this approach is that it's too slow. You can easily spend half a day reading a single paper this way. At the other extreme, you can give up on gaining a deep understanding and skim through the paper. When skimming a scientific paper, a common approach is to read the abstract, read most of the introduction, and then glance at the rest of the paper, perhaps reading the topic sentence of each paragraph and skipping those that seem difficult or less relevant.

For this course, if you are **not presenting a paper**, we expect **more than a skim**, but we do **not expect you to understand every word**. Try to hit the "sweet spot" of reading the paper where you absorb the key concepts without bogging down. If there are parts you don't understand, that's OK. Jot down questions on the side of a printout or in a notebook, and try to remember them for the class discussion. When you encounter mathematical equations, if they are complex, try to get a sense of what they say without worrying too much about the justification.

A good rule of thumb is to carefully read the abstract and every word of the introduction. For the remaining sections, decide how relevant they are to you and the course. If highly relevant, make an effort to read the whole section quickly. If they are less relevant, try to read at least the topic sentences of each paragraph, and continue on unless a section is too long or difficult.

One idea about reading scientific papers is that you are not trying to learn everything in the paper but to build a **useful knowledge index**. If you encounter a problem or task you want to accomplish in the future, the hope is that you remember the paper well enough to realize that it's relevant and refer back to it. You also want to internalize the main takeaways of the paper even if you don't remember the exact line of argument and justifications. This can still be very useful, for example, if you are trying to decide which approach to take on your own problem.

When you are presenting a paper, we expect you to read the whole paper thoroughly! You don't need to have a perfect understanding of every word, but please at a minimum read every word of it. The weekly time budget of two hours is for weeks you are not presenting, which takes longer. Please make a strong effort so you can explain the paper well and answer questions from your classmates.



Reading Blog Posts

The blog posts selected for this course are not trivial, but they are straightforward. One of the great things about upper-level graduate courses is being treated like an adult. Everyone taking this course is a strong student with a solid background in Data Science. At your academic level, you can read these blog posts in their entirety at a good pace. That is what we expect you to do.

Reading Book Chapters

The book chapters assigned in this course will be in between the blog posts and the scientific papers in their degree of difficulty. Our hope is that you will be able to read them in their entirety in roughly the estimated time of three hours per week. If you find that reading the whole chapter is taking you well over the time budget, it's OK to selectively skim the less relevant parts as long as you understand the key concepts.

Feedback and Time Management on Readings

You can and should iteratively adjust how selective you are based on the amount of time it's taking. Set a budget for the amount of reading time each week in the course. We are planning that the average week's reading should take about three hours. If you are going significantly higher than this, you should read less and skim more.

We will also check in on the weekly quizzes to ask how long students are taking on the readings. Please give us feedback on how long you are spending, so we can adjust the volume of reading if necessary. We also welcome feedback on the quality and composition of the readings. This is the first time we are giving the course, so your feedback will be vital in tuning it this year and improving it for future years.