

How to read a paper



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How to start



- ❧ Get the bird's-eye-view before drown into the details
- ❧ Three-pass method for reading research papers
 - ❧ Each pass accomplishes specific goals
 - ❧ First pass: a general idea about a paper;
 - ❧ Second pass: grasp the paper's contents, but not in details;
 - ❧ Third pass: understand the paper in depth.

The first pass



❧ 5- 10 mins

❧ consists of the following steps:

- ❧ 1. Carefully read the title, abstract, and introduction
- ❧ 2. Read the section and sub-section headings, but ignore everything else
- ❧ 3. Glance at the mathematical content (if any) to determine the underlying theoretical foundations
- ❧ 4. Read the conclusions
- ❧ 5. Glance over the references, mentally ticking off the ones you've already read

Should be able to answer



- ❧ At the end of the 1st pass, you should be able to answer the 5 Cs:
 - ❧ 1. Category: What type of paper is this?
 - ❧ 2. Context: Which other papers is it related to? Which theoretical bases were used to analyze the problem?
 - ❧ 3. Correctness: Do the assumptions appear to be valid?
 - ❧ 4. Contributions: What are the paper's main contributions?
 - ❧ 5. Clarity: Is the paper well written?

Hints



- ❧ After the 1st pass, you should be able to decide whether to read it further.
- ❧ when you write a paper, you can expect most reviewers (and readers) to make only one pass over it.

The second pass



- ❧ Read paper with greater care(up to 1 hr), but ignore details(like proofs)
 - ❧ Jot down key points;
 - ❧ Make comments;
 - ❧ note down terms you didn't understand;
 - ❧ questions you may want to ask the author



- ❧ Look carefully at the figures, diagrams and other illustrations in the paper.
- ❧ Remember to mark relevant unread references for further reading

Goal of the 2nd pass



- ❧ should be able to grasp the content of the paper
- ❧ should be able to summarize the main thrust of the paper;
- ❧ If you still can not understand the paper, you may choose:
 - ❧ (a) set the paper aside, hoping you don't need to understand the material to be successful in your career,
 - ❧ (b) return to the paper later, perhaps after reading background material or
 - ❧ (c) persevere and go on to the third pass.

The third pass



- ❧ The key to the third pass is to attempt to virtually re-implement the paper;
- ❧ Requires great attention to details(many hrs for the beginners and more than 2 hrs for the experienced readers)
 - ❧ identify and challenge every assumption in every statement.
 - ❧ think about how you yourself would present a particular idea.
 - ❧ Jot down the ideas for the future work

Doing a literature survey



- ❧ Use Google Scholar or CiteSeer and some well-chosen key words to find 3-5 recent highly-cited papers in this area.
- ❧ Do one pass on each paper to get a sense of the work, then read their related work sections(will find some brief summary of these papers).
- ❧ Find shared citations and repeated author names in the bibliography.
 - ❧ Follow the author's footsteps.
 - ❧ Find the author's recent publications.
 - ❧ Top level conferences.

Keep updated!



- ❧ Go to the website for these top conferences and look through their recent proceedings. A quick scan will usually identify recent high-quality related work.
- ❧ If they all cite a key paper that you did not find earlier, obtain and read it, iterating as necessary.