

How to Read a Paper

Some thoughts on reading and understanding a technical paper
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When reading a technical paper, try to answer these questions. Read the paper through quickly to get the big picture and then read it again (as many times as is needed) to understand more levels of detail. Notice how words are used as they may have some technical meaning beyond the scope of the paper (of which you may be unaware).

When you see equations, try to use words to describe what is being calculated. What is the purpose of each equation? Make up simple examples to see if you understand the general idea as well as the details of the calculation.

Also be careful of exaggerated claims. Attempt to answer these questions in your own words, not in the author's words, since the author's words may be biased.

1. What is the motivation for the work? What problem are they trying to solve?
2. What is the hypothesis that the authors are investigating? What is the idea that is being considered?
3. What is the methodology used to perform the investigation of their hypothesis? What "experiment" is defined? What particular problem is being solved?
4. Is this a valid experiment? Is there reason to believe that results from this experiment would shed light on the problem? (this question is separate from the actual results of the experiment. It relates to the design of the experimental vehicle itself.)
5. How will the work be evaluated? What are the success criteria? How will the author know whether the approach is a good idea? (This is also separate from the results. It relates to understanding the setup of the experiment.)
6. What is the novelty of the work described? What's new? How does it relate to earlier work?
7. What assumptions (stated and unstated) are being made? How would one test the validity of these assumptions? Do the authors justify the assumptions?
8. What are the limitations of the work? What questions remain unanswered? What new questions arise?
9. Do the intro and conclusions adequately convey your impression of the work, its motivation, its contribution?

Finally, a more personal perspective.

1. How does the topic in the paper relate to your interests and research?
2. Could you have written this paper? If no, why not? Any missing knowledge? Any critical ideas? If yes, why didn't you write it?
3. Do you have any ideas for follow-up work that you may pursue in order to write your own paper on the topic? Do you plan to pursue any of these ideas?