

Writing a Research Paper Critique

Reading research papers is a skill. Like most skills, you have the foundation necessary to do the work (how to read, and foundational knowledge of computers and software). What you *can* get better at is gaining an understanding of and, eventually, improving on the knowledge presented in the papers you read.

There is a good, short, paper on how to read a research paper:

S. Keshav. "How to Read a Paper", *ACM SIGCOMM Computer Communication Review*, Volume 37, Issue 3, Pages 83-84, July 2007. (An updated online version is here: <https://tinyurl.com/dgmbwo>)

For papers I recommend, you should do at least the first two reading passes. For papers you find on your own, you'll do a first pass and, if the work is useful, a second pass. For select papers that are closely related to your work, you do the third, in-depth pass.

For critiquing a paper:

- **Get clarity:** Make lists of things you do not understand, big or small. It could be experimental settings, results in graphs or details about the approach. Some could be answered by following on techniques online or related work papers mentioned. Plan on doing this!
- **Criticize the work:** Note explicitly what is wrong with the approach, what corner cases the authors have not thought of, and/or what could be done better. This can be ideas both big and small.
- **Compare and contrast:** Compare the work with other, similar papers you have read, noting how the approaches are different and how they are the same. Consider if there is some combination of two different approaches or combinations of results from two different approaches that makes sense - this can often lead to new innovation!
- **Identify future work:** List areas of future work that could immediately be done following the paper. In most papers, the authors themselves list future work at the end of their paper. Read these - they can also be in your list!

Also, if you find a paper you really like - either in the clarity of the idea and writing, or in the coolness of the approach, or in the methodology you could see yourself doing - take particular note. This is often an indication that this is a good paper for you to read in depth and base (at least parts of) your work. It doesn't mean your work will be exactly like this paper (but it can!), but it often can provide guidance as to the kind of work *you* want to do and the shape of the work you will do.