

Reviewing

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It is an incredibly important task to review other people's work. I feel honoured each time I'm asked to review a paper because it shows that someone trusts my knowledge of the field enough to allow me to make a judgment on the scientific merit of the work in question. Let us keep in mind at all times how much effort and hard work goes in to writing each and every paper.

Science is difficult, and exciting, and competitive, yet we must strive to remain objective. This is easier said than done, so I took a moment to write a note to myself to ensure I need not re-learn all the lessons every time I pick up a batch of papers to review.

Notes to future self

- **Start the day you get the paper assignments.** Other stuff *will* come up, and the reviews will *absolutely* take longer than you thought, and **no!** there are not more hours in the day, no matter how much you wish for them.
- The longer you leave it, the more **you will learn who the authors are** and it becomes close to impossible to remain objective. Remind yourself to *look at the science* and not the person(s) who wrote it.
- **Do not get emotionally attached** (too much). As above, do not let knowledge of the authors affect the judgment of the paper's merit. Similarly, do not lower standards for an idea you really want to see published. On the other hand, do not berate papers whose main idea is something you don't particularly care about. Lots of things you don't like are very useful and they may in turn contribute to things you do like in future.
- In general, when you read articles, **remember how to refer to the paper** in future! At minimum, who the authors are, and the year. Better to remember the title and where it was published too. This is particularly needed when reviewing and remember you found it suuuuuuper annoying to know there was some paper that did a similar thing but you couldn't remember exactly..
- **Do not be lazy.** Persist til the end of the paper. Go through the proofs properly. If there are mistakes, find them. Remember all the *how did this get past peer review* comments. Do not be that reviewer (particularly for the bigger/better conferences). Sometimes you need more stamina and yes, this is where you're allowed to have chocolate to help you push through to the end of the paper.
- **Do not get lazy.** If there is a paper that's "not so good" and is a clear case for rejection, or alternatively, if the paper is super awesome and likely to be accepted, try to give the same level of detail that you give the the cases where you are unsure, and continue to follow through to the end. If the paper is bad, this is your opportunity to have an influence on how someone works the next time, explain what is needed (technically and otherwise). If the paper is great then you will learn a lot by studying it closely.
- **Be objective.** You are not here to simply criticize the paper. It's very easy to be tempted to just note the mistakes that need to be corrected or to point out things that are missing. Provide positive reinforcement; if you find something great, don't fail to mention this in the review.
- **Don't fall for salesmanship.** Some people write very well (particularly in the abstract and the introduction). Do not let this skew your opinion before getting to the guts of the problem and solution.
- **Be modest.** Don't presume that your opinion is ultimately the right one. Do not form too strong opinions too early on in the reading of the paper. Be open to explore the ideas presented throughout the paper and those of the other reviewers. Challenge the ideas in the paper (and the other reviewers) but remain open to defeat.

- **Be open to change** your opinion. If you find that after submitting your review, other reviews are substantially different, look for the key differences in the reviews. Is there something that the other reviews noticed that you didn't? Is there something you noticed that they didn't? If there is an *explainable* discrepancy, then this is the perfect grounds to start a discussion. Otherwise, be humble and willing to take a second consideration of your review if there was something you missed on the first reading
- After all of this, **come to a clear decision** on the score you give to a paper, and **commit** to it. This may seem to contradict the previous point, but don't let it. Be humble, but after being open and generating an *informed* opinion, stick with it. Be able to clearly and precisely list and explain all the reasons that led you to come to this decision.
- **Don't succumb to logical fallacies.** Most papers have a high degree of quality. Particularly when given the chance to read an exceptional paper, it can be easy to maybe feel a bit jealous and want to attack the great paper, just to prove that the idea is not entirely *perfect*. Remember, humans write these papers and there is the possibility that they have made a small error or failed to include some point. Try to assess whether the missing/wrong point is fundamental in nature. Sometimes it's also possible to fall into the trap of wanting to see things that cannot possibly be true. For an extreme example, if a paper describes a method to freely produce apples that will eradicate all world hunger while provisioning all the nutrients humans need to survive, then don't think, "yeah, but they're not oranges. We really wanted to see more oranges. This paper is out of scope." Some more examples:
 - "It's a good theory paper, but it's not related to practice" and equivalently "It's a great practice paper, but where are the long proofs?"
 - "It's revolutionary in its ideas, but really we like piecemeal engineering" (and vice versa..)
 - "The idea breaks through the boundaries of computing as we know them, but it's not efficient" (and vice versa..)

Judge the paper on it's merit, don't expect it to be all things at once, particularly the things it cannot be, by its very nature. The field is growing, there is room for all kinds of papers.

A partial scheme of things to consider while reading

1. Scientific Merit and level of rigour

- Is every step motivated and justified? It should be. If not, perhaps there are too many steps and the solution is clearly not optimal, or perhaps there are not enough steps which then forces the reader to make assumptions.
- Is it all techno jargon or do they guide the reader by providing intuition? This helps the reader to be sure that they are understanding correctly.
- For long and complicated solutions/proofs, is there a road map provided? This helps to enable the reader to keep on track as they work through the solution.
- Does the big picture become more clear as time goes on? It should. This helps the reader understand, and shows that the paper is well thought through and designed appropriately.
- Is there guidance towards why everything is needed in the solution? Otherwise I will just question why you used this and not that and so on...

2. Quality of writing

- Shows the level of care given to the work.
- If the writing looks rushed, then perhaps the ideas are too.
- Mature writing implies mature ideas.
- Are they writing to please the reviewer? They shouldn't be. Overselling the idea is nasty.

3. Motivation

- Is it motivated well? Either by building upon previous work, or by presenting a needed solution to a known problem.
- Are the simple solutions considered? or are they using a sledgehammer to crack a nut..

- Do they give open questions?

4. **Main references**

- Explore around the main papers they cite.
- Do they compare to other known work in the area?
- Do they state the advantages and disadvantages of this work in comparison to others?
- Do they try to hide the disadvantages? Are the claims true?

5. **End Results. Novelty**

- Do they connect the end results to the claims made?
- What assumptions are the solutions based on? Are they realistic?
- Have they discussed efficiency?
- What have they added to the world by writing this?

6. Misc

- Is this the right venue?
- Will this paper lead to new research?
- Is it a paper that takes a substantial amount of *skill*, or *knowledge*, or both?