Reviewing Technical Articles

On-ramp to providing good reviews

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(With thanks to Alexandra Bonnici, University of Malta)

Friday, 19 April, 2024
Motivation for this Friday Talk

CHECK IT OUT, I'VE BEEN ASKED TO BE A PAPER REVIEWER FOR NEXT YEAR'S CONFERENCE.

I GUESS THEY CONSIDER ME AN EXPERT IN THE FIELD.

WHOA.

REALLY? WHAT WAS YOUR QUALIFICATION?

UH, I HAD A PAPER PUBLISHED IN THE SAME CONFERENCE THE YEAR BEFORE.

BUT THAT MEANS YOUR PAPER WAS REVIEWED...

...BY PEOPLE WHOSE ONLY QUALIFICATION WAS TO BE REVIEWED BY THE PREVIOUS YEAR'S PEOPLE WHOSE ONLY QUALIFICATION WAS...

STOP, YOU'RE MAKING MY EGO HURT!
Motivation for this Friday Talk

“I am not in a position to meet the reviewing obligations, since I do not have sufficient experience”

“I am interested, but I'm concerned that I don't have the necessary experience”

Can young Systems Engineering researchers conduct effective reviews?

Spoiler: Yes
What is a bad review?

Example 1

“Even the authors could not clearly explain in the conclusion or in the body what are new results. The article is not suitable even for a poster, since it is in the very early stage of the investigation. Numerical experiments are not of sufficient interest for a research article.”

Example 2

“The authors apply some standard approach to some unavailable data set and produce some numbers. Where is novelty? This is just a report on some work and is not a suitable paper for this conference!”

Example 3

“Great paper; recommend acceptance.”
A Rational Review Process for a Conference or Journal Includes...

**Diverse Pool of Reviewers**
Welcome competent reviewers from all backgrounds

**Time**
Reviewers are allowed a full month to carry out their reviews.

**Largish Program Committee**
Reviewing load isn’t too large

**Post Review Comments**
Conflicting reviews are specifically invited to discuss, and if necessary, revise their views

**Editor / Associate Editor Oversight**
Reviews and comments are seen by the Associate Editor / Editor / Program Chair
Responsibilities
1. Reviewers

- Allocate sufficient time to conduct the review
- Communicate with the editor / program chair
- Respect deadlines
- Observe academic integrity

https://www.pexels.com/photo/shallow-focus-of-clear-hourglass-1095601/
2. Program chair / editor

- Select appropriate members for the program committee / reviewer pool
- Vet the reviews thoroughly
- Select papers that bring added-value to the conference attendees

03

Top 10 Things to Look for in a Review
1. Kindness

I once had a piece of sliced bread
To eat it brought to me no dread
Your work is much better
So I’ll be the trendsetter
And put a big crown on your head

Top 10 Things to Look for in a Review

- Frame your review how you would like it framed if it were your paper being reviewed
- Don’t overdo it: be kind, not sappy!

https://makeameme.org/meme/i-think-im-4acb4435a7
2. Emphasise the Good

The idea you had was quite good
To follow your advice, I should
What just isn’t quite clear
And the thing I most fear
Is the time that’s required if I would

Top 10 Things to Look for in a Review

- Most papers are going to be cited later for the single (occasionally two or more) biggest ideas they contain
- Sure - make the paper readable and improve all aspects as appropriate, but...
- Really help the authors develop that core, differentiating contribution

https://www.istockphoto.com/illustrations/grateful-woman
3. Background Research

A great idea your work seemed to collar
I looked it up on Google Scholar
There was nothing exact
That your results attacked
I think your research worth a holler!

Top 10 Things to Look for in a Review

- Search the title/key words/key phrases on Google Scholar
- Find the top 1-3 papers in the area and see if they’ve included them in their background/discussions

https://www.amazon.com/AM-STUDENT-NOTEBOOK-100-PAGE/dp/1654385735
https://www.freepik.com/free-vector/research-background-design_1028140.htm
4. Plagiarism starts at home

There was a Chat-G-P-T bot
Which made writing an afterthought
If you think we can’t tell
When you used its intel
Then I’ve no choice but to say “not”

Top 10 Things to Look for in a Review

- Sure, Wikipedia, ChatGPT, and other scientific communities exist
- Find the rarest terms in the paper and search for them on Google Scholar
- Use your favourite plagiarism detection software (Grammarly, Turnitin, etc.)

5. Is it reproducible?

Your work kindly listed the way
To repeat all the facts you display
I then tried it myself
Left the parts on the shelf
As it took me far more than a day

Top 10 Things to Look for in a Review

- Go into the reviewing intending to replicate their experiment
- Can you do it from their instructions (assuming you had the resources)?

https://imgflip.com/i/2sjotu
https://www.displayr.com/what-is-reproducible-research/
6. Materials and methods

Your experiment is pliable
The methods are reliable
But I have to question—
Not sure the suggestion
Is anatomically viable

Top 10 Things to Look for in a Review

- Update their materials and methods with any of your own “improvements”
- While you try not to identify yourself, or push your own citations, their paper will be better without omissions
- Of course, suggest any relevant third-party materials and methods missing

https://www.pluggedin.com/movie-reviews/ratatouille/
7. Are the results believable?

The square root of one is still one
I’m sure the experiment was fun
But the data was less
Than opinion at best
And there’s plenty more to be done!

Top 10 Things to Look for in a Review

- Are the data credible? In addition to value (mean, median), is variability provided?
- Is it an “n=1” experiment?
- Did they set it up for ANOVA?
- Did they use parametric and nonparametric statistics as appropriate?

https://www.pinterest.com/pin/245516617165542669/
8. Discussion

I really love your perspective
Your viewpoint is not defective
But if I had to guess
If your approach was best
I'd have to be a detective

Top 10 Things to Look for in a Review

- The discussion should include 1+ observations of things they might have tried
- I look for some sort of sensitivity analysis to give broader perspective
- No overfitting - look closely for tight coupling between the experiments & the discussion

https://joshuashawnmichaelhehe.medium.com/socratic-debate-b7800b1b817d
9. Adjacencies, Adjacencies, Adjacencies!

In the real estate vocation
They say it’s about location
Where does your work fit in?
I can not help but grin
Because it’s misallocation

Top 10 Things to Look for in a Review

- As in real estate, it’s all about location - how closely your work is to other potential applications
- I look for other potential applications since most papers do not identify their perfect application at first
- This is where you as a reviewer can most add to their contribution to science

10. Will it last?

Your paper was cheerful and bright
Not a single flaw was in sight
Of course you but tested
Whatever invested
Your papers with answers of “right”

Top 10 Things to Look for in a Review

- What will deprecate/obviate the reported findings?
- Employ Popper’s Falsification Principle in the experimental design - the goal is to try to disprove your theory
- Anyone can selectively find evidence in support of a theory

Writing the Review
Writing the Review

1. Read the manuscript once in its entirety
2. Re-read the manuscript and take notes
3. Write a clear and constructive review
4. Make a justified recommendation
5. Take a step back and review your own review
### A Review Framework

| Describe the basic contribution of the paper. This should be a few sentences on the topic of the paper. Beginning with this helps the program chair and lets the author know that you’ve understood the paper. |
| This paper discusses _______________. The main contribution of the paper is ____________. |

| Give your recommendation. |
| I recommend that this paper be accepted. I recommend that this paper be rejected. I believe that this would be a border-line paper. |

| Give your reasons for your recommendation. Label these as major comments. |
| • The statistical analysis in this paper is suitable/unsuitable for....  
• The Methods section does not clearly explain...  
• Some of the fundamental/recent papers in the field are not cited, among these...  
• I would like to see some discussion of the findings of the papers in relation to recent findings and developments in ______. |

| Finally, give some additional comments about the paper. This is where you can note problems with spelling and/or grammar, suggest changes to figures and tables, and make other specific comments. Label these as minor comments. |
| • In several places, you’ve used the term _____, but it seems you mean _____.
• In some of the figures, the legends are too small to be legible.
• On page _____, it is stated that _____, but the paper by Smith et al. states that ______. Can you comment on this disparity? |

https://thinkscience.co.jp/en/articles/effective-peer-review
To Recap

To paraphrase Tolstoy in *Anna Karenina*, every bad review is bad in its own way.

But critical reviews are not bad reviews.

Executed properly, peer review can be a teaching experience.

The Top 10 Things for a Review provide a framework for reviewers to provide such a teaching experience.
THANKS

DANKE!
THANK YOU!
MERCI!
GRAZZI!
GRACIAS!
DANK JE WEL!

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