

Reviewing an academic paper

Acknowledgements

~ This talk is based on:

~ Talks by: John Clark, Alan Burns, Jim Woodcock,

~ 'The Task of the Referee', Alan Jay Smith

~ 'A Guide for New Referees in Theoretical Computer Science', Ian Parberry

Outline

- Peer review: what, why and how
- Reviewing academic work & writing a review
- Unusual and exceptional cases

Peer review

- ~ The process of scrutinising new work
- ~ Conducted by experts in the same area as the authors
- ~ With the goal of ensuring high quality publications
- ~ If you expect to publish, you should expect to review!
- ~ Initially with your supervisor, and later for other senior academics in your community

What's in it for me?

- ~ Contribute to your research community
- ~ Build your reputation and status
- ~ Read state-of-the-art work before everyone else
- ~ Increase your chances of publication
If you learn to think like a fox, you will be a safer chicken
- ~ Appointment as a programme committee chair or journal editor

Peer review process

- ñ Submission of a new paper by authors
- ñ Assignment of reviewers by senior academic (PC chair / journal editor)
- ñ Scrutiny of the work by reviewers
- ñ Decision by reviewers and senior academic, and response to authors

Your task as a reviewer

- Form an opinion about the work
- Determine whether the work is publishable
- Make a recommendation and produce a report

When is work publishable?

- ñ A 'sufficient contribution'
- ñ Major results (less than 1% of all papers)
- ñ Good, solid interesting work (less than 10%)
- ñ Minor but positive contribution (10% to 30%)

When is work publishable?

- ~ Purpose :
what is the problem considered? how is the problem addressed?
- ~ Appropriateness :
is the work suitable for this outlet?
- ~ Significance :
is the problem important? are the results new and an improvement over existing work? does the paper make clear the contributions over existing work?

When is work publishable?

- ñ Correctness :
 - is the actual execution correct? (e.g., proofs, statistics, algorithms).
 - are the correct conclusions being drawn?
- don't expect papers to provide absolute answers to questions. are the results adequate?

When is work publishable?

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Validity :

is the method suitable? is it clear?

are new ideas communicated with the right level of detail?

I ran the algorithm 5 times on the iris dataset [1]. It produced an excellent answer every time, far quicker than other techniques [2,3]. I conclude that this is definitely the way to go. Everyone should use my new algorithm.

When is work publishable?

- ñ Validity (continued) :
 - what about other datasets?
 - what about size of data sets?
 - training versus evaluation data?
 - statistical significance of results?
 - were [2,3] intended for this type of problem?
 - is the algorithm tuned and evaluated against the most basic versions of [2,3]?

When is work publishable?

- ñ Presentation:
 - is the work incomprehensible (and hence unpublishable)?
 - are the title, abstract and introduction appropriate?
 - is the paper structured logically?
 - are there any grammatical or spelling errors?
 - is the wording too colloquial?
 - are the figures, tables and listings legible?
 - is this paper really 2 papers (or 0.5 papers)?

When is work publishable?

ñ Key question to ask is what did I learn?

The reviewing report

- ~ Different formats used by different conferences / journals
- ~ Often includes:
 - ~ A short summary of the paper
 - ~ Justification for your recommendation (accept / reject)
 - ~ Constructive criticism of the work
 - ~ Suggestions for possible improvements
 - ~ A list of grammatical / typographical errors

Summary

- ~ Usually one paragraph
- ~ Summarise your interpretation of the paper
- ~ Useful for authors
- ~ Useful to identify parts of the paper that you didn't completely understand and need to re-read.

Justification

- ñ You will make a recommendation for the paper
- ñ Your report must justify that recommendation
- ñ General tips:
 - ñ Focus on the major highlights / issues
 - ñ Make a small number of strong arguments
 - ñ Be specific.

Constructive Criticism

- ñ Criticism is not about being nasty
- ñ Balanced & reasoned assessments about contributions

Constructive Criticism of Papers in Historical Context

ñ *Examples of reviewing paper in a lit survey for example (where you are reviewing many papers) :*

ñ *WThe annotation language used in this paper was subsequently greatly improved by X [1] (virtually all modern work uses X's annotation language), but the fundamental approach remains unchanged to this day, e.g., [2,3,4,5,6,7,8].w*

ñ *WX maintained that, although he could not prove it, VIC was almost certainly true [1]. Many others agreed, expressing hope that it would soon be proved [2,3,4,5,6]. Only Y expressed doubt, commenting that mathematical fact isn't subservient to hope [9]. This proved well-founded, when in 2004, Z produced a counter-example [10].w*

Constructive Criticism of Papers in Historical Context

ñ ***Examples of reviewing paper in a lit survey for example (where you are reviewing many papers) :***

ñ ***Awful.*** *Wl can't begin to indicate the na-vety of X's compiler work [1]. The optimisation is nonexistent, it makes no attempt whatsoever to address the important issues of concurrency (how bad is that?), and the error handling is atrocious. I could have done better myself.*

ñ ***Better.*** *WIn 1965, X produced the first compiler for language Y [1]. Although by modern standards Y is not a particularly complicated language, it nevertheless posed several new problems at the time, such as Z. Some of the solutions adopted by X feature in most modern compilers...*

Suggested improvements

- ñ Mostly relating to exposition: clarifications, more details, more discussion, omit an unnecessary part
- ñ Be realistic and helpful:
 - ñ Ask yourself what is achievable in the time allowed for revisions.
 - ñ If asking for additional material, suggest areas that can be condensed (to make room)

Making a recommendation

- ñ Based on your opinion as to whether the paper makes a significant contribution.
- ñ Your recommendation might be:
 - ñ strong accept / accept / weak accept /
borderline /
weak reject / reject / strong reject
 - ñ accept / major revisions / minor revisions /
reject
- ñ There may be a discussion if you and the other reviews make vastly different recommendations.

Decisions & revisions

~ The senior academic sends a response to the authors:

~ Contains the overall recommendation

~ The reviewers' reports (anonymised)

~ You might see the paper again, after revisions:

~ Journals typically allow multiple rounds of revisions

~ Conferences often do not, but some have rebuttals.

Reviewing principles

- ~ Anonymity ('blind' reviewing)
the reviewers' identities are not known to the authors
- ~ (Rarer) Double blind reviews ã where the authors are unknown to the reviewers. More practically difficult.
- ~ Confidentiality
all work is confidential until publication
- ~ Fairness
scrutiny of the work should be impartial and reasonable
- ~ Professionalism
reviews should be timely, courteous and honest

Not all work is born equal

- ñ Scope and reputation of outlet
a workshop on the 'aerodynamic properties of beach volleyballs' is very different to a top journal, e.g. Science
- ñ Survey and tutorial papers
seek to unite or explain a body of existing work, rather than propose novel work
- ñ Experience reports
seek to validate and evaluate existing work, rather than propose novel work

Ethical issues

- ñ Conflicts of interest
reviewing work objectively is impossible if the authors and reviewers are friends (or 'foes~)
- ñ Academic misconduct
prior publication, unrevised resubmissions, and plagiarism must be reported
- ñ Simultaneous submission
subverts the reviewing process and is normally not allowed