Writing Paper Reviews

that you would be happy to receive

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It is easy to find people who complain about reviewing

Thanks

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- authors whose papers don't get accepted
- PC chairs whose reviewers write poor reviews
- reviewers who have lots of reviews to write

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As a community it is critical that we . . .

- talk about the review process
- train researchers to write good reviews
- value good reviewing

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Thanks to
- the organizers for including this talk
- you for being open to the idea

My experience

An author

An author of 90+ conference and 20+ journal papers (received ˜650 reviews)

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A reviewer

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In 2013, I gave 88 reviews and I received 21 reviews (with co-authors)
- ~2 hours per conference paper
- ~6 hours per journal paper
- ~200 hours

Have you written a paper review?

Why did you write the review?

Why did you write the review?

Did you receive feedback on the reviews you wrote?

Your experience

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Did you receive feedback on the reviews you wrote?

Typical experiences of graduate students
- write reviews for a course
- write sub-reviews for your professor
- write reviews for a workshop

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If you haven't had much experience, find a way to integrate that into your training as a researcher.

What is the goal of the paper review process?

Some stakeholders in the review process

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- authors
- reviewers
- PC chairs
- Journal editors
- publishing organizations (e.g., ACM, IEEE)
- *the community*

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I informally polled . . .

- Editors of top SE journals
- PC chairs of top SE conferences

Is this a trick question?

To ensure that timely and interesting ideas are published that have the potential to advance the field.

To ensure quality work, that advances the field and is reasonably complete, is published.

To ensure quality within the field (e.g., to avoid plagiarism, duplication, that scholarly standards are met)

To help to select the best papers for the conference.

To filter out most of the worst papers from appearing in the conference.

To provide useful feedback to authors so that they can improve their work.

To help develop/grow/train the community.

It depends …

It depends ...

- on the goals of the venue (inclusive vs. exclusive)
- on the review process (single vs. multi-round)
- on the time available to perform reviews
- on the number of submissions
- on the size of the reviewer pool
- on the quality of the reviewers
- ...

Any thoughts or comments?

Competing concerns

Scaling to cope with the modern conference/journal environment

Making accept/reject decisions

Young researchers seeking to establish themselves

Providing constructive feedback to authors

Inclusiveness in the reviewer pool

According to Prem Devanbu (FSE'06 PC chair)

What is a good review?

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The ideal review:
- Evaluates the importance/relevance of the problem as listed by
the authors. Authors of a paper may not agree with your
conclusion, but it is vital that they understand your rationale.

- Lists the claims, and judges if they are applicable to the
problem, and their expected importance/applicability/usefulness.

- Describes how the authors validate the claims, and evaluates
the validation.

- Gives specific suggestions to improve the writing

- Suggests specifically any relevant related work the authors
should include.
```

What is a good review?

facilitates the accept/reject decision making process

- does not sit on the fence
- clearly and concisely justifies its position
- assesses the quality, novelty, value of a paper
- detects work that is incorrect, not novel, . . .

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provides constructive and actionable feedback to authors

- identifies missing related work
- detailed comments about the presentation
- suggest new questions/directions to explore

A Case Study (excerpt from 2 page review)

This paper presents a ... technique based on X and Y.

Extensive experimental evaluation is performed. The results suggest
that the ... are of higher quality than using X alone. The proposed
optimizations have significant effects in improving the performance.

Pros:
+ The paper is well written. The structure is very clear especially
in the evaluation section.
+ The paper is well motivated. ...
+ The evaluation is extensive and the results are relatively convincing.

Cons:
- The proposed approach depends on X. ... It is true that more ... can
refute ..., but the discovery of additional ... depends on X itself.
- The experiment subjects used are relatively small (100-600 LOC). ...

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Questions:
* How does it work with other ... techniques?
* Can we improve the quality of ... by looking into X rather than
treating X as a black box?

To summarize, the paper has a clear technical contribution and the
results are encouraging. I suggest acceptance.

Minor comments/typos:
Page 3, left column, "... A1 ...". Should it be "A2"?
...
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What do you like or dislike about this review?

What I like about this review

Structure makes it easy to pick out the key elements

Clearly states pros/cons

Reaches an accept/reject conclusion

Suggests avenues for more/deeper work

Specific recommendations for improvements

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OVERALL EVALUATION: -1 (weak reject)

----------- REVIEW -----------
This paper presents a study for understanding X.
The authors report the designed study which reveals Y.
The study also identifies some strategies to support
newcomers; even though it was not yet completed and
remaining experiments to obtain these results on
strategy. The writing of the paper is good.
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What do you like or dislike about this review?

What I dislike about this review

Doesn't reach or justify an accept/reject conclusion

Does not clearly states pros/cons, in fact it seems rather positive in spite of the rating

There is no structure so it is hard to tease out the key points that the reviewer is making

No suggestions for improvement

Two pass process

- read papers, take notes, and categorize them
- write reviews using category-specific treatment

My personal conference review process

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When reading I look for the *new idea*

- is it clearly and accurately described
- is there enough evidence provided so that I can see its value
- can other people build on it

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Categories

weak Looks to have a killer flaw

solid Looks like a winner

other Need to look deeper, outside my expertise, . . .

My review writing approach is different for each category.

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For weak papers
- find something positive to say
- substantiate the weakness (e.g., cite work that does this already)
- skip the minor comments

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- crisply state the key ideas and their value
- help authors temper/substantiate findings
- focus on presentation issues

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These are the easy cases.

For other papers

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. . . that are in your area of expertise

- read related papers to determine novelty/value
- go through details/proofs multiple times
- don't leave the details for other people

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... that are outside your area of expertise
- what information do you need from experts to help decide?
- solicit expert opinions yourself
- inform chairs/editor of the need for expertise
- integrate that information into your review

My personal journal review process

Only accept papers for which I am an expert reviewer

Don't focus as much on categorization (accept/reject)

Ask for more work if it is needed
- needed to make it publishable
- needed to turn an acceptable paper into a great paper

Ask specific questions of the authors
- exploit multi-round reviewing to get the best out of the paper

Clearly distinguish necessary changes from suggestions
- this is not needed in most conference processes
- a necessary change means conference reject

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Closing Thoughts

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Spend time thinking about reviewing

- it is a professional obligation (the give-receive balance)
- accept reviewing that you can do well (topic, volume)
- talk to others about their personal review process
- develop your own process
- analyze reviews you have received that were valuable
- seek feedback on your reviews (friends, advisor, chairs)

Some Crazy Ideas

Disclose reviewer information, i.e., sign reviews

Crowd-source reviews

Share paper reviews across venues
- a rejected FSE paper has its reviews forwarded to ICSE

Enforce a balance in giving/receiving reviews
- for every paper you submit you owe 3 reviews

Boost the signal-to-noise-ratio in the field
- cap the number of papers one can submit in a year
- cap the number of papers one can publish in their career

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