How to write a review

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Outline

- Importance of Reviewing
- Conference Reviewing
- Journal & Proposal Reviewing
- Improving the System

Peer-reviewing

Few people can judge:

- correctness
- novelty
- significance

of research results. Peer review is the only evaluation mechanism

Interests

Peers often compete, but...

“The tide raises all boats”

If peers produce good results

- field becomes more important
- own results become more useful
- everybody wins

Types of Reviews

- Conferences:
  - one-shot
  - accept/reject
  - few modifications
- Journals:
  - iteration
  - significant rewrites to improve quality
- Research proposals:
  - constructive

Conference Organization

- Medium-size conference (CP): 150 submissions, 40 accepted
- 6 weeks between submission and decision
- PC chair cannot read all the 150 papers
- Will not read 3*150 reviews either!

Conference Reviewing

- Author has spent many hours to write the paper
- Reviewer is the only person actually reading it
- Usually, only the final score (accept/reject) is considered!
- Reviewing is a big responsibility

How to deal with the load

- Typical review load: 10 papers
- Reading and understanding 10 papers takes 10 hours of quality time
- Most reviewers don’t have this time
- Solution: apply filtering, don’t waste time on papers that are not acceptable anyway

Paper checklist

Every paper must state:

- the problem addressed
- the solution or insight proposed
- an example that shows how it works
- an evaluation, ideally a comparison with existing techniques

$\Rightarrow$ Easy to check

Many papers fail this test!

Seeing through the hype

Many authors are good salespeople:

- hiding assumptions
- using unrealistic examples
- comparing with old or wrong versions of existing work
- providing incorrect summaries of experimental results

This is where we need your intelligence!

How to evaluate?

Yes/No questions:

- Is the paper complete (checklist)?
- Is the result correct?
- Did you learn something from it?

If any of these is no, reject

How to evaluate? (2)

Matters of degree:

- Is the work novel? Are these just someone else's ideas in a different notation?
- Is the problem important?
- Is the work significant and difficult to obtain?

Useful for ranking (weak/strong accept)

Importance of comments

- Worst scenario for author: paper rejected, but not clear why
- Comments must justify the recommendation:
  - Why reject/accept the paper
  - How could the author improve it?
  - Listing typos helpful, but secondary

Helpful comments...

Rather than:

- “This problem has been solved by many people years ago.”

Say:

- “This problem has been solved by A. Smith (AI Journal, 1992), with improvements by C. Miller (ECAI, 1999).”

Helpful comments...

Instead of:

- “I don’t think this solution works.”

Say:

- “On the following example, the method produces the wrong result: …”
- “The proof of Theorem 3 is wrong, and here is a counterexample…”

Helpful comments...

Don’t say:

- “The description is unclear.”

Rather:

- “The terms “gizmo” and “babble” are not defined anywhere...”
- The term “globber” is used before it is defined...”

Importance of comments

Producing helpful comments is important:

- Ensuring that you understood things right
- Learning more about the field
- Giving authors a fair treatment
- Rewarding authors for hard work producing a paper

Example review (1)

- Relevance: GOOD
  Originality: GOOD
  Significance of the work: GOOD
  Technical soundness: GOOD
  References: GOOD
  Presentation: EXCELLENT
- [X] strong accept (excellent and important contribution)
- “The paper is well-written and clear and addresses an important problem. It offers a clear solution, described in formalised algorithms for dynamic open constraint satisfaction problems. ….”

Example review (2)

- Relevance: GOOD
  Originality: WEAK
  Significance of the work: BAD
  Technical soundness: WEAK
  References: GOOD
  Presentation: WEAK
- [X] strong reject (unreadable, nothing new,..)
- “The paper as a whole is written sloppily and its technical content makes almost no sense.”

Why such disagreement?

The explanation…

- Reviewer 2 believes: "…In fact, a constraint satisfaction problem is essentially the same thing as a conjunctive query without projection…"
- => if this were true, indeed the paper would make no sense
- Lesson: If you think the authors are unbelievably stupid, you have probably misunderstood something very fundamental.

Reviewer discussions

- The most fun part of conference reviewing
- You can learn a lot from others

However:

- 90% of discussions end up on the negative side
- Reviews are rarely updated => author doesn't learn about the result

Journal reviewing

- Journals allow for iterations
- Same filters as for conferences, but important to help author improve the paper
- Can expect significant rewrites/additional work
- Most journal submissions are eventually published somewhere

Proposal reviewing

- The person who wrote the proposal is competing with physicists/biologists/etc., not you!

=> Try to be as positive as possible

- Funding will definitely differ from proposal:

=> constructive comments essential

The system is changing

Publishing system based on conferences is broken:

- too many papers are written
- reviewer and committee overload
- arbitrary decisions to have low acceptance rate
- rampant plagiarism

Internet allows new forms of publication

Publishing in the Internet Age

- Reviewing is a reputation mechanism
- Observation: much of the important work is first published in workshops/tech. reports
- Search tools such as citeseer provide implicit reviewing
- Journals such as ETAI pioneer innovative models

How to speed up the change

Resistance to new forms is high:

- inertia, trust
- reputation of established channels
- many people know how to work the current system

Imagine and push for new forms of publishing and reviewing!

Things to remember

- Apply filter to focus on promising papers
- Back up your decision with comments
- Be humble and positive (find at least one positive comment)
- Separate accept/reject from gradual quality judgement

Conclusions

- Reviewing is a difficult business
- But it is critical to our field
- Eventually, technology will change to a better model
- But in the meantime, we need your help!