How to write a review

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Outline

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

⇒ 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!