How to review a paper
(and other assorted musings)

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(Note: this is based on my personal experiences as reviewer, program committee chair, associate editor, etc. YMMV.)
What purpose does reviewing a paper serve?

1. Help program committee / editors decide on acceptance
2. Give feedback to authors
3. Show that you (reviewer) have insights
Purpose 1: Help program committee decide

Who will read your review?

• Others who reviewed this paper
  • You may engage in a debate with them (maybe interactively), about paper merits

• PC chairs and other PC members, who haven’t read the paper
  • Will learn about the paper only from your review
Purpose 1: Help program committee decide

What properties/components should a review have?
• Concise summary – to confirm that you didn’t misunderstand the key point, to explain to non-readers what the paper is about
Purpose 1: Help program committee decide

What properties/components should a review have?

• Concise summary

• Pros and cons – **significant** scientific strengths and weaknesses
  • Can be about problem selection, experimental design, evaluation, presentation of results
  • Scientific novelty is important
  • Ethics are important
  • Paper may not know own strengths
  • Claims in review (particularly negative) should be substantiated
  • Avoid loud gripes about trivial things (e.g., punctuation)
Purpose 1: Help program committee decide

What properties/components should a review have?

• Concise summary

• Pros and cons – **significant** scientific strengths and weaknesses

• Explanation of judgment – why pros outweigh cons or vice versa
  • May be conditional – e.g., if the theorem is correct, if the code is released, if a specific aspect (that you’re not able to judge) is novel
Purpose 2: Feedback to authors

What do authors need?

• To believe that paper was reviewed by experts who understood the paper and are providing constructive feedback
  • Why?

• If rejected, suggestion about either:
  • What it would take for the paper to be accepted
    • e.g., new experiment, different conference, different evaluation
  • Why the paper is unlikely to ever be accepted

• Whether accepted or rejected:
  Suggestions about how to improve the paper
Purpose 2: Feedback to authors

What properties/components should a review have?
• [all the previous ones]
• Detailed suggestions for improvement
• Constructive encouragement/discouragement
• Politeness!
• Understanding that even authors of bad papers may have tried their best

What properties should a review NOT have?
• Subjective statements about the reviewer (e.g., “I didn’t like this at all”)
• Unhelpful relative judgments (e.g., “worst paper I read”)
• ...
Purpose 3: Advertising reviewer

What does the reviewer need (from her own perspective)?

• To demonstrate to PC chairs, fellow reviewers: expertise, diligence, willingness to contribute to community
  • Knowledge of related work
  • Ability to differentiate between key aspects and cosmetic aspects
  • Good judgment in weighing contributions
  • Constructiveness
Purpose 3: Advertising reviewer

What properties/components should a review have?
• [all the previous ones]
Ethics considerations when reviewing papers

Reviewers have access to papers only for the purpose of reviewing
• Can’t share paper, borrow key ideas, reject to give own paper better chance, ...

Who should decide whether research was ethical?
• Reviewers?
• Program committee?
• Outside experts?
  • Lawyers? Ethicists? Subject-matter experts?
• Authors’ Institutional Review Board?

In computer security and usable privacy/security, program committees may reject paper solely because of ethical issues