How to review scientific papers
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Portions courtesy Samarjit Chakraborty
Why do we write papers?

- Dissemination of research results to the scientific community
- Get credits for our work (required for graduating, getting a job, promotion, tenure, etc.)
What is a review?

- Vetting mechanism to judge the soundness and value of a paper
- Done by a peer group (a set of established experts in that area)
- The decision to “accept” or “reject” the paper depends on the reviews
A typical reviewer

- Time restrictions - not ideal, but this is reality
- Voluntary service to the scientific community.
- If there are 4 reviews per paper then you should review 4x the number of papers you write, for the system to be sustainable
Reviewing Mechanisms

- Conferences:
  - Typically a one-time program committee (PC)
  - May meet in person (great networking)
    - Shifting to zoom ($$ + CO2 footprint)
  - Good conferences typically accept <20-30% of submissions
    - Most of what you read will be worse than what you get in a grad seminar
- Journals and books:
  - Typically a smaller editorial board
  - Solicits one-off, expert reviews
- Grants: standing or one-time panels, depending on agency
Anonymity

- Single-Blind Reviewing: Author names visible, reviewer names hidden (why?)
- Double-Blind: Author and reviewer names hidden
- Reviewer names usually visible to other reviewers (why/why not?)
Confidentiality

- Material under review is confidential

- **NEVER:**
  - Share or redistribute a draft you review
  - Borrow ideas from a submission

- As a reviewer, you should also expect your identity to be held in confidence
Why do reviews? and do them well?

- Trade volunteer work for credibility
  - PC lists are the “cool kids club”
- Social networking among PC members
  - Waaaaaay more face time with leaders in field than at a conference
  - I get the most insight into how someone thinks from reading their reviews
- Learn things!
- Get better at writing papers
  (i.e., better understand your audience - sound familiar?)
Start Practicing Now!

- Reviewing is a key professional meta-skill
  - Takes practice and feedback
- Your advisor likely reviews papers - help them!
  - I often invite my students to “shadow review”
Reviews Have 2 Goals

- Your review needs to BOTH:
  - Explain to the PC why the paper should be accepted or rejected
  - Explain to the authors how to improve the paper
    (ideally, to the level you would argue for acceptance, or more strongly if you are already positive; occasionally, an idea is truly unfixable)
Giving Editorial Advice

- If at all possible, try to give a clear accept or reject rating
- And clearly explain why!
  - Most conferences use a 5 point scale
    - 1 = Reject, 5 = Strong Accept
  - Average paper review a 2.5, with variance .2 (made-up, “truthy” numbers). Why?
  - Do such reviews contribute “signal”?
    - “Strong Accept” == triple cheeseburger
  - “Confidential Comments” a good place to be blunt/clarify
Author Feedback

- All papers have flaws
- Follow the Golden Rule:
  Write a review you would like to receive
  - Be constructive - actionable suggestions >> complaints
- For papers you want to reject:
  What would it take to convince you?
- Depersonalize criticism: “The paper” vs. “The authors”
- Don’t ascribe motive to flaws (e.g., lazy authors)
Author Feedback (2)

- Justify your criticisms
  - Saying something is not novel requires a citation
- Gut check: Can all of your requests fit in the space limit?
- Is it clear what feedback is the most important and what are nits?
Author Responses

- If authors have a response period:
  - Explicitly list the "pivot questions" for the work, if possible (why?)
Tricky Issues

- What if the paper is out of your area of expertise?
  - Always rate your expertise
  - As a representative member of community, you can still assess general interest level and clarity
  - Editor/Chair needs to know if all reviews are low confidence (why?)
- What if you don’t understand the paper at all?
  - Ok to say so
  - But consider reasons: writing vs your background?
    - In principle, you can read more related work
Avoiding Cringe

- What if a relevant paper doesn’t cite your work?
- Should you review a paper on a topic you are working on?
- What if you suspect a paper is written by a friend (or someone you find challenging)?