Skimming papers; reviewing papers

Jonathan Shapiro

School of Computer Science
University of Manchester

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Announcements
Announcements

- Slowly making progress fixing the Blackboard course page.
  - It exists, but neither Bijan nor I can see it.
  - Submissions not set up yet (as of yesterday).

- Continue to use the course webpage
  http://syllabus.cs.manchester.ac.uk/pgr/2018/COMP80142/
Skimming papers: Don’t be afraid to skim papers
Be efficient!

This means,

- You need not read *in depth* every paper you find.

- You need to index (somehow) every paper you find which is or will be potentially useful.
  - Important not to have to search for the same paper multiple times.
Hierarchy of papers

A few papers **essential** to your current research: You have to study in depth, multiple times, annotating heavily. Examples:

- Papers using a technique you intend to use in your research,
- Papers using a technique that is a competitor to techniques proposed in your research.

A larger number of potentially relevant papers: You need to know about these, and perhaps read them fully later. E.g. for a literature review.

A set of papers whose relevance may be in the future: Figure out roughly what they are about, and index them.
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Skimming research papers

Step 0: Be aware of what you are looking for in papers. Could be one or more than one of:

- Papers using the same technique as your work,
- papers addressing the same problem as your work,
- papers addressing an analogous problem which you can transfer to your problem
- papers whose bibliography can help you build your bibliography (but read the papers before citing them).
- (others?)
Skimming research papers Step 1

1. Read the title: Hopefully informative.
2. Read the abstract: *Should* contain the problem, the novelty, the approach, a summary of the results, and conclusions.
3. Skim the introduction: Find and focus on the statement of the problem and description of new approach.
4. Pay attention to section headings Does this help understand the paper?
5. Related work: You can ignore, or find the ones you have already read.
6. Details of the approach: Skip on first reading.
7. Experiments/Evaluations: Look at the pictures (the figures and the tables).
8. Conclusions: Read this.
You may be able to get a lot of information by comparing two sections:

**The standard approach:** Before describing a new approach, the authors will describe the “standard” or current approach.

**The proposed novel approach:** In contrast, they describe the new proposed approach.

I (Jon) often find I can understand a paper very quickly by spending little time on step 1, and about 5 minutes on step 2.
Proposes reading a paper is a three pass process.

Pass 1:  Skim to determine what kind of paper it is, how does it fit into the literature, is it correct, and what are its contributions.

Pass 2:  Look at the results more carefully to determine is it statistically sound (if experimental) or theoretically sound (if mathematical).

Pass 3:  Understand it fully.
Keshav’s approach to skimming

1. Read title, abstract, and introduction carefully.
2. Ignore everything else except section and sub-section headings.
3. Read the conclusions.
4. Glance over the references, mentally ticking off those you have read.

Categorize the paper in terms of the five “Cs” (next slide).
The five "Cs"

**Category:** What kind of paper is it? Measurement, analysis of existing approach, a description of a research prototype, . . . .

**Context:** What other papers does it relate to?

**Correctness:** Does it appear to be valid?

**Contributions:** What are its main claimed contributions?

**Clarity:** Is the paper well written? Is it understandable?
Skimming practice

- There are a few copies of three papers on your table.

- Pick *one* of them and skim it.

Take the next five minutes
What are they about?

- “An empirical investigation of Thompson sampling”
- “Learning representations by back-propagating errors”
- “Effects of Distant Intention on Water Crystal Formation: A Triple-Blind Replication”
- “Reflections on Trusting Trust”.
Reviewing
Reviewing papers

Informal review: Reviewing for your colleague, student, etc.

Peer review: Reviewing for journal or conference submission, or for a grant proposal.
Informal reviewing

Important to be clear what aspects the writer wants feedback on.

**Structure:** Does it have the correct structure?

**Science:** Is the science sound? Are there flaws?

**Clarity:** Can it be understood?

**English writing:** Is it grammatical? Are choices of words appropriate?

Ask the reader to focus on the aspects you are least confident about.
The peer-review process

Definition

▶ The peer review process subjects scientific research to independent scrutiny by other qualified scientific experts (peers) before they are made public.

▶ A system used by scientists to decide which research results should be published in scientific journals or conferences, or whether proposed research should be funded.

From Sense about Science (senseaboutscience.org)
The purpose of peer review

To discriminate: What can be published; what can be funded; should it be a long talk or short talk or a poster . . . .

To improve: What are the weaknesses and how can the paper be improved.
  ▶ Particularly in journal submissions.
Why do researchers participate in peer review?

- 90% review because they like playing their part as a member of the academic community.
- 85% just enjoy seeing other papers and being able to improve them.
- Almost all researchers believe that their last paper was improved through the peer review process.

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2 Results from the 2009 Peer Review Survey: Sense About Science with support from Elsevier carried out one of the largest ever peer review surveys of over 4000 authors and reviewers:

Approach reviewing with the appropriate attitude.

Grant proposals: Be open minded.

Journal or conference submission: Be strict.

Informal reviewing: Be helpful to the writer. That is the only goal.
How to review
There are three key roles in peer review: the authors who write the papers, the reviewers who provide expert opinions and advice, and the editors who make the decisions.

Figure 1: Diagram of a “typical” peer review process (there are many varieties)
What goes into a review

1. Summary of the paper (a few sentences). This shows whether you have understood the paper as the authors intended.
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In this paper, the authors proposed a new algorithm for the duelling bandit problem, which combines Thompson sampling with zero-sum game theory. They show empirically that it outperforms other known algorithms on two data sets. They also perform asymptotic analysis but find bounds which are worse than other known algorithms.
2. Good things about the paper (one paragraph) *This is particularly important if the review will be largely critical.*
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3. Major comments (as long as necessary) This is where you assess the quality of the work, including all important aspects. Be objective, and support with evidence.

This paper fails to do what it claims, which is to show a procedure which converges to the PMI model. However, this only works because their definition of the PMI model is not the one used in the literature ...
What goes into a review (cont)

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- Accept in its present form with no revisions
- Accept after minor revisions (re-review not necessary)
- Accept after major revisions (and re-review)
- Reject but encourage resubmission in another form
- Reject
Other points

1. Be respectful.

2. Try to remove bias and emotion.

3. It might be helpful to wait 24 hours between reading and reviewing.
Why papers are rejected (by me)

Lacks a valid problem: A paper should address a problem which a community cares about. ($\approx 10\%$)
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Evaluations or experiments flawed: This is also a common reason. Often experiments are biased in favour of the outcome the authors want, or lack statistical or practical significance. (≈ 40%)
Interlude — review your own paper

- What is the paper about? (Shorter than your abstract.)

- What are the strengths?

- What are the weaknesses?

- In its current state, should it be accepted to meet your own standard?
Responding to referee reports
You, your paper, and the reviewing process

You: I want to publish my paper.
You, your paper, and the reviewing process

**You:** I want to publish my paper.

**Reviewers:**

You can’t publish your paper!
You, your paper, and the reviewing process

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Not good.
Have a good attitude

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5. Leave at least 24 hours between first reading the reviews and writing your response. Particularly if they are negative.
Your response to the reviewers

Your response is essentially a letter to the editors consisting of two parts:

1. The revised paper (if given the opportunity)

2. A document responding to the reviewers points
Your response to the reviewers (cont)

- Your response should respond to every major point they raise, with either,
  - What change you made;
  - The argument for not making the change.

- For minor points (typos, etc) thank them and make the changes.

- Be polite.
Assignment
Assignments

Reading:


Doing:

▶ Start to assemble a categorized list of important venues for your research area.

▶ Which are the important workshops, conferences, or journals in which to target publications in your topic and research area?

▶ Categorize them: Top venues, intermediate venues, third rank venues.