How to Read, Write, Present Papers

Nitin H. Vaidya
University of Illinois at Urbana-Champaign
nhv@uiuc.edu

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Caveats

- Statutory warning: Your advisor may not agree
- Only my opinions.
  Random thoughts, often in no particular order
- Use advise at your own risk
- I do not necessarily follow the advise all the time
This presentation ignores some of its suggestions
Omissions

- References at the end of the talk provide many suggestions not included in this talk.
Summary

- Use common sense
- Learn from experience
Reading a Paper
Why read papers

- So you know what’s happening
- Avoid reinventing the wheel
  - does happen commonly,
    too many wheels already
- Find interesting research topics
Why not to read papers

- Cannot read everything
- Should not read everything
- Can suppress innovation
  - once you see solutions using a particular theme, often hard to think differently
Read or not to read, that is the question

- Read, of course

- Know what’s important

- Know what can be ignored without significant loss of information
What to read

- Major conferences
  - Journals are a few years behind, but still can be useful

- Tech reports from active research groups
  - need to know which groups to look up

- Survey / overview papers
  - ACM Computing Surveys
  - CACM, IEEE Computer, Spectrum
  - more technical - IEEE Personal Communications, …
  - newsletters - ACM SIGCOMM, ACM SIGMOBILE, …
What’s in a paper

- Abstract
- Introduction
- Motivation
- Problem description
- Solution
- ...
- Performance Analysis
- Conclusions
- Future Work
How to read a paper?

Know why you want to read the paper

- To know what’s going on (e.g., scanning proceedings)
  - title, authors, abstract

- Papers in your broad research area
  - introduction, motivation, solution description, summary, conclusions
  - sometimes reading more details useful, but not always

- Papers you may want to improve on
  - read entire paper carefully
What to note

- Authors and research group
  - Need to know where to look for a paper on particular topic

- Theme of the solution
  - Should be able to go back to the paper if you need more info

- Approach to performance evaluation

- Note any shortcomings
So this paper is in print ...

- Be skeptical

- If it sounds too good to be true, it often is
How to Write
How to write a paper

- Do unto others as you would have them do unto you
How to write a paper

When you have truly exceptional results

- $P = NP$

- Probably doesn’t matter how you write, people will read it anyway
How to write a paper

- Most papers are not that exceptional
- Good writing makes significant difference
- Better to say little clearly, than saying too much unclearly
Readability a must

- If the paper is not readable, author has not given writing sufficient thought

- Two kinds of referees
  - If I cannot understand the paper, it is the writer’s fault
  - If I cannot understand the paper, I cannot reject it

- Don’t take chances. Write the paper well.

- Badly written papers typically do not get read
Do not irritate the reader

- Define notation before use
- No one is impressed anymore by Greek symbols
- If you use much notation, make it easy to find
  - summarize most notation in one place
Do not irritate the reader

- Avoid Using Too Many Acronyms
  - AUTMA  ?!

- You may know the acronyms well.
  Do not assume that the reader does (or cares to)
How to write a theory paper

- **Unreadability** is not the same as **formalism**

- Reader should be able to understand contributions without reading all details

- If some proofs are not too important, relegate them to an appendix
  - **Proofs** are not as worthy as new proof **techniques**
How to write a systems paper

- Provide sufficient information to allow people to reproduce your results
  - people may want to reproduce exciting results
  - do not assume this won’t happen to your paper
  - besides, referees expect the information

- Do not provide wrong information

- Sometimes hard to provide all details in available space
  - may be forced to omit some information
  - judge what is most essential to the experiments
  - cite a tech report for more information
Discuss related work

- Explain how your work relates to state of the art

- Discuss relevant past work by other people too

- Remember, they may be reviewing your paper.
  - Avoid: The scheme presented by Vaidya performs terribly
  - Prefer: The scheme by Vaidya does not perform as well in scenario X as it does in scenario Y

- Avoid offending people, unless you must
Tell them your shortcomings

- If your ideas do not work well in some interesting scenarios, tell the reader
- People appreciate a balanced presentation
How to write weak results

- If results are not that great, come up with better ones

- Do not hide weak results behind bad writing
  - Be sure to explain why results are weaker than you expected

- If you must publish: write well, but may have to go to second-best conference
  - Only a few conferences in any area are worth publishing in
  - Too many papers in poor conferences bad for your reputation
  - Just because a conference is “IEEE” or “ACM” or “International” does not mean it is any good

- If results not good enough for a decent conference, rethink your problem/solution
Read some well-written papers
  • award-winning papers from conferences

Avoid long sentences

If you have nothing to say, say nothing
  • don’t feel obliged to fill up space with useless text
  • if you must fill all available space, use more line spacing, greater margins, bigger font, bigger figures, anything but drivel
Technical reports

- Useful to get early feedback from other researchers
- Puts a timestamp on your work
- Can include more information / results than might fit in a paper
How to Present
How to present a paper

- Do unto others as you would have them do unto you
How to present a paper (at a conference)

Objectives, in **decreasing** order of importance

- **Keep people awake and attentive**
  - everything has been tried: play fiddle, cartoons, jokes
  - in most cases, extreme measures should not be needed
  - humor can help

- **Get the problem definition across**
  - people in audience may not be working on your problem
How to present a paper
(at a conference)

Objectives … in decreasing order of importance

- Explain your general approach
  - most productive use of your time

- Dirty details
  - most people in the audience probably do not care
  - a typical conference includes 30+ paper presentations, yours could be the N-th
Talk outline or not?

- Useful when several ideas discussed in a single talk
- Short talks: Skip the outline
- Long talks: Include an outline
- Make the outline interesting
You want people to (quickly) read your slides

- Use big enough font

- Do not put too much on one slide
  - don’t want to keep them busy reading, instead of listening

- Use good color schemes
  
  Not blue on yellow
Slide text need not be grammatically accurate

Keep it short
- OK to omit some details
- fill them in when you present the paper

Practice makes perfect
versus
Practice can improve your presentations
PowerPoint, but not excessively

- Everybody has used PowerPoint

- No one is impressed by fancy backgrounds anymore

- Avoid using gratuitous animation

- Standard PowerPoint layouts can be useful
  - decent font sizes and color schemes
Picture is worth 1000 words

- Use illustrations to explain complex algorithms
- Omit minor details, focus on the important
- They can read the paper to know the exact algorithm
Short talks

- May not have enough time to discuss all ideas clearly
- Focus talk on one or two ideas
- Summarize rest briefly
- Better to explain one idea well, than many ideas poorly
How to present a paper

- Avoid blocking the screen

- Point to the screen, rather than the slide on the projector
How many slides?

- Depends on personal style

- Rules of thumb
  - 1 slide for 1-2 minutes
  - Know your pace

- I tend to make more slides than I might need, and skip the not-so-important ones dynamically

- Anticipate technical questions, and prepare explanatory slides
How to present a paper

- Practice makes perfect (or tolerable)

- May need several trials to fit your talk to available time
  - particularly if you are not an experienced speaker
If English is your second language

- Accent may not be easy to understand
- Talk slowly
- Easier said than done
  - I have a tough time slowing down myself
No substitute for experience

- Nothing like a terrible presentation to learn what not to do

- Try to learn from other people’s mistakes, instead of waiting for your own
Summary

- Use common sense
- Learn from experience
- Enjoy!
  - Papers can be fun
Useful references

- Speaker’s Guide, Ian Parberry
  
  http://hercule.csci.unt.edu/ian/guides/guides.html

- The Best Method for Presentation of Research Results, Veljko Milutinovic
  
  http://www.computer.org/tab/tcca/NEWS/sept96/sept96.htm

- Many other guides on the web

Above web links may become outdated over time.
Thanks !