

How to Read, Write, Present Papers

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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

Caveats

- 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

Miscellaneous

- 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

Text

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

Text

- 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 slides 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

Thanks !