

# 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 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

Thanks !