How to Read, Write, and Present a Research Paper

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CISC 879 : Advanced Parallel Programming
Lecture Overview

• Effective and Efficient Reading
• How to Write a Paper
• How to Present a Paper
Disclaimer

- Not easy way to read, write, and present!
- Practice, practice, practice
- Study good examples
  - Ask advisor for examples of papers
  - Read award papers
  - Attend/watch talks by good speakers
    - Videos available on internet
    - Example: http://www.researchchannel.org/prog/
What do I mean by “Read?”

- Effective and efficient reading
  - Do not waste time on irrelevant papers
  - Maximize your time on relevant papers
- The Whys, Whats, and Hows of Reading
- Critical Reading
  - Essential to writing good critical reviews
Problems with Some Papers

- Solving problems not applicable to an actual need
- CS has not adopted Scientific Method
- Least Publishable Unit (LPU)
- Never clearly contrasting to related work
- Hard to Read
Questions to Ask

- What are the motivations?
- What is solution and how is it evaluated?
- What is your analysis of problem, solution, and evaluation?
- What are the major results?
  - Correct, new, clearly presented, worth publishing
- What are contributions?
- Are there any questions not answered?

Reference: [http://www-cse.ucsd.edu/users/wgg/CSE210/howtoread.html](http://www-cse.ucsd.edu/users/wgg/CSE210/howtoread.html)
Efficient Reading

• Preparation
  • Quiet place and note-taking material

• Read for Breadth
  • Read title and abstract
  • Skim intro, headers, tables, graphs, and conclusions
  • Look for primary contributions

• Read in Depth
  • Challenge arguments, assumptions, evaluations, and conclusions

• Fallacy: Must read from beginning to end

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Getting a Paper Accepted

- Follow the Rules!
  - paper format, length, on time, etc.
- Spell and Grammar Check
- Write, Read, Edit, Repeat (many times!)
- Have colleagues review
- After-the-fact outline (check flow of paper)
- Read good papers
  - Ask advisor and your teachers for good papers
  - Seminal papers
Getting a Paper Accepted

- Important: **Write to the reader**
  - What does the reader know and what do they expect next?
- Quality must be recognized quickly
- What are contributions?
- Is paper stimulating?
- Is paper relevant?
- Have a planned organization of paper
- Enough details to reproduce experiments
Anatomy of a Good Paper

- Abstract (4-8 sentences)
  - State the problem and why it's important
  - Briefly describe solution
  - Implication of solution
- Introduction (10% of paper)
  - Describe problem
  - State your contributions (bulleted list)
- Describe the problem (10%)
  - Motivate the problem
Anatomy of a Good Paper

- Describe your idea (20%)
  - Convince reader idea can solve problem
  - Implementation details
- The details (45%)
  - Convince reader you solved problem
  - State reasonable counterexamples
- Related work (10%)
  - Convince of novelty
- Conclusion (5%)
  - Summary of results and significance of contributions
Icing on the Cake

- Attention Grabber Sentence
- Great Introduction!
- More time editing = less time reading
- Convey intuition
  - Once reader has intuition, can follow details
- Good looking graphs
  - Can understand (paper) from reading graph captions
- Use Examples!!
  - Present the general case
Additional Resources

- The Elements of Style
  - By Strunk and White

- Style, Toward Clarity and Grace
  - By Joseph M. Williams

- Talks of Research Writing
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What is Your Talk is about

- The Paper = The Beef

- The Talk = Beef Advertisement

- Do not confuse the two!

Your Talk is NOT About:

- To impress your audience with your brainpower
- To tell them all you know on the topic
- To present all the technical details


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Your audience

• Have never heard of the topic
• Just had lunch and ready to nap

Your mission is

WAKE THEM UP

and make them glad you did.


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What’s in your Talk

- **Motivation (20%)**
  - 2 minutes to engage audience
  - Why should I listen?
  - What is the problem?
  - Why is it an interesting solution?

- **Key Idea (80%)**
  - Be specific
  - Organize talk around specific goal
  - Ruthlessly prune everything else!

Tips for a Good Talk

- Narrow, deep rather than wide, shallow
  - Avoid shallow overview talks
  - Cut to the chase: technical “meat”
- Examples are your main weapon!
  - To motivate talk
  - To convey intuition
  - To illustrate key idea


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What to leave out

- Lots of animation and color
- Slides with lots of text
  - You do not want to read everything that is on your slides, otherwise your audience might wonder why they just don’t just simply read your slides.
  - You do not want a lot of text on your slides as people will want to read everything you have written and will be distracted from your presentation. Use your slides as a guide.
- Technical Detail
  - Extensive formulas and code
  - Dense slides will put audience to sleep!
  - Present specific aspects; refer to paper for details
- Related Work
  - Know it, but don’t elaborate on it

What NOT to Do

- Use small fonts
- Reveal one point at a time
- Do not apologize
  - “I didn’t have time to prepare the talk”
  - “I don’t feel properly prepared to give this talk”
- Go over your time limit!!
- Stand in front of projected material
- Stand with back to audience
- Point to laptop

Final Tips

- Be Enthusiastic
- Practice
- Memorize first few sentences
- Move around, use arms
- Speak to someone at back of room
- Identify nodders and speak to them
- Watch for questions