How to Read and Critique Technical Papers
Why do we read papers?

• Your instructors/advisors ask you to
• You are trying to pick up some cool new techniques not available in textbooks
• You are surveying an area of research
• You are reading papers loosely related to your field and try to identify new research problems
What papers to read?

• Your instructors/advisors ask you to
• You are trying to pick up some cool new techniques not available in textbooks
• You are surveying an area of research
  – Start with a survey paper or some well-cited papers → their references
• You are reading papers loosely related to your field and try to identify new research problems
  – Top conferences/journals/authors always a good starting point
How to read papers

• 4 phases to reading

Stage I

Determine if there is anything interesting at all and identify the interesting portion

Stage II

Read the whole paper

Stage III

Go over the portions that are important or difficult

Stage IV

Write a critique

Information content

10%

20%

60%

10%
Stage I

• What is interesting?
  – Ideally the abstract should tell you this, but frequently it does not.
  – Need to jump about
    • Read conclusion
    • Read introduction
    • Look at the bibliography
    • Glance at the TOC (if any)
Stage II

• Read with the following questions in mind
  – How can I use this stuff?
  – Does this really do what the author claims to do?
  – What if the assumptions and choices that the author made are discarded (or made invalid)?
Stage III

• Understand what is proposed in more details
  – Architecture
  – Algorithm
  – Mechanism
  – Methodology

• Understand how the proposed idea is evaluated
Stage IV Critiques

• Short summary of the paper
  – What problems does it address and how?

• Evaluation of the significance of its technical contribution
  – What is new?
    • New problem, new methodology to an established problem, marginal improvement to existing solutions
  – How well does it work?
    • Are assumptions made valid?
    • Is the evaluation adequate?
    • Does the evaluation support the conclusion drawn?
    • How does it compare to competing solutions?
    • What new insights can be gained?

• Suggestions on aspects that can be improved
  – Support your arguments!
• What is not
  – Lengthy copy & paste of parts of the paper
*Familiarity: Rate your familiarity with the topic of the paper.

- Expert
- Familiar
- Some knowledge
- Novice

*Recommendation: Your overall rating.

- Definite accept (top 10%, excellent paper)
- Likely accept (top 20% but not top 10%, significant contribution)
- Accept if room (top 30% but not top 20%, borderline for Networking)
- Likely Reject (top 50% but not in top 30%, needs more work)
- Definite Reject (bottom 50%, not up to Networking standard)

*Contributions: What are the major issues addressed in the paper? Do you consider them important? Comment on the degree of novelty, creativity, impact, and technical depth in the paper.

*Strengths: What are the major reasons to accept the paper? [Be brief.]
*Weaknesses: What are the most important reasons NOT to accept the paper? [Be brief.]

*Detailed Comments: Please provide detailed comments that will be helpful to the TPC for assessing the paper. Also provide feedback to the authors.

TPC comments: Write any comments for TPC members only. The authors will not see these comments.