How To Read a Research Paper

Research Papers

- Primary form in which research results are disseminated in computer science
- Conference papers (shorter)
- Journal papers (longer)
  - Often the complete version of a conference paper
  - May come out several years after the conference paper

Reading a Paper Critically

- Understand the problem
- Understand the proposed solution
- Understand competing approaches / designs
- Evaluate the paper

- Peer review is the cornerstone of the scientific publishing process

Why?

- Learn to do research
- Learn to think critically about quality of research papers
  - Someone will be thinking critically about your own work!
  - In any discipline, there are fad and there are lasting ideas… learn to tell the difference!
- Gain perspective
- Key issue: what are the questions to ask?

Evaluating a Paper

- What is the problem being solved?
  - Is it important? Relevant? Why?
  - What is the prior work in this area?
- Is the proposed solution clever?
  - Cleverness is orthogonal to importance!
- Are the assumptions and model reasonable?
- Impact
  - Easier to evaluate for older papers
  - Does other work build on it? Do other papers uses techniques and solutions proposed in this paper?

Evaluation Process

- Read slowly, take notes as you read
  - Question assumptions, importance of the problem
  - Write questions to track what you don't understand
- Sometimes what is not in the paper is more important than what is in it
  - Is there something the authors have overlooked?
- Don't let ideas or design details pass until you understand them!
- Do not assume the paper is correct, even if published in a prestigious peer-reviewed venue

Ground Rules

- Try to understand
- Don’t be afraid to ask
- Be constructive
- Be polite
- Don’t be afraid to criticize (constructively!)