

# How to Read a Paper by S. Keshav

# Why?

- Keep current with the state of research
  - And development, and . . .
- Important point is to find the key idea in the paper and see how that idea is applied
- One approach: multiple passes through the paper
  - Get a general idea of what the paper is saying
  - Go through the paper, but don't worry about the fine details or proofs
  - Then worry about the details or proofs

# Pass 1

- Read the title, abstract, introduction
  - Read the title and abstract thoroughly; skim the introduction
- Read section, subsection headings
  - This gives you an idea of the structure of the paper
- If there is any math, glance at it
  - Idea here is to get an idea of the type of math and any obvious assumptions
- Read the conclusion
  - This more thoroughly than the introduction
- Look at the references

# Pass 1

- *Category*: What type of paper —a theoretical analysis? An experimental paper? A case study?
- *Context*: What other work is it related to? What is the underlying foundation of the work? Does it build on existing work or pose a new problem?
- *Correctness*: Are there any obvious errors? Are the assumptions you have identified valid?
- *Contributions*: What has the paper added to the body of knowledge?
- *Clarity*: Is the writing clear? Are there obvious grammatical or spelling errors? Is the sentence structure, and the structure of the paper, readable?

Decide whether to read the paper in more detail, based on the above

# Pass 2

- Go through the whole paper more thoroughly
  - Look for terms you don't understand
  - Write down any questions you have
  - Find the key points in the paper
- Look at figures and be sure they are understandable
  - Check font sizes (are they readable?) and any labels on the figures
- Note any references you encounter at points that interest you
- Decide if you want to go through the paper in more depth

# Pass 3

- Here you try to get into the minds of the authors and recreate the work they did
  - Exactly what assumptions did they make?
  - If you were doing the work, would you do it the same way?
- If the paper is experimental, do they provide enough information to reproduce the experiment?
- If the paper is theoretical, are the bases for the work sound?
- Look for hidden assumptions in both cases

# Key Points

- Read a paper in 3 passes
- First pass: get to know the paper; this should take ~10–30 minutes
- Second pass: go through the paper in more detail, so you understand the structure of the work done and any assumptions made; this should take ~1–2 hours
- Third pass: go through the paper in full detail, to understand exactly what the results are and mean, and the key ideas and contributions underlying the work
- After each pass, ask yourself if the paper is worth continuing