Paper Summary Guidelines
CMSC 601

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(a few words added by Charles Nicholas)

- Paper summaries should not be longer than two pages, and should generally be no more than one page. You want to hit all of the key points, but not get into too much detail, or it's not really a *summary*.
- Summaries should provide answers to these questions about the paper:
  - What is the specific problem that the work is intended to address?
  - What is the authors' main claim? (i.e., what are they trying to do?)
  - What evidence do the authors give to support their claim? *Does* the evidence support their claim adequately?
  - Does the work appear to be original and significant?
  - Do the authors place their work in the context of related work? Ideally, they should cite relevant literature and should explain why their work represents an original and significant contribution.
  - Is the paper well organized?
  - Is the paper clearly written?
  - Is the paper seminal, in the sense of stimulating lots of follow-on work perhaps?
- Some other questions you may with to think about and answer, in order to make your paper summary as thorough as possible:
  - What assumptions or limitations does the work have? **This is always a good question**.
  - What would be the logical next steps for the research?
  - What are your remaining open questions about the work after reading the paper?
  - What are the most important citations in the paper to follow up on if you were to read further on this topic? Why?

Remember: Even in a paper summary, if you want to use text from the original source, you *must* use quotation marks (and a citation, if it isn't obvious what the source is). Excessive use of quotes usually indicates that you didn't really understand the ideas well enough to express them in your own words (and makes the summary flow poorly).

Strategies for Reading Papers

If you've come across a paper in the course of your explorations, you need to first decide if it's relevant. (Obviously, if it's an assigned paper, you may skip this step!)

- Decide from the title and context if it might be relevant.
- Read the abstract to decide if it actually is relevant, then read through the introduction quickly to make sure.

Once you've decided (or been told) to read the paper, don't just tackle the paper head-on. Approach it strategically.

- First skim the whole paper once to get a feeling for what it's about. Skip anything dense or technical. Glance at the figures and tables.
- Read through the whole paper, but don't let yourself get stuck. If you have questions, don't struggle to figure them out; instead, jot a note in the margin and keep going. Put stars next to important points and/or underline key ideas. Don't get carried away with the underlining, or it won't be

helpful when you want to look back over the paper.
- Go back and work through the details of any (important) equations, proofs, algorithms, etc. that you skipped over.
- If you're going to present the paper at a lab meeting or class, or if it's very relevant to your own research, you may need to spend more time with the paper to fully understand it. You may also need to look up citations of work (by the authors or by others) on which this paper builds. It's important, though, to learn which papers are critically important and which are less so -- it would be entirely possible to spend the next year (or two or three or four) doing nothing but reading, and *still* not have read all of the papers that you "ought" to. Spend your time wisely, and keep track of your reading so you don't have to *re*-read everything next year.
- Even for papers that you don't need to turn in a research summary on, I advise *always* writing a short summary (one or two paragraphs, or a short list of bulleted points) of the paper in your research journal. When I'm reviewing a paper, or reading it seriously, I try to make thorough enough marginal notes that I can extract a summary/review directly from these notes. I'll also often make summary notes ("great idea but poorly executed," "thorough results but uninteresting work") on the first page.
- Did I mention that **you should have a research journal!?** Preferably this would be a bound composition book, not a bunch of scraps of paper or looseleaf. Nowadays, you might have a personal research blog. Marie went through six composition books in grad school, and she *still* occasionally look back at them. Charles didn't learn about paper summaries until he was a full professor, but he's got research journals extending back to the mid 1980's.

When you're doing your own literature survey, or reading for your own research, it's a good idea to keep a list of citations that might be worth tracking down, with at least enough bibliographic information to find the actual paper later on. Marie also keeps a BibTeX file with all of the papers she's read! Ideally, this BibTeX file would be annotated with a short summary of each paper. (For this class, since you have to do an annotated bibliography, and later a literature survey, keeping these summaries as you go along is **highly** recommended!)

Some Useful Links

http://www.biochem.arizona.edu/classes/bioc568/papers.htm
How to Read a Scientific Paper, John W. Little and Roy Parker, University of Arizona.
Oriented towards biology papers, so not everything is relevant, but section 4, "Evaluating a Paper," has some particularly helpful suggestions.

http://swig.stanford.edu/~fox/paper_writing.html
Armando's Paper Writing and Presentations Page, Armando Fox, Stanford University.
Mostly on writing and presenting papers, but also talks about reviewing papers.

http://www.isi.edu/gost/courses/csci555/survive/
CS 555: How to Survive!, John Brewer, ISI.

http://bell.mma.edu/~jbouch/ReadingPapers.html
How to Read a Scientific Research Paper: A Four-Step Guide, Joceline Boucher, Maine Maritime Academy.
(Modified with permission from Ann McNeal, School of Natural Science, Hampshire College.)