

ECEN/CSCI 5593 Advanced Computer Architecture (ACA)
Paper Review #1 (Branch prediction – overcoming control flow hazards)

Professor Bill Dally (Stanford) tips for reading papers:

1. Before diving in, think about what your goals are, and what you want to get out of the paper. You need to approach the reading with an aim to extract info; you may want to target specific areas of the paper in case you are looking for something particular. Keeping these objectives in hand will help you while reading.
2. Read the abstract first. This should be an advertisement for the paper.
3. Read conclusion. Figure out what the authors accomplished, know what their goals were.
4. Find the “paper overview” section in the introduction and read it if you need to. If you don’t know about a certain topic, you may find background material here.
5. Make a quick first pass through the paper, so you understand their presentation of the topics. Figure out how the equations fit into the discussion, but don’t try to understand the math. On the second pass, read the paper more carefully.
6. Highlight important parts of a paragraph so you don’t have to reread the entire paragraph each time. This helps in class discussions as well.
7. Write down an outline as you go- this will help you remember what you have read. You can refer back to this outline as you go through the paper.
8. Look up key references if you are looking for a particular topic. This paper may not have what you are looking for, but it may build on top of a topic you need to research.

Assignment: write a one page (no cover sheet, but include your name) on the concepts of the paper. Ideally summarize the paper in one paragraph (6-7 sentences), and add a second paragraph to add your unique insight on the paper (relevant today, flaws in the paper, ideas of your own on what the authors might have explored in addition to their work). Papers are available on IEEE and ACM publishing library when logged in from a colorado.edu system or colorado.edu VPN connection.

You can review any of the following papers:

Alternative implementations of two-level adaptive branch prediction (1992)

by Tse-Yu Yeh , Yale N. Patt in the proceedings of the 19th Annual International Symposium on Computer Architecture

Marius Evers, Sanjay J. Patel, Robert S. Chappell, and Yale N. Patt. 1998. An analysis of correlation and predictability: what makes two-level branch predictors work. In Proceedings of the 25th annual international symposium on Computer architecture (ISCA '98).

Daniel A. Jiminez and Calvin Lin. 2001. Dynamic Branch Prediction with Perceptrons. In Proceedings of the 7th International Symposium on High-Performance Computer Architecture (HPCA '01). IEEE Computer Society, Washington, DC, USA.

Any paper of your own selection (related to branch prediction)