15-745 Optimizing Compilers, Spring 2012
Advice on How to Lead an In-Class Discussion

There are several motivations for our in-class discussions. First, we would like you to be exposed to the state-of-the-art in compiler optimization, including the most recent developments in industry as well as the latest academic studies. If you simply read a compilers textbook, you may get the mistaken impression that all of the questions have been answered already; in reality, things have been changing significantly, both in research and in practice. Second, we would like you to get a feel for how one conducts good research in compiler optimization. Finally, we hope that some of the open questions that will arise in our discussions might help spark ideas for your research project in this course.

With these goals in mind, here are some tips on how to lead a successful discussion:

- Do not prepare for your discussion by simply splitting up the papers among group members and having each person present one of the papers: that is definitely not the idea. Each person in the group should read *all* of the papers. After you have done that, get together as a group and decide what is common/different/interesting/unusual amongst the papers, and which of these concepts you wish to convey. You do not need to present material from all of the papers, although you should think about each one carefully before creating your presentation.

- Do not attempt to present the full content of the papers. There simply is not enough time. Distill the papers down to their key ideas and results.

- Your mission is to provoke a thoughtful discussion about your topic. Come prepared with a list of thought-provoking questions to pose to the audience.

- Do not assume that your audience has read the papers. I encourage everyone to at least skim all of the papers before the class meets, but there are too many papers for everyone to have read all of them in detail. Hence your talk must be self-contained: you must provide whatever background is necessary for your discussion.

- Don't just accept all of the statements in these papers at face value. Do you agree with the authors? Do their results really support their conclusions, or are there other interpretations or opposing views? In particular, is there a good reason to believe that the conclusions will still hold for applications other than the ones in the given study?

- Be careful about the time. Twenty minutes is a very short period of time, especially since we want a significant chunk of that time to be devoted to discussion. I would suggest that you time your presentation to make sure that you can fit it within a reasonably short period of time. Make sure that you leave *at least* 3-5 minutes for discussion. If you can organize your entire session as an interactive discussion, that is even better.

- *A picture is worth a thousand words.* Create slides or whatever visual aids you need to communicate your ideas quickly and clearly. You probably do not have time for more than 5-10 slides total for your group. You may want to create backup slides related to questions that you might ask, but that is optional. **IMPORTANT: Email your slides to Prof. Mowry and the TA's no later than 8:30am on the day of your discussion so that they can be projected from a common laptop; there should be just one PowerPoint file per group—thanks!**

- At some point in your discussion (perhaps near the end), you should present what you consider to be interesting open research questions related to your topic. These are not necessarily just suggestions for class projects (the scope can be much larger than that), although they might help people think about interesting problems to address.

- All of the discussion leaders should actively participate in leading the discussion.