

CS 188 Lecture Notes

Lecturer: Tom Cormen

Scribe: Kimo Johnson

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How to give talks

The materials for this lecture came from the following sources: *Some Lecturing Heuristics* by Patrick Winston; *How to Present a Paper in Theoretical Computer Science: A Speaker's Guide for Students* by Ian Parberry; *The Technical Presentation* by Lance Glasser; *Paper Presentation Guidelines* by John Carter; and Tom's own experiences. Some other good sources for information on presenting your work are *A Theoretician's Guide to the Experimental Analysis of Algorithms* by David Johnson and *How to Present a Paper on Experimental Work with Algorithms* by Catherine McGeoch and Bernard Moret.

The four kinds of talks

There are four kinds of talks in computer science: the poster talk, the conference talk, the colloquium or seminar talk, and the job talk. These talks vary in length and difficulty, and each talk requires a different level of detail. The paragraphs that follow will give an overview of each kind of talk and suggestions on the number of slides you should make. Later in these notes are preparation techniques and points to keep in mind when you give your talks.

Poster talk

A 10-minute poster talk is the second-hardest type (behind the job talk) because of the *Theory of Relativity*: when you're giving a talk, 10 minutes feels like 4 minutes; when you're listening to a talk, 10 minutes feels like 25 minutes. If you are the speaker, you will feel that you haven't had time to say anything, yet your audience will be ready for you to finish. All you can do in this time frame is state the problem and state the result. You have time for nothing else. If you can do that in 10 minutes, then your talk will be successful. You may not even have to state the problem if it is well-known.

You should have no more than 8 slides for a poster talk. If you try for more, your talk will feel rushed. An experienced speaker may be able to present 10 slides without rushing, but it is better to be safe and make no more than 8.

Conference talk

A conference talk usually lasts 20 to 30 minutes. In a conference talk, you have time to present the problem, its context, the results, and one or two key ideas. You still don't have time for the details. Essentially, your

goal is to motivate the audience to read your paper. In other words, the conference talk is an advertisement for your work.

Approximately 15 slides is an appropriate amount for a conference talk. You may be able to have 18 slides, but you should try to stay within one to two minutes per slide.

Colloquium/seminar talk

You give a colloquium or seminar talk if you are an outside speaker or a student presenting work in a course. It is basically a conference talk with the parts expanded. You have between 45 minutes and one hour, and in this time frame you can present some, but not all, of the details.

You will want around 25 slides for a colloquium; any more and you will most likely rush.

Job talk

Job talks are the hardest talks to give. In about an hour you have to convince a room of professors and students that your work is interesting, deep, and fundable; that you will be a good teacher, colleague, and asset to the institution; that people like you; that you know what you are doing; and that there are plenty of follow-up projects for you to work on. As if this task isn't difficult enough, you will get only one bit of feedback from a job talk: an offer or no offer. The feedback might not even come until after you've delivered all your talks, so you probably won't be able to make changes to your presentation.

Since the job talk is roughly the same time scale as the colloquium, you should make about the same number of slides.

Techniques for preparing your talk

Although job talks have the most at stake, all talks require preparation and practice. What follows is a list of visual and verbal techniques to help you prepare your talks.

Visual techniques

- Give yourself plenty of time to prepare the visuals. A week is a good amount of time since you need to practice your talk with the visuals. Talks prepared the night before will look like they were prepared the night before, telling the audience that you don't care.
- Spend about one and a half to two minutes per slide. This pace implies no more than 8 slides for a poster talk, around 15 for a conference talk, and 25 for a colloquium or job talk.
- Storyboard your talk. Take a sheet of paper and divide it into 4 quadrants. Turn the paper on its side (landscape) and sketch one slide in each quadrant, giving you 4 slides per page. Storyboarding allows you to have your entire talk in front of you and helps you work out the high-level problems before you invest time making the slides.
- Use large type. Try standing 10 feet from your laptop or slide. If you can't read the text, increase the font size. If you think the font may still be too small, increase the font size. Sizes between 18-point and 24-point are appropriate in PowerPoint, but be careful: PowerPoint may automatically shrink your fonts to fit the text on one slide.

- Treat each slide like a paragraph (or part of a longer paragraph). Each slide should present a single idea, and the title of the slide serves the same purpose as a topic sentence.
- Favor pictures over words. Pictures are far more interesting and informative than text.
- Use color to teach, not to show off. You may be tempted to make colored text just because you can. Avoid this temptation and use color only if it has meaning. If you do assign meaning to colors, don't use similar colors unless they should have similar meanings. Also avoid using both red and green since color-blind people have trouble distinguishing these colors.
- Use simple backgrounds. A busy background may distract the audience. It's OK if the background is colored; just make sure that there is enough contrast between the text and background. In other words, you should use light text on a dark background, or dark text on a light background.
- Use animations only if you have a good reason. They follow the same principle as color: don't make text fly across the screen just because you can. Animations should serve a logical purpose and help teach.

Verbal techniques

- Know exactly what you want to say at all times during the talk. Your slides should remind you of what you want to say. Also, you should decide in advance what to say about every slide; do not improvise when you see your slides.
- Turn on your *um*-filter, *OK*-filter, or any other verbal filter you may need. These words distract your audience and weaken your presentation. You may not know the words you overuse in speech. If this is the case, record yourself speaking or ask a friend to listen carefully to what you say. You need to be able to speak clearly if you want people to listen.
- Practice, practice, practice. You need to practice your talk with the slides until you are completely comfortable giving it. The first time, practice in an empty room. You will realize how often you don't know what you want to say, you will find bugs in your slides, and you will get a rough idea of the length of your talk.

The second time, practice in an empty room again. You will be able to work out the bugs you discovered in your first session, you will become more familiar with the talk, and you will also get a more accurate idea of the length of the talk. Repeat the talk in an empty room until you are completely comfortable with it.

Now you are ready for a live audience. You will have to interact with the audience and they can give you feedback. (They can also count your "ums.") Repeat the talk with a live audience, possibly enlisting new members to avoid burning out the others, until you are comfortable with it. It is a good idea to have a few people see several revisions of your talk to judge your progress.

Important points to keep in mind

We have gone over many visual and verbal techniques to help you work on the low-level details of what you want to show and what you want to say. But a talk is more showing the correct slides and speaking clearly—you need to understand your goals and be able to lead your audience to those goals without losing

them along the way. The next list of tips will help you keep your audience engaged, so these are important points to keep in mind.

- Know your goals. Glasser lists two meta-goals of talks: “convey technical information and understanding” and “convince your audience of the validity and value of your results.” These goals are appropriate for any talk. He also lists three non-goals: “Show people how clever you are,” “make a social statement,” and “attack someone.”
- Get the important points up front. Each listener in your audience starts with a fixed amount of attention. As your talk progresses, their attention is spent and many will eventually stop listening. You need to state the important points in the beginning while everyone is still listening.
- Don’t save your main point until the end. You may be tempted to present your logical conclusions sequentially to force the audience into believing your result at the end of the talk. The problem with this approach is that you will lose most of the audience along the way, weakening the impact of your result. A better approach is to state the important points early and summarize at the end.
- Repeat key ideas during the talk. At any moment, at least 20 percent of the audience is not paying attention, so don’t assume everyone has heard everything. Repetition gives people another chance and underscores the key ideas.
- Motivate the audience to care about your work, but don’t spend too much time on motivation.
- Have a presence. You need to be confident and take command of the audience. You also need to show the audience that you’re having a good time. Remember that you’re a performer and you can control the mood of the audience—if you’re enjoying yourself, the audience is more likely to enjoy your presentation. Yet, don’t try to be funny, especially if you’re not a funny person. The audience will wonder why you’re resorting to humor in a technical presentation.
- Let your personality come through and give the audience a chance to react to it. They want to hear a talk from a person, not an automaton. A talk with personality is also more memorable.

Finally, here are a few tips from Winston’s *Some Lecturing Heuristics*. Although you may not have control over some of these aspects, it is important to understand how they can affect your talk.

First, he suggests looking at the hall before you speak. You may not be able to choose the hall, but if you can, you want it to be comfortably full. He believes if the hall is too empty, the audience will wonder why more people didn’t attend.

Second, he points out that your mood will be determined by only a few people. Someone reading a newspaper or sleeping may lead you to believe your talk is dull. But don’t let these people affect your mood—find the people who are interested and focus on them.

Third, he suggests cycling over the ideas. Start with an overview, then present a mid-level view, and then, if time permits, present the details. People find comfort in hearing things they have already heard. Examples, analogies, and rhetorical questions are also useful tools for presenting ideas and keeping your audience engaged.

Finally, he suggests cultivating gestures and learning how to point at the board. Remember, you are a performer and the audience wants to see a person, not a statue.