

Scientific Communication CITS7200

Computer Science & Software Engineering

Lecture 10

Giving a talk

Today we will talk about how to give a seminar in Computer Science. If you continue in academia, you will give more seminars, either as university talks, as part of the interviewing process in a job application, or as conference presentations at international meetings. Much of this lecture comes from Ian Parberry's "How to Present a Paper in Theoretical Computer Science" that is included in your "Readings and References" handout.

Different talks have different constraints: some can be as short as 10 minutes, others as long as 50 minutes or more. Some can be informal talks before a small group of experts in your area, whilst others can include a larger and more diverse audience expecting a general and informed overview of your topic.

In all cases you need to be well-organised. You must have a clear idea of what it is you want to say, and how you are going to say it.

1 What to say and how to say it

You need to structure your talk so that the audience knows what to expect. Usually a talk in computer science can be broken down into five main components: the Definition of the Problem, the General Theory, the Details, the Conclusion, and Question Time. We will consider each of these components in turn.

1.1 The Definition of the Problem

This is possibly the most important part of your talk. You must let the audience know what your talk is going to be about, and more specifically, what the problem is that you are dealing with. First impressions are very important and members of the audience will decide not only whether they want to listen to your talk, but whether you are capable of giving a good talk, all within the first few minutes. If you lose them here it will be very difficult to get them back later on.

- *Make the problem clear and concrete.* Many speakers forget this simple point, but if the audience doesn't understand the problem under consideration, they won't understand anything else. Define the problem with a concrete example, not by giving its most abstract form. It is the concrete example that the audience will come back to when you present the solution so it is important that you choose an example that is simple and yet rich enough to illustrate all the points you want to make.
- *Motivate the audience.* Explain why the problem is so important. Throw in a little philosophy or history, and relate the problem to other problems. This is where you can discuss previous and related work in this area, and show that you have done the scholarly part of the research as well. Present a clear and ordered summary of the results leading up to yours, mentioning the authors and dates of the relevant papers. Don't give full bibliographic information, but have it available should anyone ask for it later. Sometimes it is also useful to mention *where* the research was done, since those in the area will be able to assess the previous contributions in a broader context.
- *Set up your notation.* You should try to keep terminology to a minimum, and make it as simple as possible. This might mean simplifying the presentation; why discuss your results in n dimensions when 2 dimensions is simpler to understand? In the Conclusion you can mention that the results scale up to arbitrary dimensions, if that is the case. Nevertheless, all technical terms must be introduced early in your talk, and it does no harm to remind the audience of their meaning when they are re-introduced.
- *Remind, but do not assume.* If your paper assumes standard results, then remind the audience exactly what they are. Phrasing this as a reminder avoids antagonising those who are not familiar with them.

- *Emphasise the contributions of your paper.* The audience wants to know precisely what your contribution is. Make this clear; do not make them search for it within a pile of details, because they might get it wrong. Often a simple list of your contributions in point form is the best way to do this, and it will help you organise the structure of the rest of your talk.

Sometimes it is appropriate to give the audience a brief guide to the rest of your talk, but only if the talk is longer than 30 minutes. Otherwise, you are losing valuable time to explain your ideas, rather than the meta-structure of your talk. Do not make your road map too detailed. You can come back to it throughout your talk, reminding your audience where you are in the overall presentation.

1.2 The General Theory

This is the main part of your presentation and it contains not only the methodology of your work but also a general overview of your results. It is where the audience attention will begin to wander if you failed to properly define and introduce the problem.

- *Abstract the major results.* Describe the key results of your talk. Present statements of results, but no proofs. You might have to get a little technical here, but do so gradually and carefully.
- *Explain the significance of the results.* Backup and relate the formal results you have just presented with the comments you made in the Introduction.
- *Sketch a proof of the crucial results.* Give a very high-level description of how the results are proved. Emphasise the proof structure, but gloss over technical details. If you are reviewing someone else's work and the proofs appear to have no structure, you must impose one.

1.3 The Details

If you are doing well, most of the audience will have followed you up to this point, but the experts amongst them might be getting a little bored. After all, it all looks so easy, perhaps they are beginning to doubt whether your results are actually true. Now is the time to give some technical details.

- *Present a key result.* Choose just one key result. It should be important, non-trivial, and representative of the rest of your results. However you must be able to present it in a short amount of time.
- *Present it carefully.* Now descend into all the messy details, but try to be as clear as possible.

1.4 The Conclusion

Your talk is almost concluded. You need to round it off, discussing your results in retrospect.

- *It is clear in hindsight.* You can now make observations that would have been confusing at the beginning. Refer to statements you have made in the previous three sections, and weave them together. Regain the attention of those who drifted off in the Details section. Make sure that *everyone* leaves feeling as if they have learned something.
- *Give open problems and limitations.* It is usual to conclude with a list of open problems related to your work. Point out the weaknesses in your work, and possible generalisations, thereby diffusing potentially antagonistic questions during question time.
- *Let the audience know your talk is over.* You can finish your talk with a simple phrase, such as “Thank you. Are there any questions?”

1.5 Question Time

In most cases there will be a short time for questions at the end of your formal presentation, however, it can often make your talk more lively, and you more relaxed, if you allow questions throughout your talk. Only do the latter, however, if you have plenty of time for your talk, or you are confident you can control the presentation well enough to ensure that you get through the appropriate amount of material in the given time. Try to anticipate questions from those that have not even understood the problem (the most difficult), to those that have followed all the technical details (usually the easiest).

2 Visual aids

There are three possible approaches to the visual presentation of your work:

1. High Tech,
2. Medium Tech, and
3. Low Tech.

Powerpoint and web-browsers are applications, amongst others, for preparing seminar presentations. Computer video presentations can be very slick and professional, but require that you be well organised ahead of time, and have no problems with equipment. You are less likely to give a computer presentation if you are traveling around giving talks at multiple venues, simply because of your inability to control all the technical details. However, it is becoming increasingly standard to expect a Powerpoint presentation, and for you to arrive with your presentation on a disk or other portable memory device.

One problem with computer video presentations is that you often do not have random access to your slides. This means that it is difficult to prepare multiple entry and exit points for your talk, or to refer to a particular slide if someone asks you to do so at question time. It is a good idea to prepare and bring with you a hard copy of the static slides in your talk in case the equipment lets you down and you are left with an overhead projector.

An overhead projector is the most commonly used piece of equipment for seminar presentations. A slide projector is common in medical talks, but if you use a slide projector it is best to have *all* your visuals as slides, rather than moving between the slide projector and the overhead projector. Make sure that you have control over when each slide is shown. It is very distracting for the talk to be continually interrupted with “Next slide please”. A video cassette can be useful for animation and real-time motion demonstrations, just as a tape recorder can be useful for computer music talks, but make sure you know how to use the equipment, that you have timed your presentation, and that the tape is at precisely the right point for playing. Try to make sure that the tape is properly edited for the talk, and avoid fast-forwarding through long sections of uninteresting action.

You can prepare your slides using \LaTeX or Word, or if you have legible hand-writing, use colour pens and write them yourself.

If you wish to use \LaTeX , use the following format:

```

\documentclass{slides}
\pagestyle{plain}
\begin{document}
%
%      Slide 1
%
\begin{slide}{}

blah blah blah

\end{slide}
\end{document}

```

To produce landscape formatted slides, use

```
\documentclass[landscape]{slides}
```

and then use the landscape option when converting the .dvi file to postscript:

```
dvips -t landscape slides.dvi -o slides.ps
```

Choose whichever way of preparing your slides suits you best. Word processed slides usually look professional, but almost always lack colour, and it can be time-consuming to include diagrams. If you handwrite your slides, use permanent ink rather than water soluble pens, as sweaty hands will smudge your writing.

Use large font sizes and do not put too many points on any single slide. The slides are simply to be used as pointers to your talk. Do not use full sentences but rather key words, around which you can extemporise. You should aim to spend about 2 to 3 minutes on each slide, and certainly not less than about 90 seconds on any slide. Thus, for a 15 minute talk, 10 slides would be a generous upper limit.

Throw away any flimsy tissue paper that comes with the transparencies and replace it with ordinary paper from your recycling box. You can use the back of this paper to write yourself notes about what you are going to say at each point.

The overriding aim is to make the slides as invisible as possible. Do not use slides with rip-off backing sheet. Do not keep your slides in a ring binder

that you continually click open and closed throughout the talk. Do not turn the overhead projector on and off between slides.

Try not to cover your slides with a sheet of paper, revealing a single point at a time. It is difficult to accomplish this without the page sliding off, and it annoys a great proportion of most audiences. If you do not want the audience to see a particular point at the moment, put it on another slide.

This principle of invisibility applies to Powerpoint slides as well; do not use too many features that simply distract from the content.

3 Getting through to the audience

3.1 Use repetition

Oral presentations are usually summed up as follows: Tell them what you are going to tell them. Tell them. Tell them what you have told them. This repetition helps to reinforce your ideas and clear up any misconceptions.

3.2 Do not get bogged down in detail

It is a common error to over-estimate your audience and try to impress them with your command of the technical detail. You must remember that you know more about your topic than any one else in the room, even when you are talking to experts. Details are out of place in an oral presentation and are best presented in a written paper where those interested can go through them at their own leisure.

3.3 Know your audience

There are four types of audience that you are likely to meet:

1. *Scientists*. Most of the audience has no idea what Computer Science is. The emphasis of your talk should be the problem and your general results. Skip all details. Normally you will not meet such an audience until much later in your career. Questions are likely to be at a very general level.
2. *Computer Scientists*. Most of the audience will not know what theoretical computer science is. You can have a small Details section, but

keep it brief. Be very careful with your definitions and in reminding the audience of the standard results that you use. The emphasis should still be on the problem and the general results.

3. *Theoretical Computer Scientists.* Here the emphasis is now on the general results and details of your talk. You no longer need to be so careful about your definitions, but it is polite to remind your audience.
4. *Experts.* As with theoretical computer scientists, but expect an argumentative audience and try to anticipate the questions. Remember that the question time will now be a significant proportion of your talk.

3.4 Do not over-run

There is nothing more irritating than a talk that goes overtime. Always find out how long you should speak for, and how much time should be devoted to questions. Prepare your talk with multiple entry and exit points, so that you can lengthen or shorten it with ease as your talk proceeds. If you are short of time, always cut the Details section first. Make sure you have a wall clock or wrist watch visible so that you can monitor your progress.

3.5 Nerves

Everyone always gets nervous when giving a talk. It is natural to produce adrenaline in such a situation and it is important to focus your nervous energy in such a way as to make your talk a better performance. The adrenaline should make you appear more active, focused, and vivacious. It should also heighten the apparent enthusiasm you have for your work. However, if you become too nervous, it can completely ruin your talk. Nerves often affect your voice, constricting the muscles you use when speaking. It is important that you relax enough to ensure that you can open your mouth properly, articulate clearly, and project your voice well. A well-modulated voice is always preferred over a monotonic voice, the latter being the single most-certain thing to put an audience to sleep.

Try steady, deep breathing beforehand. Make sure you have your opening sentence or two off by heart. Keep notes of what you might say in case you completely clam up, but do not read directly from your notes if you can help it. Make eye contact with your audience, and make it with more than one member of the audience.

Do not stand between the overhead projector and the screen. If your hands are shaking, do not hold a pointer but simply place a pen on the overhead projector at the place you wish to mark. If you prefer to point to the screen, make sure that you continue to talk to the audience. Do not hit the screen with the pointer if it is a non-rigid screen; it will cause the projected image to go out of focus. It is very difficult to keep a laser pointer steady; only use one if you are very confident.

Try to move around a bit. Project your voice so that those at the back can hear clearly. Modulate your voice and try to sound enthusiastic about your work.

Neither overdress nor under dress. Ostentatious clothing distracts attention away from the content of your talk and towards the form. Do not use fashionable, trendy, or colloquial language; keep it simple and straightforward, especially for those in the audience for whom English is not their first language.