Scientific Presentations

PhD Seminar: How to give effective presentations

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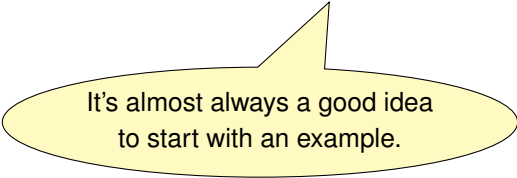February 2017

Motivation

"We may not be experts at public speaking,
but we are all experts at listening to talks."

Susan McConnell (Stanford University)
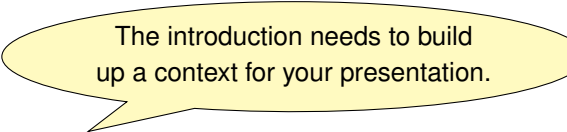
Motivation

Example

Never write a long text just as this, use short phrases illustrating your key points instead. If you put a long text on your slide, such as this one, the audience doesn't know any more whether to read the text or listen to you, and you will lose control of the presentation. An exception would be an example text that you are using to illustrate some points of your presentation, or a quotation.

It's almost always a good idea to start with an example.

Motivation

> The introduction needs to build up a context for your presentation.

- This presentation is about how to give an effective scientific presentation.
- Why is it important?
  - 'Sell' your work
  - audience $\neq$ asleep
  - audience $\rightarrow$ understand and remember the most important points
- How is it done?
  1. Presentation on expectations
  2. Videos on aspects of good/bad presenting
  3. Hands-on exercise

Overview

1. Motivation

2. Preparation

3. Structure of a Presentation

4. Tipps for beautiful slides

5. Conclusion

Overview

content – NOT: "intro, method, conclusion"

even better: diagram!

Preparation

- Who is the audience?
  - Don't expect everyone to be an expert in the field.
  - Don't underestimate your audience either.

  - **Attention Span**
    = the amount of time a person can concentrate on something without becoming distracted.
    - Average attention span of adult: 20 minutes (or 7 minutes, depending on study)
    - You can prolong attention span periodically: tell a story, give a demo, change medium (from slides to board etc.)

Preparation

- How much time do you have?
  - Rule-of-thumb: 2 minutes per content slide
  - Get rid of anything that you are not going to explain

- Technical devices
  - Make sure beamer, laptop, pointer etc. work
    $\Rightarrow$ plan some extra time before the presentation for set-up
  - Switch off mobile phones, Instant Messaging,...

Your favorite IM
♡**Darling**♡: When are you coming home for dinner?

Preparation

Practise your talk!

- You know how long it will take.
- Use friends/family as an audience.
- Memorize the first 2 sentences of your talk.
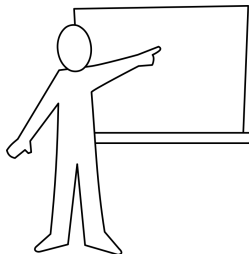
More about aspects of being a good speaker after this presentation!
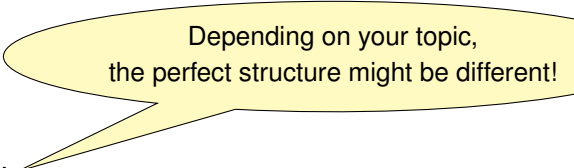
The Content

> If someone remembers **one thing** from your talk, what should it be?

- Check the material
- Identify central topics and claims
- Outline the talk

Organization

Depending on your topic,
the perfect structure might be different!

1. Motivation
2. Solution / Methods
3. Results / Experiments
4. Comparison of methods / relation to other work
5. Conclusion (+ your own criticism / ideas)

- Present the general topic.
- Show a concrete problem.
- Show that the state of the art is not enough.

Solution and Results

- Explain new approach and its advantages.
- Show how approach solves concrete problem.
- Does the approach generalize?

Examples (your main weapon)

- Motivate the work / convey basic intuition
- Illustrate method / idea in action
- Use examples *first*, generalize afterwards.
- Use *short* examples (they must fit on one slide and still be readable).
  You may have to change the examples from the paper or come up with your own examples!
- Even if short, the example should illustrate the concept!
- Think about whether you want to prepare / develop an example on the board or Flipchart.

Maths

$$||f+g||_q^p = \int |f+g|^p d\mu$$
$$\leq \int (|f|+|g|)|f+g|^{p-1} d\mu$$
$$= \int |f||f+g|^{p-1} d\mu + \int |g||f+g|^{p-1} d\mu$$
$$\leq$$
$$\left((\int |f|^p d\mu)^{\frac{1}{p}} + (\int |g|^p d\mu)^{\frac{1}{p}} (\int |f+g|^{(p-1)(\frac{p}{p-1})}) d\mu \right)^{1-\frac{1}{p}}$$
$$= (||f||_p + ||g||_p) \frac{||f+1||_p^p}{||f+g||_p}$$

and from this you can clearly see that...

- Don't put (long) formulas on your slide!
- Try to explain methods without using formulas.
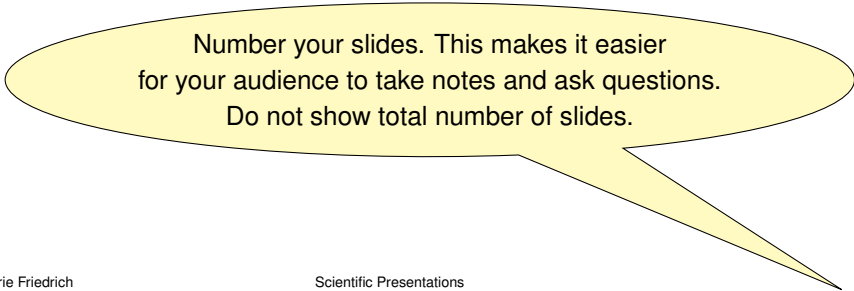- Explain formulas in natural language (also on slide) if you absolutely need to show them.

Structure of a Presentation - Diagrams

- instead of using lists, use diagrams to show structure of presentation / method whenever possible
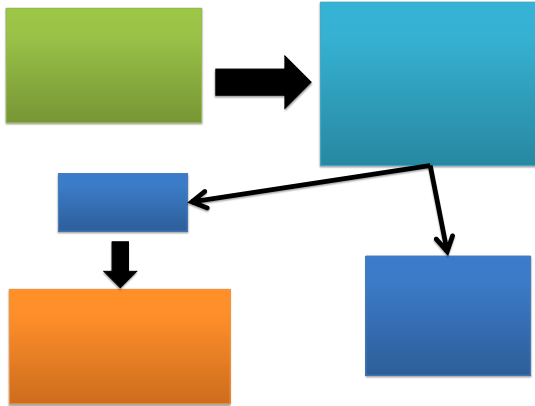
Beautiful slides

- **Less is more.**
- No fancy transitions or effects (distracts audience).
- Lists should be short.
- Unveiling list items / other content: Show what you want your audience to think about at any given time (no more, no less). One list item at a time can also be distracting.
- Limit text to no more than 2 lines of text.

> Number your slides. This makes it easier for your audience to take notes and ask questions. Do not show total number of slides.

Background

- Colorful backgrounds, patterns $\Rightarrow$ careful! $\natural$

This is recommended for small rooms.

This is recommended for large rooms.

Never ever do this to your audience.

Font

- AVOID WRITING LONG PHRASES / SENTENCES IN CAPITALS.
  IT IS LESS READABLE.

- Make sure the text is readable to your audience.
- Don't turn your presentation into an eyesight test.
- If you need to use tiny or small font sizes, there is probably too much stuff on your slide anyways.
- Use font sizes 18-36 points.

Font Family

> **Example**
>
> Colorless green ideas sleep furiously. (sans serif)
> Colorless green ideas sleep furiously. (serif)

Use sans serif fonts.
(Serifs take longer to read on screen,
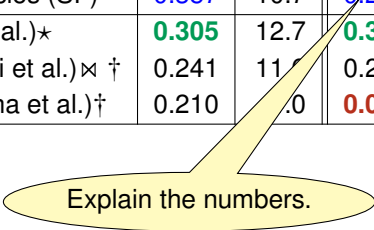they are used for printed media.)

Images

- Should have a good resolution and be readable!
- Try to use as many images as possible, but only if they illustrate or explain a point you want to make! Don't just use them for decoration if they have nothing to do with your talk.
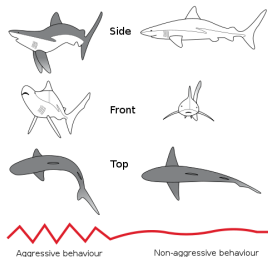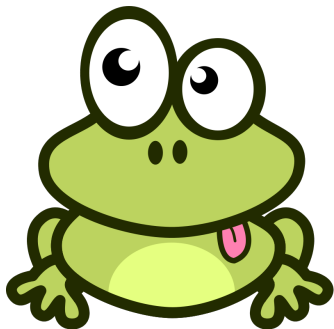
Presenting Results

- Tables: highlight important numbers. Show only what is necessary to interpret results (but no less).
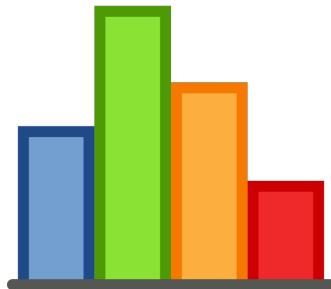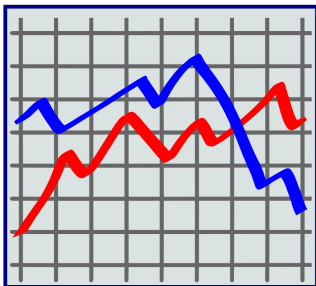
Model	WSsim-1		WSsim-2	
	ρ	sign.	ρ	sign.
Average of humans*	0.555	30.4	0.641	48.3
Prototype 2/N (E&K)	0.478	22.8	-	-
Sense Frequencies (SF)	0.357	10.7	0.245	14.2
VSM (Thater et al.)⋆	**0.305**	12.7	**0.389**	21.4
Topic Models (Li et al.)⋈ †	0.241	11.?	0.256	15.0
PageRank (Sinha et al.)†	0.210	?.0	**0.097**	4.6

Explain the numbers.

Presenting Results

- Use diagrams (instead of tables) whenever possible.

Conclusion

1. Think about content first (important points)
2. Think about how to present it (use slides, board, exercise...)
3. Entertain your audience to a certain degree
4. You'll all do fine =)

Future Work / Open Questions

- What else could be done about this?
- Ideas for improvement
- ...

Thank you!

You are the most wonderful audience I ever had!

Any questions?

(Actually, just say this, and stop your presentation at your conclusion / future work slides, that will result in more interesting questions by your audience. Also, people will clap now and wake up those who have slept, and they will pay attention to the current slide. Seriously. Your summary slide is better than just "Questions?".)

References

- Brad Vander Zanden: Preparing an Effective Presentation. (http://web.eecs.utk.edu/~bvz/presentation.html)
- Anne Roch and Rajeev Roy (University of Twente): Effective Scientific Presentation Skills. (www.utwente.nl/ewi/te/education/layout of research reports and presentations/powerpoint presentation.ppt)
- Susan K. McConell: Designing effective scientific presentations: using PowerPoint and structuring your talk (http://www.youtube.com/watch?v=Hp7Id3Yb9XQ)
- http://www.st.cs.uni-saarland.de/zeller/GoodTalk.pdf
- http://www.cs.berkeley.edu/ jrs/speaking.html