Institut für Religionswissenschaft

Tipps und Tricks für das

WISSENSCHAFTLICHE ARBEITEN

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BERN

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1 Schriften mit diakritischen Zeichen

Viele von euch brauchen diakritische Zeichen, um ihre schriftlichen Arbeiten zu schreiben. Auf Indien oder Zentralasien spezialisierte etwa benötigen Zeichen wie: ā ē ī ṇ ṅ ḥ ṃ ḷ. Wie kriegt man sein Textverarbeitungsprogramm dazu, diese Zeichen darzustellen und, was noch wichtiger ist, wie tippt man diese auf einfache Weise ein?

Lösung A

Benutze LaTeX.

Lösung B

Sado-Masochisten, die unbedingt MS-Word benutzen wollen, müssen sich einen Font (Schrift) installieren, der diese Zeichen enthält. Im Folgenden ein Vorschlag nebst Installationsanleitung.

Ein Font, der praktisch alles enthält, was Durchschnitts-AsienkundlerInnen brauchen (inkl. Chinesisch), ist MS-Reference. Einen legalen, kostenlosen Download gibt es hier:

hier.

2 Guidelines for Creating Presentations

Ein mündliches Referat durch optische Informationen zu unterstützen, ist ein gute Idee. Leider ist häufig zu beobachten, dass Bildschirmpräsentationen ohne Überlegung „halt irgendwie“ aufgebaut werden. Anstatt das Verständnis des Publikums durch visuelle Führung zu unterstützen, wird es mit unnötigen Dopplungen oder komplexen Tabellen, die im Vortrag mit keinem Wort erwähnt werden, gelangweilt oder verwirrt. Ich habe schon Vorträge gesehen, bei denen jedes einzelne gesprochene Wort am Bildschirm gedoppelt wurde. Noch dazu mit einem Klick alle fünf Sekunden, um die Sätze genau zum Zeitpunkt ihres Aussprechens erscheinen zu lassen. Was soll das?

Leider hat auch der häufige Einsatz des Programms PowerPoint mit seinen grenzenlosen Spielereien dazu geführt, dass sich Präsentationen häufig in billiger Effekthascherei ergehen und daher mittlerweile von einer Aura des Unprofessionellen umgeben sind.

Die folgenden Guidelines für Bildschirmpräsentationen sind ein Extrakt aus der hervorragenden Dokumentation des Pakets LaTeX-Beamer von Till Tantau. Es lohnt sich auch für PowerPoint-Benutzer, diese Punkte zu beherzigen.

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In this section I sketch the guidelines that I try to stick to when I create presentations. These guidelines either arise out of experience, out of common sense, or out of recommendations by other people or books. These rules are certainly not intended as commandments that, if not followed, will result in catastrophe. The central rule of typography also applies to creating presentations: *Every rule can be broken, but no rule may be ignored.*

2.1 Structuring a Presentation

2.1.1 Know the Time Constraints

When you start to create a presentation, the very first thing you should worry about is the amount of time you have for your presentation. Depending on the occasion, this can be anything between 2 minutes and two hours.

- A simple rule for the number of frames is that you should have at most one frame per minute.

- In most situations, you will have less time for your presentation that you would like.
- *Do not try to squeeze more into a presentation than time allows for.* No matter how important some detail seems to you, it is better to leave it out, but get the main message across, than getting neither the main message nor the detail across.

In many situations, a quick appraisal of how much time you have will show that you won't be able to mention certain details. Knowing this can save you hours of work on preparing slides that you would have to remove later anyway.

2.1.2 Global Structure

To create the "global structure" of a presentation, with the time constraints in mind, proceed as follows:

- Make a mental inventory of the things you can reasonably talk about within the time available.
- Categorize the inventory into sections and subsections.
- For very long talks (like a 90 minute lecture), you might also divide your talk into independent parts (like a "review of the previous lecture part" and a "main part"). Note that each part has its own table of contents.
- Do not feel afraid to change the structure later on as you work on the talk.

Parts, Section, and Subsections.

- Do not use more than four sections and not less than two per part.

Even four sections are usually too much, unless they follow a very easy pattern. Five and more sections are simply too hard to remember for the audience. After all, when you present the table of contents, the audience will not yet really be able to grasp the importance and relevance of the different sections and will most likely have forgotten them by the time you reach them.

- Ideally, a table of contents should be understandable by itself. In particular, it should be comprehensible *before* someone has heard your talk.
- Keep section and subsection titles self-explaining.
- Both the sections and the subsections should follow a logical pattern.
- Begin with an explanation of what your talk is all about. (Do not assume that everyone knows this. The *Ignorant Audience Law* states: Someone important in the audience always knows less than you think everyone should know, even if you take the Ignorant Audience Law into account.)

- Then explain what you or someone else has found out concerning the subject matter.

- Always conclude your talk with a summary that repeats the main message of the talk in a short and simple way. People pay most attention at the beginning and at the end of talks. The summary is your "second chance" to get across a message.

- You can also add an appendix part. Put everything into this part that you do not actually intend to talk about, but that might come in handy when questions are asked.

- Do not use subsubsections, they are evil.

Giving an Abstract.

In papers, the abstract gives a short summary of the whole paper in about 100 words. This summary is intend to help readers appraise whether they should read the whole paper or not.

- Since your audience is unlikely to flee after the first slide, in a presentation you usually do not need to present an abstract.

- However, if you can give a nice, succinct statement of your talk, you might wish to include an abstract.

- If you include an abstract, be sure that it is *not* some long text but just a very short message.

- *Never, ever* reuse a paper abstract for a presentation, *except* if the abstract is "We show P = NP" or "We show P $\neq$ NP"

- If your abstract is one of the above two, double-check whether your proof is correct.

Numbered Definitions.

A common way of globally structuring articles and books is to use consecutively numbered definitions. Unfortunately, for presentations the situation is a bit more complicated and I would like to discourage using numbered theorems in presentations. The audience has no chance of remembering these numbers. *Never* say things like "now, by Definition 2.5 that I showed you earlier, we have ..." It would be much better to refer to, say, Kummer's Definition instead of Definition 2.5. If Definition 2.5 is some obscure definition that does not have its own name (unlike Kummer's Definition or Main Definition or Second Main Definition or Key Lemma), then the audience will have forgotten about it anyway by the time you refer to it again.

Bibliographies.

You may also wish to present a bibliography at the end of your talk, so that people can see what kind of "further reading" is possible. When adding a bibliography to a presentation, keep the following in mind:

- It is a bad idea to present a long bibliography in a presentation. Present only very few references. (Naturally, this applies only to the talk itself, not to a possible handout.)
- If you present more references than fit on a single slide you can be almost sure that none of them will be remembered.
- Present references only if they are intended as "further reading." Do not present a list of all things you used like in a paper.
- You should not present a long list of all your other great papers *except* if you are giving an application talk.
- If you cite the references, always cite them with full author name and year like "[Tantau, 2003]" instead of something like "[2,4]" or "[Tan01,NT02]".

2.1.3 Frame Structure

Just like your whole presentation, each frame should also be structured. A frame that is solely filled with some long text is very hard to follow. It is your job to structure the contents of each frame such that, ideally, the audience immediately seems which information is important, which information is just a detail, how the presented information is related, and so on.

The Frame Title

- Put a title on each frame. The title explains the contents of the frame to people who did not follow all details on the slide.
- The title should really *explain* things, not just give a cryptic summary that cannot be understood unless one has understood the whole slide. For example, a title like "The Poset" will have everyone puzzled what this slide might be about. Titles like "Review of the Definition of Partially Ordered Sets (Posets)" or "A Partial Ordering on the Columns of the Genotype Matrix" are *much* more informative.
- Ideally, titles on consecutive frames should "tell a story" all by themselves.

How Much Can I Put On a Frame?

- A frame with too little on it is better than a frame with too much on it. A usual frame should have between 20 and 40 words. The maximum should be at about 80 words.
- Do not assume that everyone in the audience is an expert on the subject matter. Even if the people listening to you should be experts, they may last have heard about things you consider obvious several years ago. You should always have the time for a quick reminder of what exactly a "semantical complexity class" or an "ω-complete partial ordering" is.
- Never put anything on a slide that you are not going to explain during the talk, not even to impress anyone with how complicated your subject matter really is. However, you may explain things that are not on a slide.
- Keep it simple. Typically, your audience will see a slide for less than 50 seconds. They will not have the time to puzzle through long sentences or complicated formulas.

Structuring a Frame

- Use block environments like |block|, |theorem|, |proof|, |example|, and so on.
- Prefer enumerations and itemize environments over plain text.
- Use |description| when you define several things.
- Do not use more than two levels of "subitemizing." Mostly, you should not even use the second one. Use good graphics instead.
- Do not create endless |itemize| or |enumerate| lists.
- Do not uncover lists piecewise.
- Emphasis is an important part of creating structure. Use `alert` to highlight important things. This can be a single word or a whole sentence. However, do not overuse hilighting since this will negate the effect.
- Use columns.
- *Never* use footnotes. They needlessly disrupt the flow of reading. Either what is said in the footnote is important and should be put in the normal text; or it is not important and should be omitted (*especially* in a presentation).
- Use |quote| or |quotation| to typeset quoted text.
- Do not split frames into several consecutive frames except for long bibliographies.
- Do not use long bibliographies.

Writing the Text

- Use short sentences.
- Prefer phrases over complete sentences. For example, instead of "The figure on the left shows a Turing machine, the figure on the right shows a finite automaton." try "Left: A Turing machine. Right: A finite automaton." Even better, turn this into an itemize or a description.
- Punctuate correctly: no punctuation after phrases, complete punctuation in and after complete sentences.
- *Never* use a smaller font size to "fit more on a frame." *Never ever* use the *evil* option |shrink|.
- Do not hyphenate words. If absolutely necessary, hyphenate words "by hand".
- Break lines "by hand". Do not rely on automatic line breaking. Break where there is a logical pause. For example, good breaks in "the tape alphabet is larger than the input alphabet" are before "is" and before the second "the." Bad breaks are before either "alphabet" and before "larger."
- Text and numbers in figures should have the *same* size as normal text. Illegible numbers on axes usually ruin a chart and its message.

2.2 Using Graphics

Graphics often convey concepts or ideas much more efficiently than text: A picture can say more than a thousand words. (Although, sometimes a word can say more than a thousand pictures.)

- Put (at least) one graphic on each slide, whenever possible. Visualizations help an audience enormously.
- Usually, place graphics to the left of the text. In a left-to-right reading culture, we look at the left first.
- Graphics should have the same typographic parameters as the text: Use the same fonts (at the same size) in graphics as in the main text. A small dot in a graphic should have exactly the same size as a small dot in a text. The line width should be the same as the stroke width used in creating the glyphs of the font. For example, an 11pt non-bold Computer Modern font has a stroke width of 0.4pt.
- While bitmap graphics, like photos, can be much more colorful than the rest of the text, vector graphics should follow the same "color logic" as the main text (like black = normal lines, red = hilighted parts, green = examples, blue = structure).

- Like text, you should explain everything that is shown on a graphic. Unexplained details make the audience puzzle whether this was something important that they have missed. Be careful when importing graphics from a paper or some other source. They usually have much more detail than you will be able to explain and should be radically simplified.

- Sometimes the complexity of a graphic is intensional and you are willing to spend much time explaining the graphic in great detail. In this case, you will often run into the problem that fine details of the graphic are hard to discern for the audience.

2.3 Using Animations and Transitions

- Use animations to explain the dynamics of systems, algorithms, etc.

- Do *not* use animations just to attract the attention of your audience. This often distracts attention away from the main topic of the slide. No matter how cute a rotating, flying theorem seems to look and no matter how badly you feel your audience needs some action to keep it happy, most people in the audience will typically feel you are making fun of them.

- Do *not* use distracting special effects like "dissolving" slides unless you have a very good reason for using them. If you use them, use them sparsely. They *can* be useful in some situations: For example, you might show a young boy on a slide and might wish to dissolve this slide into slide showing a grown man instead. In this case, the dissolving gives the audience visual feedback that the young boy "slowly becomes" the man.

2.4 Choosing Appropriate Colors

- Use colors sparsely. The prepared themes are already quite colorful (blue = structure, red = alert, green = example). If you add more colors for things like code, math text, etc., you should have a *very* good reason.

- Be careful when using bright colors on white background, *especially* when using green. What looks good on your monitor may look bad during a presentation due to the different ways monitors, beamers, and printers reproduce colors. Add lots of black to pure colors when you use them on bright backgrounds.

- Maximize contrast. Normal text should be black on white or at least something very dark on something very bright. *Never* do things like "light green text on not-so-light green background."

- Background shadings decrease the legibility without increasing the information content. Do not add a background shading just because it "somehow looks nicer."

- Inverse video (bright text on dark background) can be a problem during presentations in bright environments since only a small percentage of the presentation area is light up by the beamer. Inverse video is harder to reproduce on printouts and on transparencies.

2.5 Choosing Appropriate Fonts and Font Attributes

Text and fonts literally surround us constantly. Try to think of the last time when there was no text around you within ten meters. Likely, this has never happened in your life! (Whenever you wear clothing, even a swim suit, there is a lot of text right next to your body.) The history of fonts is nearly as long as the history of civilization itself. There are tens of thousands of fonts available these days, some of which are the product of hundreds of years of optimization.

Choosing the right fonts for a presentation is by no means trivial and wrong choices will either just "look bad" or, worse, make the audience having trouble reading your slides. This user's guide cannot replace a good book on typography, but in the present section you'll find several hints that should help you setup fonts for a Beamer presentation that look good. A font has numerous attributes like weight, family, or size. All of these have an impact on the usability of the font in presentations.