Giving a Presentation

Wolfram Burgard
Outline

- The slides
  - Content
  - Layout
- The presentation
The Slides

- Typically done long before the presentation
- and long enough to practice
- They are used to better convey the message

- Their purpose is not to allow you to read off what you want to say
Choosing a Proper Title is Hard

- The title of a slide often says what is on the slide
- You actually can to better: Use the title to convey a message
- The title should better tell the message of the slide.

- Choosing a Proper Title is hard vs.
- What is a Proper Title?
The Structure of Scientific Presentations is often Similar

1. Introduction and Motivation
2. State of the Art
3. Our Approach
4. Results
5. Conclusions and Future Work

- This/such a slide is contained in many presentations
- Maybe it is better to leave it out if your presentation is short.
Introduction and Motivation

Describe
- the problem
- why it is relevant
- the open question
- in which way the approach you present gives an answer to this question
State of the Art

- Mention relevant approaches presented in the past.
- Tell in which way the approach presented in this paper goes beyond the previous ones.
- The art lies in finding the right balance when describing related work.
- Say what the approaches do and what they solve (be friendly, make the authors happy!)
- Say in which way your approach is better (do not make the authors unhappy!)
The Approach

- This part of the presentation is not intended to demonstrate your skills
- It is intended to let the audience understand how your approach works
- Provide the audience with an intuition!
- Use graphics to describe it!
- Explain the math using graphics!
Example: Graph-based SLAM

- Let $G = (x, z)$ be a graph where $x = \{x_1, \ldots, x_n\}$ is a set of poses and $z = \{z_{ji}\}$ is a set of pairwise observations of poses $j$ and $i$, where $\Omega_{ji}$ is the corresponding measurement uncertainty.

- Furthermore let $e_{ji}$ be the errors between the pairwise observations $z_{ji}$ and the relative poses $x_{ji}$.

- Goal: Find $\mathbf{x}^* = \arg\min_x \sum_{ji} e_{ji}^T \Omega_{ji} e_{ji}$
Given:

- **Poses**  $\mathbf{x} = \{x_1, \ldots, x_n\}$
- **Pairwise observations**  $\mathbf{z} = \{z_{ji}\}$
- **Measurement uncertainty**  $\Omega_{ji}$
Maybe Better: Graphical Example

Given:
- Additionally we observe that $x_5 = x_1$
- This introduces the error: $e_{51}$
More generally, we have an error $e_{ji}$ for every pairwise observation $z_{ji}$ given the positions $x$ of the nodes.

Goal: Find $x^* = \arg\min_x \sum_{ji} e_{ji}^T \Omega_{ji} e_{ji}$.
Algorithms are Hard to Explain

Algorithm 1 Coverage(S)

1: \( C \leftarrow S \) //Set the current node to S
2: \( P_{aux} \leftarrow C \)
3: \( P \leftarrow \emptyset \)
4: while 1
5: \( \forall n \in P_{aux}, m \in N, \| c_n - c_m \| < M_R \cdot e_{cell} \) \( \text{visited}(m) = 1 \)
6: \( \forall n \in P_{aux}, m \in N, \| c_n - c_m \| < 2M_R \cdot e_{cell} \) \( \text{overlapped}(m) = 1 \)
7: \( N_C \leftarrow \{ n \in N | \| c_n - c_C \|_\infty = (2M_R + 1) \cdot e_{cell} \) and \( \text{overlapped}(n) = 0 \) and \( g(n) < \infty \} \)
8: if \( N_C \neq \emptyset \)
9: find \( M \in N_C \) with minimal \( g \)
10: else
11: \( D^*(C) \) and stop at \( \text{visited}(M) = 0 \) or \( \| c_M - c_o \|_\infty = e_{cell}, o \in O \) and \( \exists n, \) \( \text{visited}(n) = 0, \| c_M - c_n \| < M_R \cdot e_{cell} \)
12: if no such node \( M \) exists
13: return \( P \)
14: end
15: end
16: \( P_{aux} \leftarrow P_{aux}(C, M) \)
17: \( C \leftarrow M \) //Set the new current node
18: \( P \leftarrow P \cup P_{aux} \)
19: end

[Dakulovic et al., IFAC 2011]
Explaining Algorithms

- Describe the idea
- Give examples to describe how it works
- Design the examples so that all features of the algorithms can be explained
- Once you are done with the examples, the audience should have an idea how it works
The Results

- The results should back up your claims.
- With them you show/demonstrate that your approach has the desired features.
- They should clearly demonstrate that the approach you present is better than previous ones.
The Conclusions and Future Work

- Tell what the contribution of this paper is
- A good first sentence starts with “We presented a novel approach to ...”
- Tell what has been described in the presentation/paper
- Maybe talk about limitations that might lead to future work
Seminar Talks about Other People’s Work

- You might add slides describing your opinion about the paper.
- Tell what you regard as positive aspects
- Tell which potential improvements you see
- What would you have done differently?
Text

- Use sans serif fonts instead of serif fonts
- Use
  - dark text on light background (easy to read)
  - light text on dark background (not so easy to read)
    Left-aligned text is easier to read than centered text
- Avoid putting too much onto one slide (avoid clutter)
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Text

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- Use
  - dark text on light background (easy to read)
  - light text on dark background (not so easy to read, printing uses much ink)
    Left-aligned text is easier to read than centered text
- Avoid putting too much onto one slide (avoid clutter)
Text Color

- Check readability
- Check readability
- Check readability
- Red and green are hard to distinguish for a large fraction of the population
- Check readability, maybe ask others!
Text Size

- Make sure that everyone can read the text (32Pt)
- Make sure that everyone can read the text (28Pt)
- Make sure that everyone can read the text (24Pt)
- Make sure that everyone can read the text (20Pt)
- Make sure that everyone can read the text (18 Pt)
- Make sure that everyone can read the text (16 Pt)
- Make sure that everyone can read the text (14 Pt)
- Make sure that everyone can read the text (12 Pt)

- The caption should not be smaller than the text on the slide
Abbreviations

- Abbreviations reduce the length of the text
- However, they also make the text harder to read and to understand

- Don’t use abbreviations to show that you are an insider
- Don’t use abbreviations to show that newcomers are outsiders

- Avoid abbreviations (unless they are very, very common)
- Especially avoid them in titles
Figures

- Prefer vector graphics over images
- When grabbing an image from the source paper, make sure you do this at the highest resolution
- Enlarge the picture as much as possible before grabbing it
- When you can see the individual pixels, think about redrawing the figure!
- To check, attach your computer to an LCD monitor and check the quality by going close to the screen.
A Low Resolution Figure
Higher Resolution is better!

Probe shaft

Electrode

Probe base with contact pads

Contact to circuitry

40 µm
Plots

- Use colors that can easily be distinguished
- Use patterns that can easily be distinguished
- Order the legend according to the functions
- Make them high resolution
- Create your own one if needed
Negative Example Plot

![Graph showing three series across four categories](image-url)
Colors are better!
Animations

- Useful to explain content
- or to illustrate processes

- and not to entertain the audience
- Avoid line after line text/animations
- Often animations are even distracting
- Do not demonstrate that you know every feature of the presentation tool!
Line after Line Animations

Every technical presentation has the following outline:
1. Motivation
2. Outline of the talk
3. State of the art
4. The new method
5. Experimental results
6. Conclusions
The Motivation

- What is the problem?
- Why is it relevant?
- What has been done thus far?
- What is the key idea of the approach presented in the paper?
- In which way do the experiments demonstrate that it provides a better solution to the problem?

- Simply avoid custom animations!
Similar Case in LaTeX Beamer

- What is the problem?
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Spell Checking

- Your computer can do spell checking for you: Use it!
- Always set the language of the slide to the language that you are using

Benutzen Sie die Rechtschreibprüfung!

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Typesetting Formulas

- **In-text:**
  \[ \sum_{i=1}^{n} i = \frac{n \cdot (n+1)}{2} \]

- **Equation Editor:**
  \[ \sum_{i=1}^{n} i = \frac{n \cdot (n+1)}{2} \]

- **TeXPoint:**
  \[ \sum_{i=1}^{n} i = \frac{n \cdot (n+1)}{2} \]
Inline Equations

- Easy to type
- Always aligned with text
- Float with text

- Restricted
- Very few symbols available
- Hard to align elements (equation symbol)
Equation Editor

- Relatively easy
- Graphical interface
- High flexibility
- Nicer

- Each equation is an individual object
- The do not float with text
- Nice but not absolutely nice
TeXPoint

- Full LaTeX flexibility
- Equations can be pasted from LaTeX sources
- The nicest equations

- Each equation is an individual object
- They do not float with text
- Harder to learn
- Text interface
Important Aspects to Check

- Set the **language of the slides to the language of the presentation**
- **Spell** your slides (press F7)
- Check whether videos run when Computer is attached to LCD Display
- Check whether videos run on a different computer
- Friendly video codecs are
  - **MP4 with H.264 standard settings** or
  - **MS RLE** encoding for animations
Use Consistent Colors & Shapes

- Think about the colors and shapes that you want and
- stick with them.
Your Presentation

- Plan it
- Practice it
- Time it
- Think about how to deal with interrupting questions
- Practice transitions between slides

- Keep in mind: This is your show. Optimize it!
YOUR CONFERENCE PRESENTATION

HOW YOU PLANNED IT:

- Introduce Yourself
- Describe Outline of Talk
- Motivation
- Results
- Methodology and Experiment Design
- Conclusions
- Applause
- Engaging Q&A

START

15 MINUTES

HOW IT GOES:

- Previous Speaker Runs Late and Eats Into Your Time
- Technical Difficulties Connecting Your Laptop
- Forget Introducing Yourself
- Spend Way Too Much Time Describing Your Outline
- Annoying Audience Member Interrupts with Self-Aggrandizing Question
- Realize You Only Have 3 Minutes Left
- Power Through the Rest of Your 30 Slides
- Awkward Silence Q&A

START

15 MINUTES
Connecting your Laptop

- Check whether your laptop works before the talk
- Are the colors OK?
- Are the videos visible on both screens?
- Do not boot your computer in front of the audience (use suspend to RAM)
- Better do not close the lid before connecting your laptop
- Check the entire presentation (esp. videos) when you have to give it on a computer different from yours
The presentation mode is a great tool as it allows you to see the content of the slide, elapsed time, notes, and the next slide!
The Presentation Mode is a Great Tool

It allows you to

- put something into the notes that is not on the slides but that you want to say, e.g., the first sentence for every slide
- lets you check where you should be according to the timing
- lets you make a proper transition to the next slide.

Position the computer so that you can see its screen and read the notes!
Laser Pointer

- Might help you to point at things
- or to emphasize aspects

- Hold the laser pointer in both hands if the laser point jitters
- Not everything needs to be pointed at

- Do not point at the audience,
- Start and stop the laser properly
- Familiarize yourself with the buttons
- and the other features (timer)
Laser Pointer Gestures

- Underline

- Circle

- Point at ✴
Speaking (1)

- Speak up to make sure that everyone can hear you.
- If there is a microphone, speak into it!
- Do not lower your voice simply because there is a microphone
- If you can hear your voice from the speakers, the audience does as well
- If you cannot hear it, the audience will probably also not be able to hear it (and you)
Speaking (2)

- Avoid dialect
- Avoid idioms
- Avoid repetitions (look for alternatives or synonyms if you discover it)
- Avoid hesitation vowels like “ahem”, “uh”, “well”, “yes”, “OK”, …
How to Move?

- Establish contact to the audience
- Do not solely focus the computer screen or the screen
- Avoid siding (try to look at everyone)
Questions / Interruptions?

- Think positive!
- Questions are good and show that people are interested
- Try to repeat the question to make clear that you understood it properly
- If you cannot answer a question, be honest about it and do not say random words
- If answering would take too long or would go too far away from the talk, suggest to take the discussion offline
- Do not worry when someone falls asleep
A talk is a unique opportunity to present yourself
Prepare it carefully
Practice it extensively
There is no reason to be late with your presentation
There is no reason not to be prepared
Thank you for your attention!

This slide appears in almost every talk but actually is superfluous.