How to Make a Good Presentation
Seminar: Learning with Limited Supervision
Summer Semester 2024

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Robot Learning Lab
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With every presentation...

you present your work...

and **yourself**!
Outline

1. **Slides**: Content & Layout
2. Presentation
3. Conclusion
Slides

Content & Layout
Quick Remarks

• Typically done long before the presentation
  • Rule of Thumb: At most 1 slide per minute

• Tool to help you convey your message
  • Images, Videos, Graphs, Animations, etc.

• Not meant as a teleprompter
  • Do not read from the slides
Slides

Structure of Scientific Presentations

• Introduction and Motivation
• State-of-the-Art
• Approach
• Experiments and Results
• Conclusion

• Brief Outline slide
• Use Section break slides
  • Guide your audience
The Sections
The Sections
Introduction and Motivation

Describe:

• The problem
• Why is it relevant?
• Open question
• How your approach tackles this question?

Why should people care about your work?
The Sections

State-of-the-Art

- Mention relevant past approaches
- How does your work go beyond the SotA?
- Balance between praise and criticism:
  - Mention what other approaches do and what they solve (be friendly, make the authors happy!)
  - Point out their drawbacks without diminishing their worth
  - Specify in which way your approach is better (do not downplay the work of others!)
The Sections
Approach

• Intention:
  
  • Not to show off your skills!
  
  • Make your audience understand **how** your approach works
  
  • Provide technical details and **intuition**
  
  • Use **graphics** and **examples** to explain technical details
The Sections

Experiments and Results

• Explain your experimental setup

• Should back up your claims

• Demonstrate your approach has the desired features

• Illustrate that your approach is better than previous ones
The Sections

Conclusion

• Describe the **contributions** of this paper

• A good first sentence:
  
  “*We presented a novel approach to …*”

• Highlight the **key idea** of the work

• Talk about **limitations**

• How they can be addressed in **future work**?
Slide Design
Quick Remarks

• Use the provided **template**
  
  • Font size might be too small (18pt)

• Use the **footer** area
Slide Design

Bullet Points

• Only use a bullet point when you have *multiple* things to list

• Line distance between bullet points

• Manage headline vs. content space vs. negative space
Slide Design

Text

• Use **Sans-Serif** fonts:
  • Avoid Serif fonts, *Comic Sans*, *Papyrus*, …

*Left aligned* text is easier to read…

… than centered text

• Avoid **clutter** / too much text

• Adjust **font size** based type of presentation (Zoom / in-person)
Slide Design

Text Color

• Dark text on light background (easy to read)

• Light text on dark background (not so easy to read)

• Check readability

• 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!
Slide Design

Abbreviations

• Abbreviations reduce the length of the text

• Use them *sparingly!*
  • Make you appear like an insider,
  • while others feel like outsiders

• Avoid abbreviations (unless they are *common*)
  • DIY, ASAP, UK, USA → Common abbreviations
  • PQ, SQ, RQ → Uncommon abbreviations
Slide Design

Font Size

• Not an eyesight test:

  • Make sure that everyone can read the text (26 Pt)
  • Make sure that everyone can read the text (23 Pt)
  • Make sure that everyone can read the text (20 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)
  • I could write whatever I want, nobody will notice (10 Pt)

• The caption should not be smaller than text on the slide
Slide Design

Figures

• Prefer **vector graphics** over raster images

• Grab an image from a paper at the **highest resolution**
  • Find original > Extract from PDF > Screen Capture (zoom in!)

• If the image is pixelated, redraw the figure!

• To check, connect your computer to an LCD monitor and check the quality by going close to the screen
• A couple of issues with this figure …
Slide Design

Figures

• Check
  • Resolution
  • Aspect Ratio
• Crop
• Alignment
  • …
Algorithm 1 Coverage(S)

1: \( C \leftarrow S \) \hspace{1em} // Set the current node to S
2: \( \mathcal{P}_{aux} \leftarrow C \)
3: \( \mathcal{P} \leftarrow \emptyset \)
4: while 1
5: \[ \forall n \in \mathcal{P}_{aux}, \ m \in \mathcal{N}, \|c_n - c_m\| < M_R \cdot e_{cell} \]
6: \[ \text{visited}(m) = 1 \]
7: \[ \forall n \in \mathcal{P}_{aux}, \ m \in \mathcal{N},\|c_n - c_m\| < 2M_R \cdot e_{cell} \]
8: \[ \text{overlapped}(m) = 1 \]
9: \[ \mathcal{N}_C \leftarrow \{n \in \mathcal{N} \mid \|c_n - c_C\|_\infty = (2M_R + 1) \cdot e_{cell} \]
10: \[ \text{and overlapped}(n) = 0 \text{ and } g(n) < \infty \} \]
11: \[ \text{if } \mathcal{N}_C \neq \emptyset \]
12: \[ \text{find } M \in \mathcal{N}_C \text{ with minimal } g \]
13: \[ \text{else} \]
14: \[ \text{D*}^*(C) \text{ and stop at visited}(M) = 0 \]
15: \[ \text{or } \|c_M - c_0\|_\infty = e_{cell}, \ o \in \mathcal{O} \text{ and } \exists n, \]
16: \[ \text{visited}(n) = 0,\|c_M - c_n\| < M_R \cdot e_{cell} \]
17: \[ \text{if no such node } M \text{ exists} \]
18: \[ \text{return } \mathcal{P} \]
19: \[ \text{end} \]
20: \[ \mathcal{P}_{aux} \leftarrow \mathcal{P}_{aux}(C, M) \]
21: \[ \mathcal{C} \leftarrow M \] \hspace{1em} // Set the new current node
22: \[ \mathcal{P} \leftarrow \mathcal{P} \cup \mathcal{P}_{aux} \]
23: \[ \text{end} \]

[Dakulovic et al., IFAC 2011]
Algorithms are **boring** / hard to present

- Same goes to equations
  - Nobody remembers symbols introduced in previous slides

- Keep them in the **appendix** in case someone asks for details
Slide Design

Algorithms and Equations

\[ G_t \sim DP_t(\alpha_t, BP_p(\alpha_p, \alpha_p, \text{Dir} \times \text{AW})) \]

\[ G^{(s)}_t \sim BP_s(1, |A_s|, \alpha_s, G_t \times U(A_s \times [-\pi, \pi])) \] (2)

\[ \{G_{T_j}, T_j\} \sim \text{BeP}(G^{(s)}_t) \] (3)

\[ \{\mu_k, \Sigma_k, \gamma_k\}_k \sim \text{BeP}(G_{T_j}) \] for each \( j \) (4)

\[ \{x, \omega\} \sim p(z | \mu_k, \Sigma_k, \gamma_k, T_j) \] for each \( k \) (5)

\[ G^{(s)}_t \sim BP_s(1, \alpha_s, M \times U(A_s)) \] (6)

\[ \{x, \omega\}_t \sim \text{BeP}(G^{(s)}_t) \] (7)

\[ p(C, a, z) = \left( \prod_{s=1}^{S} p(n, z) \right) p(t) \left( \prod_{s=1}^{S} p(d_{ij} | t) \right) \]

\[ p(T) \left( \prod_{s=1}^{S} p(x_{a,s} | T) \right. \left. p(d_{ij} | T) \right) \]. (8)

\[ p(n_{a,s}) = p(z_{a,s} | n_{a,s}) = n_{a,s}! \text{Poi}(n_{a,s} | \alpha_s | n_{a,s} | A_a)\}^{-n_{a,s}} \] (9)

\[ p(t_j, d_j | t_{-j}, d_{-j}) = p(t_j | d_{-j}, t_{-j})p(t_j | t_{-j}) \] (10)

Here, \( p(t_j | t_{-j}) \) is the CRP predictive distribution

\[ p(t_i = j | t_{-j}) = \begin{cases} \frac{n_j}{n_j + \sum_{j \neq k} n_k}, & t_j \text{ is an existing type} \\ \frac{\alpha_j}{\alpha_j + \sum_{j \neq k} \alpha_k}, & t_j \text{ is a new type} \end{cases} \] (11)

\[ p(d_{j,k} \neq 0 | d_{[-j,k]}, t) = \frac{n_k}{n_{t_j} + c_p} \] (12)

\[ p(d_{ij,K+1} | d_{[-j],t}, t) = \frac{n_{K+1}}{n_{T_j}} \text{Poi} \left( \frac{c_p \alpha_p}{n_{T_j} + c_p} \right) \] (13)

\[ p(\tilde{x}_{a,[j]} | \tilde{x}_{a,[j],t}) = \mu(t_{a,j}) \] (14)

\[ p(\tilde{a}_{ij} | \tilde{a}_{[-ij],t}) = \sum_{i,j} \frac{n_{a,s} + \alpha_s}{\sum_{i,j} n_{a,s} + \alpha_s} \] (15)

\[ R_d = \frac{1}{p(z_{a,j} | z_{a[-j]}, T_{t_j}, d_{ij}, t)p(t_j, d_j | t_{[-j], d_{[-j]}}) p(t_j) \frac{n_{m-1}}{p(n_{m})} \frac{n_{t_j}}{p(n_{t_j})} \frac{n_{q(a)}}{p(n_{q(a)})} \frac{n_{m}}{p(n_{m})} \frac{n_{q(C)}}{p(n_{q(C)})} \] (16)

\[ R_s = \frac{1}{p(z_{a,j} | z_{a[-j]}, T_{t_j}, T_{[-j]}, d_{ij}, d_{[-j]}, t_j, t_{[-j]}) p(t_j, d_{ij} | t_{[-j], d_{[-j]}, t_j}) p(t_j) \frac{n_{m-1}}{p(n_{m})} \frac{n_{q(a)}}{p(n_{q(a)})} \frac{n_{m}}{p(n_{m})} \frac{n_{q(C)}}{p(n_{q(C)})} \] (17)

\[ R_T = \frac{1}{p(x_{a,j} | x_{a[-j]}, T_{t_j}, T_{[-j]}, d_{ij}, t)p(T_j) \frac{n_{m-1}}{p(n_{m})} \frac{n_{q(a)}}{p(n_{q(a)})} \frac{n_{m}}{p(n_{m})} \frac{n_{q(C)}}{p(n_{q(C)})} \] (18)

\[ p(d_{ij} = i) \propto \begin{cases} \frac{n_i}{n_{t_j} + c_p}, & i = 0 \\ \frac{n_i}{\sum_{j \neq k} n_k}, & i \neq 0 \end{cases} \] (19)

\[ p(a_i | x_{a[-j], t_j}, d_{ij}, d_{[-j], k}, t) \] (20)

\[ p(d_{ij,k} \neq 0 | d_{[-j,k]}, t) = \frac{n_k}{n_{t_j} - 1} \] (21)

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Slide Design

Algorithms and Equations

Instead:

- Introduce the idea
- Use diagrams or animations
- Design toy examples to explain:
  - the inner workings
  - important features of the algorithm
- What should audience take away?
  - Intuition behind your algorithm
  - General idea of how it works
## Tables

### My not so awesome results

<table>
<thead>
<tr>
<th>Baseline</th>
<th>Acc</th>
<th>mAP</th>
<th>AP&lt;sub&gt;50&lt;/sub&gt;</th>
<th>AP&lt;sub&gt;75&lt;/sub&gt;</th>
<th>AP&lt;sub&gt;90&lt;/sub&gt;</th>
<th>AP&lt;sub&gt;s&lt;/sub&gt;</th>
<th>AP&lt;sub&gt;m&lt;/sub&gt;</th>
<th>AP&lt;sub&gt;L&lt;/sub&gt;</th>
<th>MSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLP</td>
<td>65.17931499</td>
<td>51.10769197</td>
<td>48.96746961</td>
<td>56.61312357</td>
<td><strong>0.947493075</strong></td>
<td>87.147549</td>
<td>73.80109773</td>
<td>65.17931499</td>
<td>1.537611e1</td>
</tr>
<tr>
<td>ResNet</td>
<td>63.5059482</td>
<td>74.204388</td>
<td>58.83328263</td>
<td>43.3834097</td>
<td>0.530719905</td>
<td>69.69859185</td>
<td>59.92916455</td>
<td>63.50959482</td>
<td>9.999999</td>
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<tr>
<td>RNN</td>
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<td><strong>94.473017</strong></td>
<td><strong>98.18218359</strong></td>
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<td>63.07418726</td>
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<td>94.096291</td>
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<tr>
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<td>55.96271</td>
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<td>89.20976538</td>
<td>0.6289675</td>
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<td>86.4344795</td>
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<td>84.03977</td>
<td>65.50471894</td>
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<td>46.4208664</td>
<td>4.785</td>
</tr>
<tr>
<td>Ours</td>
<td>89.44789127</td>
<td>80.4517</td>
<td><strong>96.288</strong></td>
<td><strong>92.04034965</strong></td>
<td><strong>81.55</strong></td>
<td><strong>92.28013688</strong></td>
<td><strong>97.2400282</strong></td>
<td><strong>99.37020661</strong></td>
<td><strong>0.77954122</strong></td>
</tr>
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<td>Diffusion</td>
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<td>78.56749</td>
<td>73.97519969</td>
<td>47.06480578</td>
<td>45.6406477</td>
<td>53.57308955</td>
<td>7.12345678</td>
</tr>
<tr>
<td>Mamba</td>
<td>73.87519057</td>
<td>52.16184837</td>
<td>61.69384238</td>
<td>45.72795333</td>
<td>68.66335717</td>
<td>74.31961469</td>
<td>83.4%</td>
<td>73.875</td>
<td>6.5100988</td>
</tr>
</tbody>
</table>
Slide Design

Tables

- Horizontal lines = good
- Vertical lines = bad
- Units and direction of best
- Citations
- Consistent number formatting
- Highlight best (and second best)
- Caption

- Try to avoid, use plots instead

<table>
<thead>
<tr>
<th>Method</th>
<th>Acc [%] ↑</th>
<th>AP_{50} [%] ↑</th>
<th>MSE [cm] ↓</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MLP</td>
<td>78.9</td>
<td>68.3</td>
<td>15.4</td>
</tr>
<tr>
<td>ResNet</td>
<td>85.3</td>
<td>71.4</td>
<td>9.9</td>
</tr>
<tr>
<td>RNN</td>
<td>81.6</td>
<td>74.4</td>
<td>8.7</td>
</tr>
<tr>
<td>Transformer</td>
<td>88.7</td>
<td>78.6</td>
<td>5.3</td>
</tr>
<tr>
<td>Mamba</td>
<td>91.3</td>
<td>79.2</td>
<td>6.5</td>
</tr>
<tr>
<td>Ours</td>
<td>89.4</td>
<td>81.5</td>
<td>0.8</td>
</tr>
</tbody>
</table>
Slide Design

Plots

![Graphs showing categories and series]

![Complex data visualization with labels such as 100% H2O, 50% H2O, 33% Fe, 100% Fe, and various temperatures]

Series 1  Series 2  Series 3

Category 1  Category 2  Category 3  Category 4

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Slide Design

Plots

- Use easily distinguishable **colors** and **patterns**
- Order the legend according to the functions
- Axes labels, units, ticks
- High resolution
- Create your own if needed
Slide Design

Animations

• Animations are useful to explain content, illustrate processes, guide the focus of your audience, …

• Not meant to entertain

• Are easily overdone

• Can be very distracting

• Only with purpose

• No need to show off your mad PowerPoint skills
Slide Design

Spell Checking

• Do’nt get cauhgt whit a most envarazing typo
• Check you’re speling wile writeing
• Prufe reed ober and over
• Than aks some one else too dobel chek
• Your PC has a spell checker: Use it!
• There are other tools such as Grammarly
• Don’t forget to set the correct language

Benutzen Sie die Rechtschreibprüfung!
Slide Design

Consistency

Throughout the entire presentation:

• Use a fixed, consistent color *palette*

• Consistent shapes

• Same mathematical symbols and variable names

• Same colors / styles for plots:
  
  • If velocity is green in one plot, ensure it is green in other plots too

  • also for baselines
Presentation
Presentation

In-Person

• Check if 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
Presentation

On-Line

• Check your camera and positioning beforehand

• Be in the centre of the image

• Make sure you’re well lit, and do not sit against the light

• Be aware of your background

• Check whether videos run smoothly on the conferencing software

• Be familiar with the software: How to share the (correct) screen, enter presentation mode etc.
Presentation

Presenter View

• Allows you to view notes for each slide
• Lets you check where you should be according to the timing
• Lets you make a proper transition to the next slide
Presentation

Your Presentation

• Plan it
• Rehearse it (multiple times)
• Time it
• Think about how to deal with interrupting questions
• Practice transitions between slides

• Keep in mind: This is your show. Optimise it!
Presentation

Laser Pointer

• Helps you to point at things

• Use the laser pointer instead of the mouse cursor

• Clearly visible and hard to miss

• Laser pointer visible from the presentation mode as well

• Not a Disney Sing-Along-Song
  • Not everything needs to be pointed at
Presentation

Voice

• **Speak up** to make sure that everyone can hear you

• Modulate your voice tone

• Avoid dialect

• Avoid idioms

• Avoid repetitions (look for alternatives or synonyms if you discover it)

• Avoid **filler words** and hesitation vowels like “ahem”, “uh”, “well”, “yes”
Questions & Interruptions

• Think positive!

• **Questions** are good and show that people are interested

• **Repeat** the question to ensure that you understood it properly

• If you cannot answer a question, **be honest** about it

• Suggest to take the **discussion offline**, if the answer would take too long or diverges from the talk
Presentation

Timing

• Test the duration of your presentation **beforehand**
• Keep a **timer** running
• If you tend to stumble on phrasing: Slide **notes** can serve as a crutch
Conclusion
Conclusion

YOUR PRESENTATION

HOW YOU PLANNED IT:

START

15 MINUTES

CONCLUSIONS

15 MINUTES

METHODOLOGY AND EXPERIMENT DESIGN

RESULTS

APPLAUSE

ENGAGING Q&A

MOTIVATION

INTRODUCE YOURSELF

DESCRIBE OUTLINE OF TALK

HOW IT GOES:

START

PREVIOUS SPEAKER RUNS LATE AND EATS INTO YOUR TIME.

TECHNICAL DIFFICULTIES CONNECTING YOUR LAPTOP.

FORGET INTRODUCING YOURSELF.

ANNOYING AUDIENCE MEMBER INTERRUPTS WITH SELF-AGGRAVATING QUESTION.

POWER THROUGH THE REST OF YOUR 30 SLIDES.

15 MINUTES

SPEND WAY TOO MUCH TIME DESCRIBING YOUR OUTLINE.

REALIZE YOU ONLY HAVE 3 MINUTES LEFT.

ACKWARD SILENCE Q&A.

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Conclusion

• 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 !!!
Conclusion

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• Practice it extensively
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