Seminar Summer Term 2024

How to give a good presentation

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AutoML for Science

April 16th, 2024

AutoML.org

[?] Questions regarding the organization

[60min] **Bayesian Optimization for HPO**

[?] Your Questions

[25min] **How to give a good presentation**

[?] Your Questions

Questions regarding the organization?

Notes from my side
- Please connect with your Study Buddy and ideally set up a meeting today ;-)
- If you want to switch dates, try to find a person to switch with and let me know

→ You'll have to give a lot of presentations in your life (in academia **and** industry)

Such presentations can decide whether
- You get a job
- You get a promotion
- Your favourite project gets funded
- You get the resources you need
- …
- You get a good grade ;-)

Photo by Matthew Jungling on Unsplash

1. Structure is key
2. Adapt your talk to your audience
3. Present in pictures
4. Readable slides
5. Descriptive Titles (new)
6. Practice, Practice, Practice!
7. Check your technical equipment before
8. Behave naturally
9. Learn from the mistakes of others

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#1 Structure is key

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High level to low level to high level
- Catch your audience's attention
- Then tell them what you'll tell them and why they should care (priming)
- Then tell it to them
- Then tell them what you just told them

Make transitions clear, don't forget the "meta-talk"
- E.g., *In order to explain X, first I'll need to explain Y*
- E.g., *Now that we've seen X and Y, we have the ingredients to do Z*
- Remind the audience where you are in the talk, e.g. using a reoccurring outline slide
- Use meaningful titles

Don't get lost in details
- In case of doubt **leave out some details**
- Use a "T-structure": combine broad coverage of a topic with depth about one aspect
- Focus on what you find most interesting

Start your presentation with

- a brief introduction of yourself
- a motivation of why your topic matters and why the audience should care
- what you will talk about (outline slide only for >30 mins)

End your presentation with

- the main takeaways
- a lookout
- a clear statement announcing the end of your presentation, e.g. *That's it from my side and now I am happy to answer questions*
- a Thank-you slide is not necessary, better show the conclusion/discussion slide (unless you thank collaborators)

An example structure (e.g. one slide each)

- main motivation
  → why is this needed? what is the limitation of previous work? how does it connect to other work (in this seminar)?

- main contributions
  → what is novel? how does the paper add value to the field?

- method
  → how does it work?

- results
  → how well does it work? (not everything needs to be included)

- strengths / limitation of the approach
  →when does it fail, is there a bottleneck, problems in practice, weak empirical evaluation
  →how is it better than previous work, when does it shine

- conclusion
  → main take home message

The paper you are presenting is written for a specialized research community.

Your audience often has a different background

- "Customize" the motivation (and ideally connect it to the topic of event/prior talk)
- Cover the necessary background
- We are experts on some topics – don't bore us with what we already know

In general

- A talk to the CEO is completely different than one to the tech support group
- A talk applying method X to problem Y is completely different when you're talking to community studying X or Y

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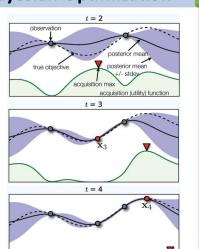
Slides full of text are hard to follow

- The audience will read and **not listen to you**
- Reduce text, use **more images**
- Use animation only to guide focus of attention

Method of Choice: Bayesian Optimization

- Prominent approach to optimize expensive blackbox functions [Mockus et al., '78]
- Approach
  - Observe a few function evaluations
  - Construct a probabilistic model of the objective function, for example a Gaussian process
  - Use that model to compute a so-called acquisition function that quantifies how useful a new data point is, trading off exploitation of areas predicted to be good and exploration of areas where the model is uncertain
  - Use the acquisition function to select the next point to evaluate the function at
  - Evaluate the function there, refit the model, and iterate
- Efficient in the number of function evaluations
- Works when objective is nonconvex, noisy, has unknown derivatives, etc
- Recent convergence results [Srinivas et al, '10; Bull '11; de Freitas, Smola, Zoghi, '12]

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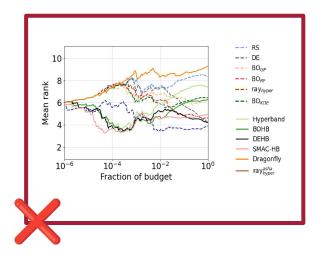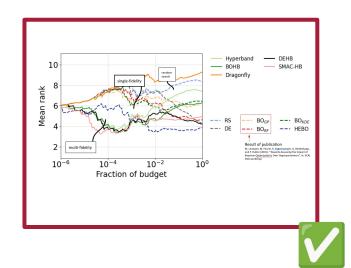

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How to present a graph/plot?

- always explain what the graph shows
- use presenter to guide audience
- take enough time

→ The same applies to equations and tables

Text, Font & Color

1. Make sure to pick a reasonable text and background color
2. Can you read this? Also from the back? Remember, the contrast and resolution of your laptop is usually much better than that of the projector
3. Sometimes the font size is too tiny. This also applies to axis labels.
4. Pick a single font type and color and use it throughout *the whole presentation*
5. Highlight important **keywords** when there is a lot of text, but: choose a consistent *way* of highlighting

Graphics

1. Size up figures to use most of the slide.
2. Not all animations are useful.
3. Screenshots are okay, if you do not have access to the original image.

Other

1. Meke sure tere are no typos in yur slides
2. A list needs more than one entry
   - e.g. this is not a list!
3. Make sure slides are self-contained (important for most presentation types)

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#5 Descriptive titles

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The title of your slide should be **informative**, e.g.

a. Motivation
b. Method
c. Experiment / Results
d. Future Work

⟷

a. ChatGPT can support data scientists
b. The right prompt matters
c. Experiments on a Kaggle dataset
d. Next up: Automatically win Kaggle competition

→ This is very helpful to create your presentation:
● Write down your main message in ~20 sentences (one slide per minute)
● Create slides to support the content of each sentence

1. Plan each part!
- Have a time budget
- Have bullet points with the main points
- Practice & check the timing for the part

2. Put it all together and practice!
- Do the transitions work?
- Always get stuck at the same point? Change that point!
- Don't speak too fast! Speaking too slowly is almost impossible
- Make use of breaks

3. Finetune start and beginning!
- Know how you want to start (when you're most nervous)
- Know how you want to end (what the audience remembers)

⭐ **Bonus tipps**
- Practice starting at a random slide of your presentation
- Stand and use presentation mode (as realistic as possible)
- Think about potential questions
- Have backup slides with left out details

Checklist

- Do you have to bring your own laptop?
    - Does your laptop work with the projector?
    - Do you have the right dongle?
    - Internet connection switched off?
    - Desktop free of too personal items?
    - Screen saver switched off?
    - Enough battery or laptop plugged in?
- Is your presentation in the right format?
- Do all videos show properly?
- Does audio work?
- (if applicable) Does your laser pointer work?

⭐ **Bonus tipps**
- Prepare and test your equipment before the talk!
- Have your slides also as a PDF ready

WWW.PHDCOMICS.COM

Keep **eye contact** with the audience; don't turn your back
→ But do <u>not</u> wonder what they might think of your presentation! (now it's too late)

Relax!

Answering questions:
- Listen to the whole question carefully; don't interrupt
- Repeat what you understood, especially for long/multiple questions.
- Think before you answer
- Short and precise
- If you don't know the answer, say so. This is okay.

⭐ **Bonus tipp**: Ask someone to take a video of you presenting and watch it

Have you ever been to a presentation where you were

🤭, 🙁, 😵‍💫 or irritated by a specific behaviour of the presenter?

Then

- Analyze what went wrong
- (if possible) give them (friendly & constructive) feedback
- Do not make the same mistakes

⭐ **Bonus tipp**
- If you see a great presentation, learn from it (and let the presenter know that you enjoyed the presentation)

1. **Never present other people's work as your own**

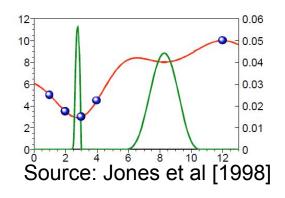   • Never copy-paste (even critical if it is your own work)

   • State explicitly what is your contribution

2. **Give appropriate credit**

   • references for figures

   • licence for photos/icons

   • Quotes: *X and Y [12] define this problem as follows : "…"*

Source: Jones et al [1998]

→ Never cheat or plagiarize on purpose, clearly mark your references, adopt best practices for avoiding mistakes

Slides will be taken into account for your grade

Send me your slides (as pdf) within two days (!) after your presentation.
Note: If you change anything (fixed equations, corrected typo, add explanation) in the slides, please add a short statement in the email.

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During Q&A? (this part of your presentation)
- first part: clarification questions (answer them to the best of your knowledge)
- Have some ideas for topics to discuss with the audience ready
  - What did you like about this paper?
  - How does this relate/improve/extend other papers?
  - How does this fit into the context of AutoML?
  - What are the weaknesses of this approach?
  - What would you improve/look at if you would work on this?
  - Would you have an application for this method?
  - Is there code available?
  - etc.

If you're not the presenter, also think about these questions when reading the paper (participating in the discussione is also part of your grade)

After each presentation: Anonymous feedback survey.

What?
- everyone can/should provide <u>constructive (!)</u> feedback to everyone
- feedback regarding content, slides and style

How?
- I will ask you to add a QR code to add as your last slide
- I will give you access to the survey (or send you results)

Questions?

Source: phdcomics.com/comics/archive.php?comicid=1553

- **How to give a great scientific talk** https://www.nature.com/articles/d41586-018-07780-5
- **Free Images** https://www.pexels.com/, https://unsplash.com/
- **How to read a research paper** http://ccr.sigcomm.org/online/files/p83-keshavA.pdf