EBERHARD KARLS
UNIVERSITÄT
TÜBINGEN

machine learning
new perspectives
for science

Seminar WS23/24

How to give a good presentation

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Some parts of this presentation are adapted from a seminar hold by André Biedenkapp, with permission.

AutoML.org

Story Line Today

[?] Questions regarding the organization

[25min] **How to give a good presentation (not only in this seminar)**

[?] Your Questions

[40min] **Bayesian Optimization for HPO**

[?] Your Questions

Questions regarding the organization?

Notes from my side

- Please connect with your “supporter” 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

Why should you aim for a good presentation?

→ 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

A few simple rules

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

#1 Structure is key

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

#1 Structure is key

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)

#2 Adapt your talk to your audience

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

#3 Present in Pictures

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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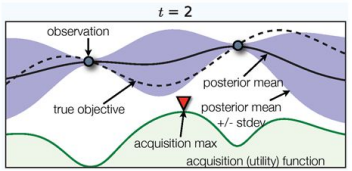

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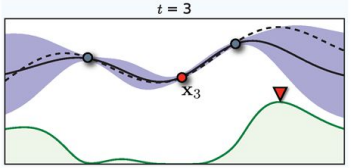

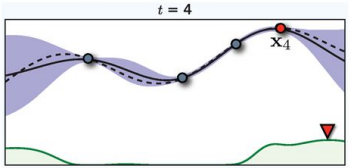

- Recent convergence results [Srinivas et al, '10; Bull '11; de Freitas, Smola, Zoghi, '12]

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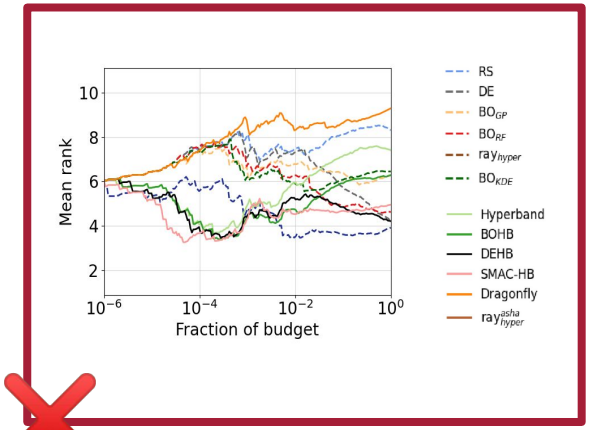
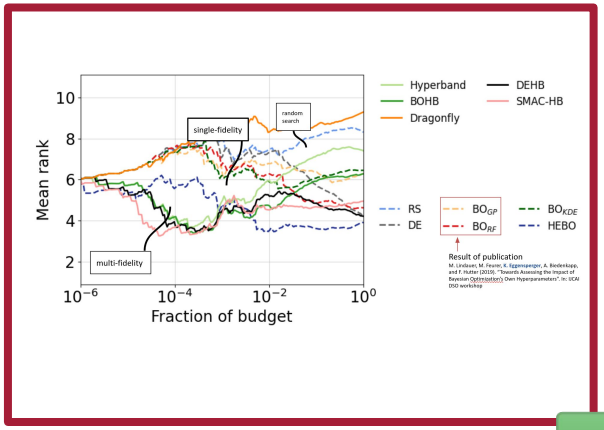
#3 Present in Pictures

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





#4 Readable slides - some tips

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)

#5 Practice, Practice, Practice

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

#6 Check your technical equipment before

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

#7 Behave Naturally

Keep **eye contact** with the audience; don't turn your back
→ But do not 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

#8 Learn from the mistakes of others

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

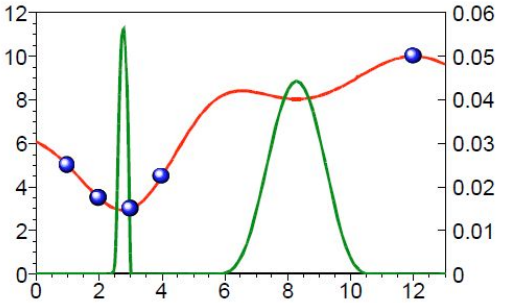
⭐ **Bonus tipp**

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

Good scientific practice

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

This Seminar: Specific Rules

Slides are part of your grade for this seminar

The slides/presentation ideally contain (e.g. one slide each)

- the main motivation
  → why is this needed? what is the limitation of previous work?
- a summary of the main contributions
  → what is novel? how does the paper add value to the field?
- weaknesses of the approach
  →when does it fail, is there a bottleneck, problems in practice, weak empirical evaluation
- strengths of the approach
  →how is it better than previous work, when does it shine

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.

Question: Is everyone fine with sharing the slides on ILIAS?

This Seminar: What else matters?

During the presentation

- First/Last 30sec of your presentation
- How well did you motivate the method
- How well did you explain technical details

During Q&A? (it is part of your presentation)

- 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?
  - etc.

If you're not the presenter, also think about these questions when reading the paper

This Seminar: Feedback from Peers

Anonymous feedback survey.

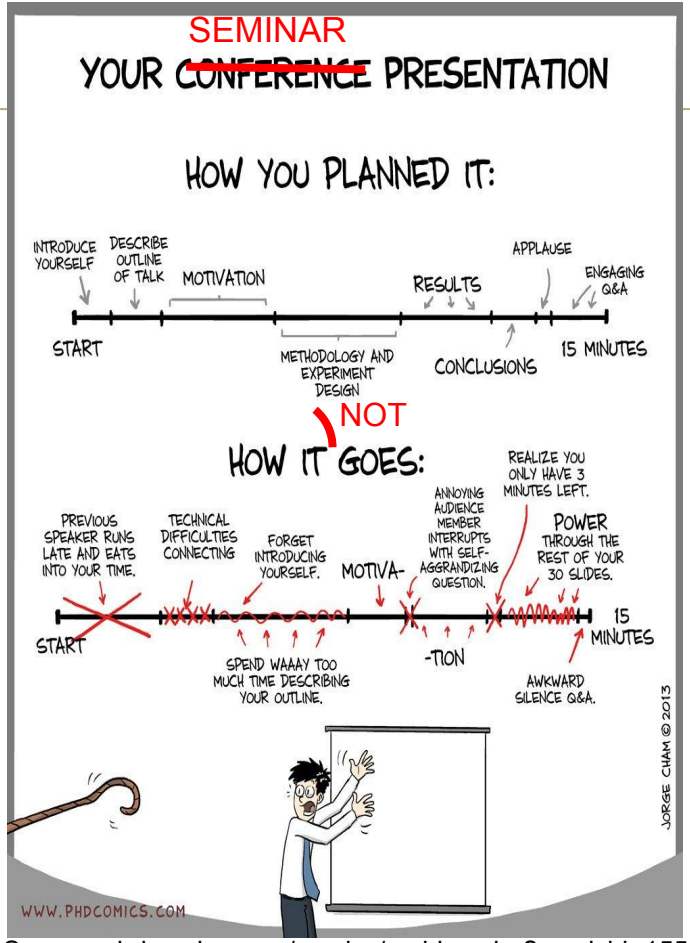
What?

- everyone can/should provide feedback to everyone
- will happen directly after the presentation
- will contain feedback regarding content 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

More resources

- **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