universität freiburg

How to Make a Good Presentation

Seminar: Learning with Limited Supervision

Summer Semester 2024

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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

Slides

Quick Remarks

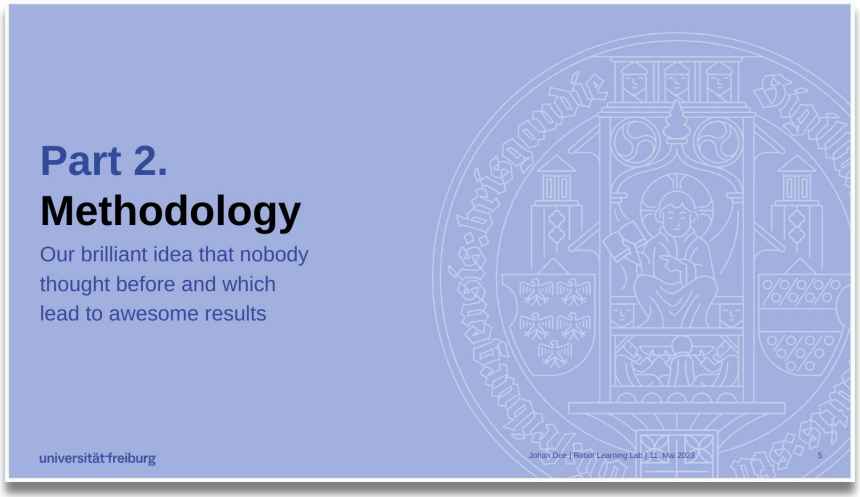
- Typically done **long** before the presentation
  - Rule of Thumb: At most 1 slide per minute
- Tool to help you convey **your message**
  - Images, Videos, Graphs, Animations, etc.
- Not meant as a **teleprompter**
  - Do not read from the slides

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?

Source

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**?

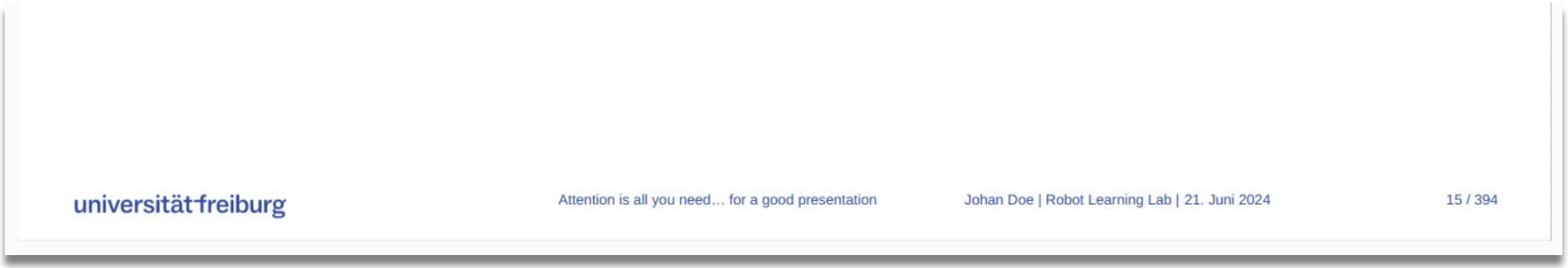
Slide Design

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 (26Pt)
  - 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

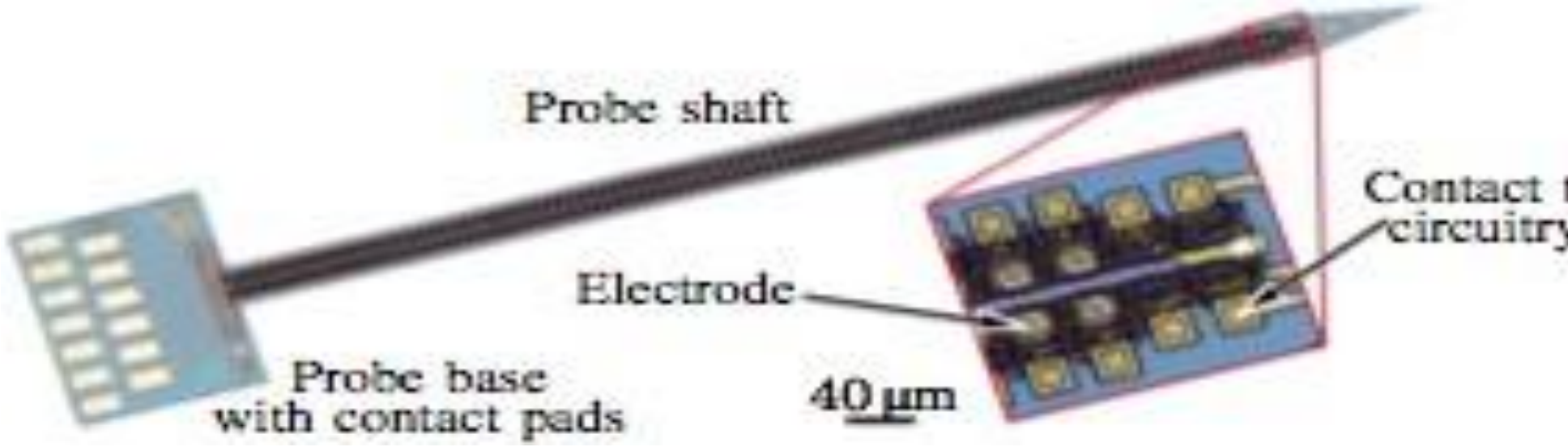
Slide Design

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

Slide Design

Figures

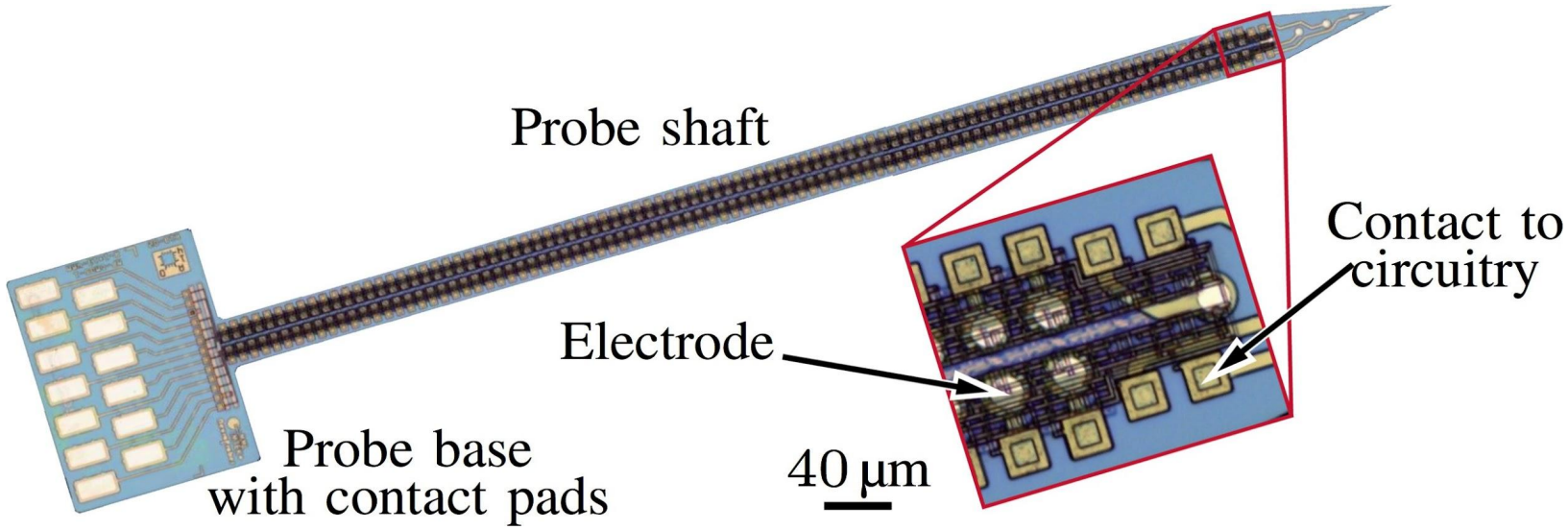


- A couple of issues with this figure …

Slide Design

Figures

- Check
  - Resolution
  - Aspect Ratio
  - Crop
  - Alignment
  - …



Slide Design

Algorithms and Equations

Algorithm 1 Coverage(S)

$C \leftarrow S$ *//Set the current node to S*
$\mathcal{P}_{aux} \leftarrow C$
$\mathcal{P} \leftarrow \emptyset$
while 1
  $\forall n \in \mathcal{P}_{aux},\ m \in \mathcal{N},\ \|c_n - c_m\| < M_{\mathrm{R}} \cdot e_{\mathrm{cell}}$
    $\mathbf{visited}(m) = 1$
  $\forall n \in \mathcal{P}_{aux},\ m \in \mathcal{N},\ \|c_n - c_m\| |< 2M_{\mathrm{R}} \cdot e_{\mathrm{cell}}$
    $\mathbf{overlapped}(m) = 1$
  $\mathcal{N}_C \leftarrow \{n \in \mathcal{N} \mid \|c_n - c_C\|_\infty = (2M_{\mathrm{R}} + 1) \cdot e_{\mathrm{cell}}$
    and $\mathbf{overlapped}(n) = 0$ and $g(n) < \infty\}$
  if $\mathcal{N}_C \neq \emptyset$
    find $M \in \mathcal{N}_C$ with minimal g
  else
    D*'(C) and stop at $\mathbf{visited}(M) = 0$
      or $\|c_M - c_o\|_\infty = e_{\mathrm{cell}},\ o \in \mathcal{O}$ and $\exists n$,
      $\mathbf{visited}(n) = 0, \|c_M - c_n\| < M_{\mathrm{R}} \cdot e_{\mathrm{cell}}$
    if no such node M exists
      return $\mathcal{P}$
    end
  end
  $\mathcal{P}_{aux} \leftarrow \mathcal{P}_{aux}(C, M)$
  $C \leftarrow M$ *//Set the new current node*
  $\mathcal{P} \leftarrow \mathcal{P} \cup \mathcal{P}_{aux}$
end

[Dakulovic et al., IFAC 2011]

Slide Design

Algorithms and Equations

- 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

$$G_t \sim \mathrm{DP}_t(\alpha_t, \mathrm{BP}_p(c_p, \alpha_p, \mathrm{Dir} \times \mathcal{NW})),$$

$$G_c^{(s)} \sim \mathrm{BP}_c(1, |A_s|\,\alpha_c,\ G_t \times U(A_s \times [-\pi, \pi])) \tag{2}$$

$$\{G_{t_j}, T_j\}_j \sim \mathrm{BeP}(G_c^{(s)}) \tag{3}$$

$$\{\boldsymbol{\mu}_k, \boldsymbol{\Sigma}_k, \boldsymbol{\gamma}_k\}_k \sim \mathrm{BeP}(G_{t_j}) \quad \text{for each } j \tag{4}$$

$$\{\mathbf{x}, \omega\} \sim p(\mathbf{z} \mid \boldsymbol{\mu}_k, \boldsymbol{\Sigma}_k, \boldsymbol{\gamma}_k, T_j) \quad \text{for each } k \tag{5}$$

$$G_\epsilon^{(s)} \sim \mathrm{BP}_\epsilon(1, \alpha_\epsilon, M \times U(A_s)) \tag{6}$$

$$\{\mathbf{x}_i, \omega_i\}_i \sim \mathrm{BeP}(G_\epsilon^{(s)}) \tag{7}$$

$$p(\mathbf{C}, \mathbf{a}, \mathbf{z}) = \left(\prod_{s=1}^{S} p(n_{s,\epsilon}) p(n_{s,m})\right) p(\mathbf{t}) \left(\prod_{t=1}^{n_t} p(\mathbf{d}_{[t]} \mid \mathbf{t})\right) p(\mathbf{T}) \left(\prod_{t=1}^{n_t} \prod_{k=1}^{K_t} p(\mathbf{z}_{[\mathbf{d}_{[t,k]}]} \mid \mathbf{T}_{[t]}, \mathbf{d}_{[t,k]}, \mathbf{t})\right). \tag{8}$$

$$p(n_{s,\epsilon}) = p(\mathbf{z}_{[\mathbf{a}_{[s]}]}, \mathbf{a}_{[s]}) = n_{s,\epsilon}!\,\mathrm{Poi}(n_{s,\epsilon} \mid \alpha_\epsilon)(n_\omega\,|A_s|)^{-n_{s,\epsilon}}. \tag{9}$$

$$p(t_j, \mathbf{d}_j \mid \mathbf{t}_{[-j]}, \mathbf{d}_{[-j]}) = p(\mathbf{d}_j \mid \mathbf{d}_{[-j,t_j]}, \mathbf{t}) p(t_j \mid \mathbf{t}_{[-j]}). \tag{10}$$

Here, $p(t_j \mid \mathbf{t}_{[-j]})$ is the CRP predictive distribution

$$p(t_j = i \mid \mathbf{t}_{[-j]}) = \begin{cases} \frac{n_i}{\alpha_c + \sum_{i'} n_{i'}} & t_j \text{ is an existing type} \\ \frac{\alpha_c}{\alpha_c + \sum_{i'} n_{i'}} & t_j \text{ is a new type} \end{cases}, \tag{11}$$

$$p(d_{j,k} \neq 0 \mid \mathbf{d}_{[-j,t_j]}, \mathbf{t}) = \frac{n_k}{n_{t_j} + c_p}, \tag{12}$$

$$p(\mathbf{d}_{[j,K^+]} \mid \mathbf{d}_{[-j,t_j]}, \mathbf{t}) = n_{K^+}!\,\mathrm{Poi}\left(n_{K^+} \middle| \frac{c_p \alpha_p}{n_{t_j} + c_p}\right), \tag{13}$$

$$p(\tilde{\mathbf{x}}_{[d_{j,k}]} \mid \tilde{\mathbf{x}}_{[\mathbf{d}_{[-j,t_j,k]}]}) = t_\nu(\tilde{\mathbf{x}}_{[d_{j,k}]} \mid \mu, \Sigma) \tag{14}$$

$$p(\omega_{[d_{j,k}]} \mid \omega_{[\mathbf{d}_{[-j,t_j,k]}]}) = \frac{n_\omega + \alpha_\omega}{\sum_{\omega'}(n_{\omega'} + \alpha_{\omega'})}, \tag{15}$$

$$R_d = \frac{1}{p(\mathbf{z}_{[\mathbf{d}_j]} \mid \mathbf{z}_{[\mathbf{d}_{[-j,t_j]}]}, \mathbf{T}_{[t_j]}, \mathbf{d}_{[t_j]}, \mathbf{t}) p(t_j, \mathbf{d}_j \mid \mathbf{t}_{[-j]}, \mathbf{d}_{[-j]})} \frac{1}{p(T_j)} \frac{p(n_m - 1)}{p(n_m)} \frac{p(n_\epsilon + n_j)}{p(n_\epsilon)} \frac{q_b(C_j)}{q_d(C_j)}. \tag{16}$$

$$R_s = \frac{p(\mathbf{z}_{[\mathbf{d}_j^\star]} \mid \mathbf{z}_{[\mathbf{d}_{[-j,t_j^\star]}]}, T_j^\star, \mathbf{T}_{[-j,t_j^\star]}, \mathbf{d}_j^\star, \mathbf{d}_{[-j,t_j^\star]}, t_j^\star, \mathbf{t}_{[-j]})}{p(\mathbf{z}_{[\mathbf{d}_j]} \mid \mathbf{z}_{[\mathbf{d}_{[-j,t_j]}]}, T_j, \mathbf{T}_{[-j,t_j]}, \mathbf{d}_j, \mathbf{d}_{[-j,t_j]}, t_j, \mathbf{t}_{[-j]})} \frac{p(t_j^\star, \mathbf{d}_j^\star \mid \mathbf{t}_{[-j]}, \mathbf{d}_{[-j]}) p(T_j^\star) p(n_\epsilon^\star) q_b(C_j)}{p(t_j, \mathbf{d}_j \mid \mathbf{t}_{[-j]}, \mathbf{d}_{[-j]}) p(T_j) p(n_\epsilon) q_b(C_j^\star)}. \tag{17}$$

$$R_T = \frac{p(\mathbf{x}_{[\mathbf{d}_j]} \mid \mathbf{x}_{[\mathbf{d}_{[-j,t_j]}]}, T_j^\star, \mathbf{T}_{[-j,t_j]}, \mathbf{d}_{[t_j]}, \mathbf{t}) p(T_j^\star)}{p(\mathbf{x}_{[\mathbf{d}_j]} \mid \mathbf{x}_{[\mathbf{d}_{[-j,t_j]}]}, T_j, \mathbf{T}_{[-j,t_j]}, \mathbf{d}_{[t_j]}, \mathbf{t}) p(T_j)}. \tag{18}$$

$$p(d_{j,k} = i) \propto \begin{cases} p(d_{j,k} = 0 \mid \mathbf{d}_{[-j,t_j,k]}, \mathbf{t}) p(n_\epsilon) & i = 0 \\ p(\mathbf{z}_i \mid \mathbf{z}_{[\mathbf{d}_{[-j,t_j,k]}]}, \mathbf{T}_{[t_j]}, d_{j,k}, \mathbf{d}_{[-j,t_j,k]}, \mathbf{t}) & i \neq 0 \\ p(d_{j,k} \neq 0 \mid \mathbf{d}_{[-j,t_j,k]}, \mathbf{t}) p(n_\epsilon - 1) & \end{cases} \tag{19}$$

$$R_- = \frac{1}{p(\mathbf{z}_i \mid T_j, \mathbf{d}_{[j,K^+]})} \frac{p(\mathbf{d}_{[j,K^+]}^\star \mid \mathbf{d}_{[-j,t_j]}, \mathbf{t})}{p(\mathbf{d}_{[j,K^+]} \mid \mathbf{d}_{[-j,t_j]}, \mathbf{t})} \frac{p(n_\epsilon + 1)}{p(n_\epsilon)} \frac{q_+}{q_-} \tag{20}$$

$$p_m(\langle \mathbf{z}_i, \mathbf{z}_j \rangle, \langle k_{i'}, k_{j'} \rangle) = \mathcal{N}(d_\Delta \,|\, 0, \sigma_m^2) M_{i'}(\omega_i) M_{j'}(\omega_j). \tag{21}$$

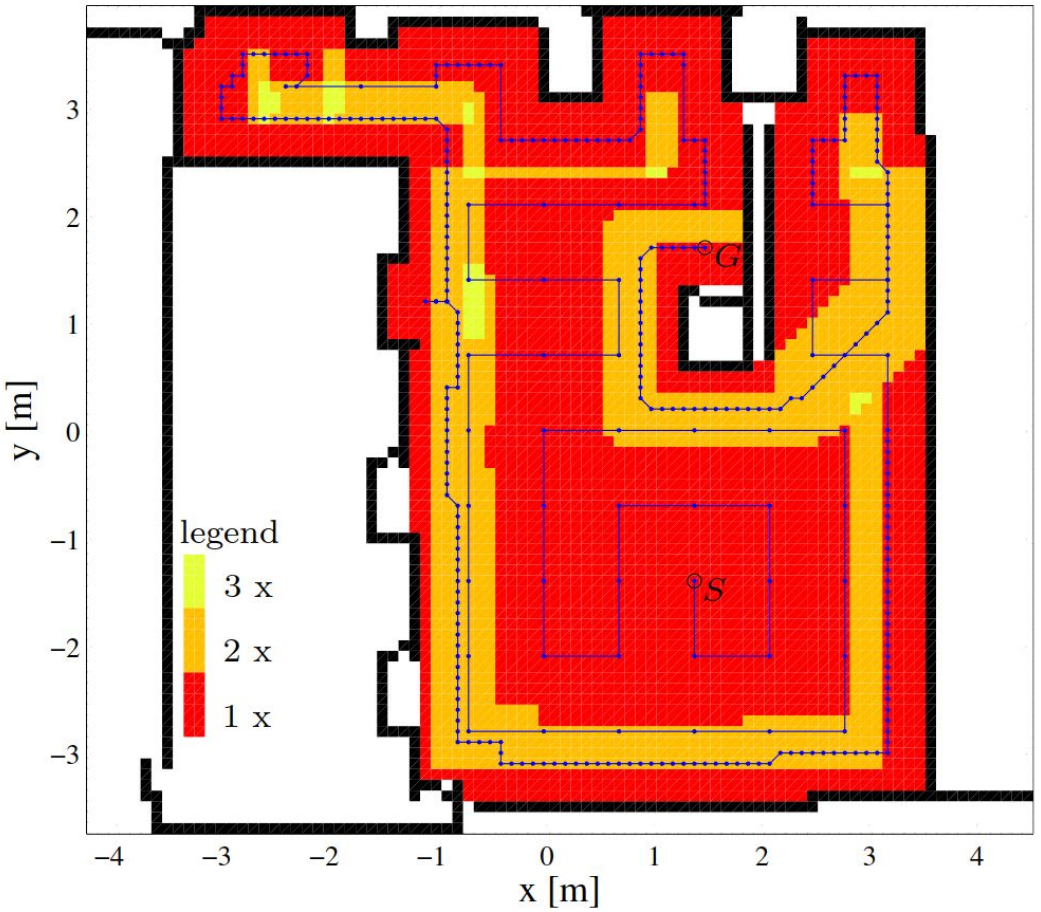
Courtesy of Adrian Röfer

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



[Dakulovic et al., IFAC 2011]

Slide Design

Tables

My not so awesome results

Baseline	Acc	mAP	AP_{50}	AP_{75}	AP_{90}	AP_s	AP_m	AP_L	MSE
MLP	65.17931499	51.10769197	48.96746961	54.61312357	**0.947493075**	87.147549	73.80109773	65.17931499	1.537611e1
ResNet	63.5059482	74.204388	58.83328263	43.3834097	0.5307199053	69.69859185	59.92916455	63.50959482	9.999999
RNN	94.09628891	54.46471774	94.473017	**98.18218359**	0.8399473363	63.07418726	64.85948246	94.096291	8.645
Transformer	86.43944795	55.96271	79.16797267	89.20976538	0.6289675	4.570553e1	45.32042211	86.4344795	5.277434
GCNN	46.42088664	68.24851811	84.03977	65.50471894	81.19881366	73.95157154	54.41238821	46.4208664	4.785
Ours	89.44789127	80.4517	**96.288**	92.04034965	81.55	**92.28013688**	**97.2400282**	99.37020661	**0.77954122**
DinoV2	**99.37020661**	62.41543812	77.05379813	0.608938	91.44263909	41.51532745	91.77551728	94.37661	6.774
Diffusion	53.57308955	57.0322709	80.13649621	78.56749	73.97519969	47.06480578	45.6406477	53.57308955	7.12345678
Mamba	73.87519057	52.16184837	61.69384238	45.72795333	68.66335717	74.31961469	83.4%	73.875	6.5100988

Slide Design

Tables

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

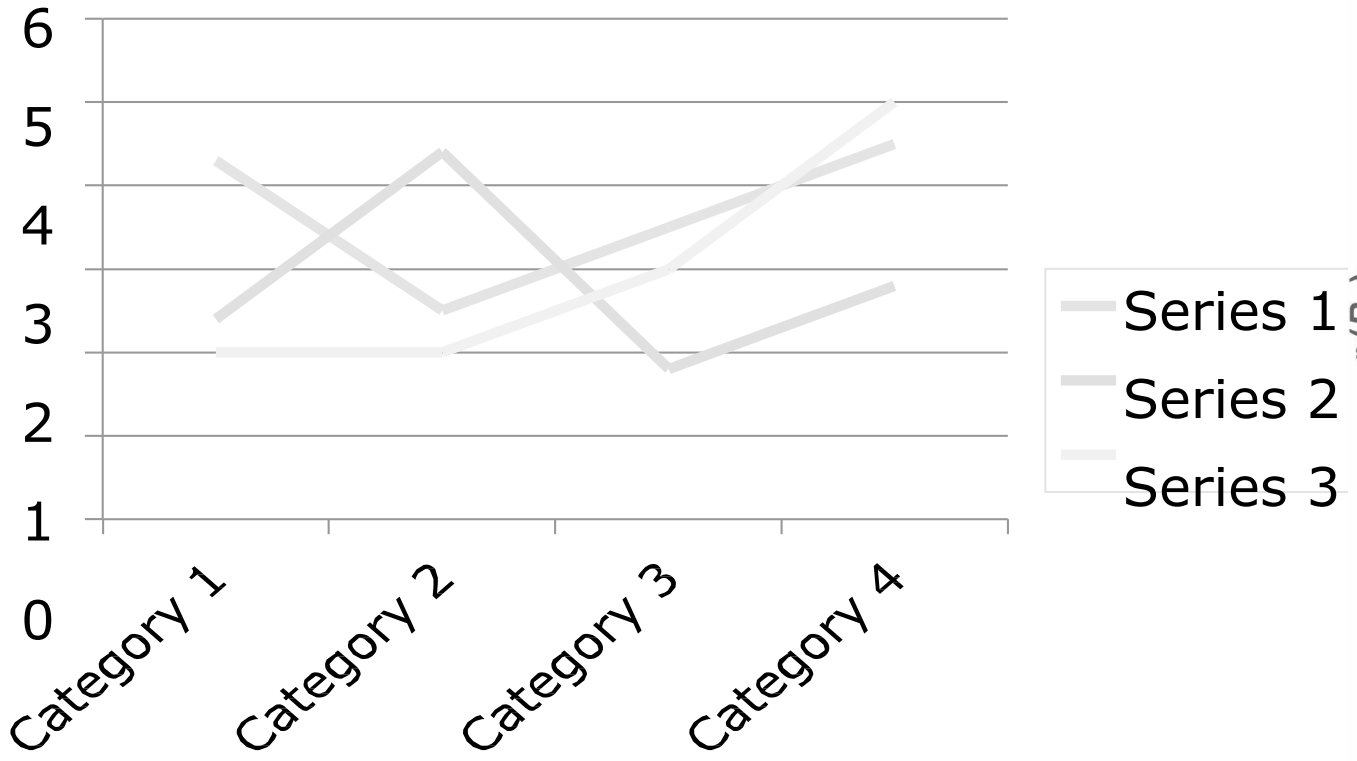
- Try to avoid, use **plots** instead

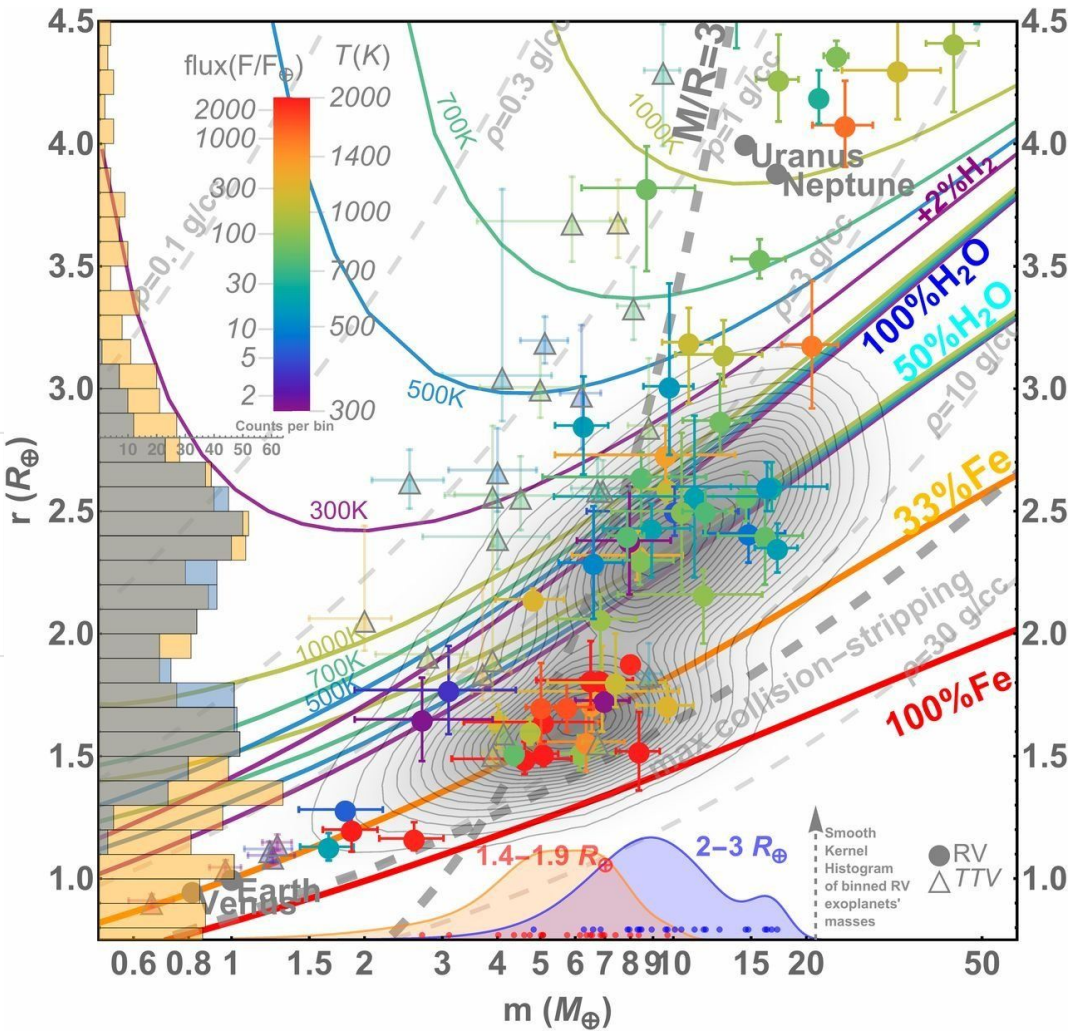
My awesome results

Baseline		Acc [%] ↑	AP_{50} [%] ↑	MSE [cm] ↓
MLP	[1]	78.9	68.3	15.4
ResNet	[2]	85.3	71.4	9.9
RNN	[3]	81.6	74.4	8.7
Transformer	[4]	88.7	78.6	5.3
Mamba	[5]	**91.3**	79.2	6.5
Ours		89.4	**81.5**	**0.8**

Slide Design

Plots

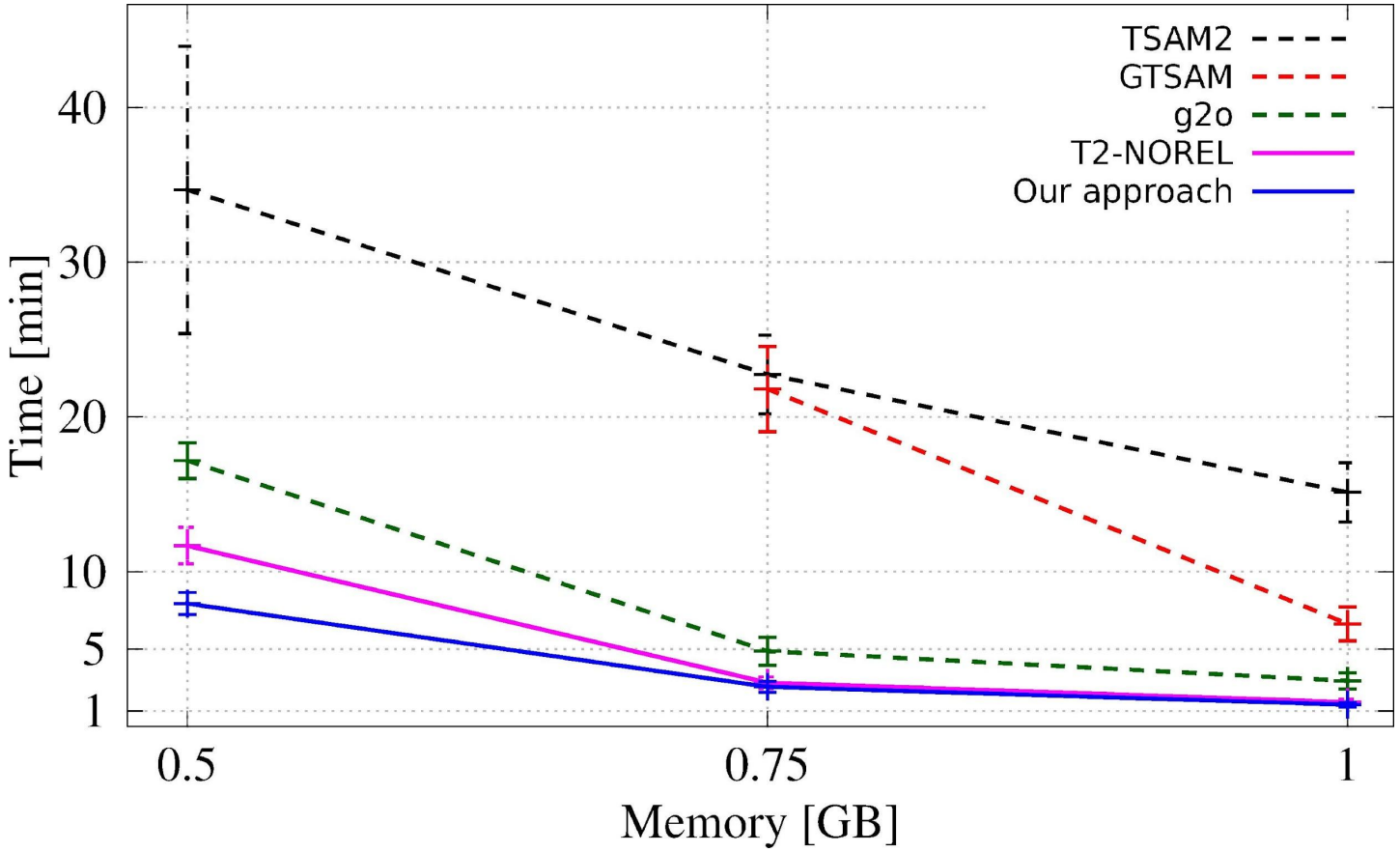




Slide Design

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

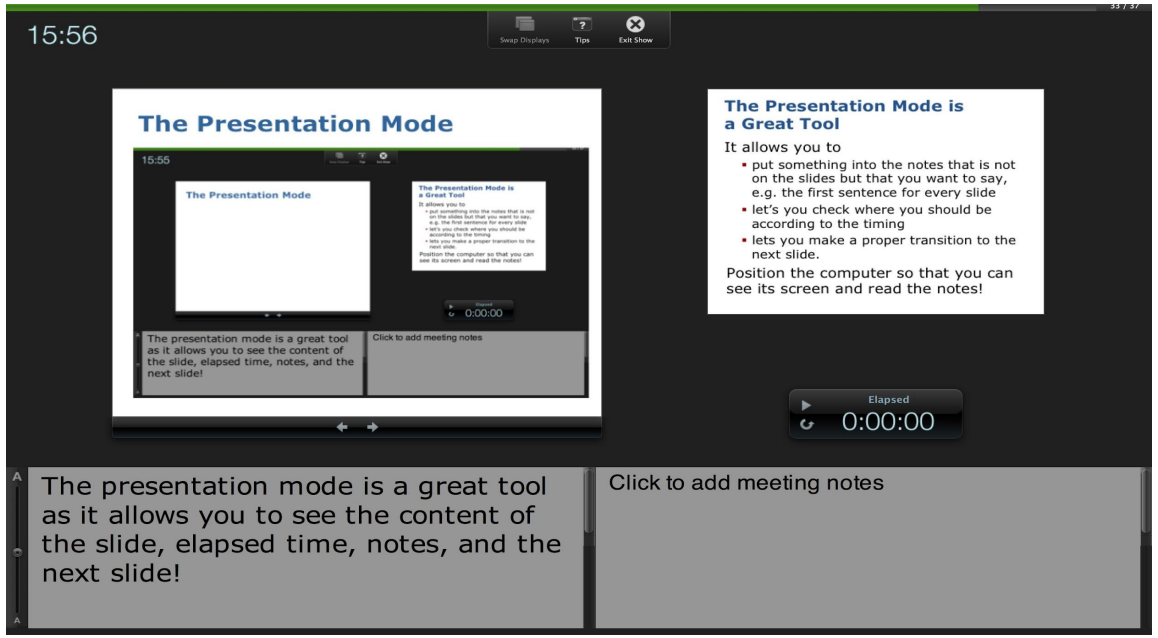
On-Line

- 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”

Presentation

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

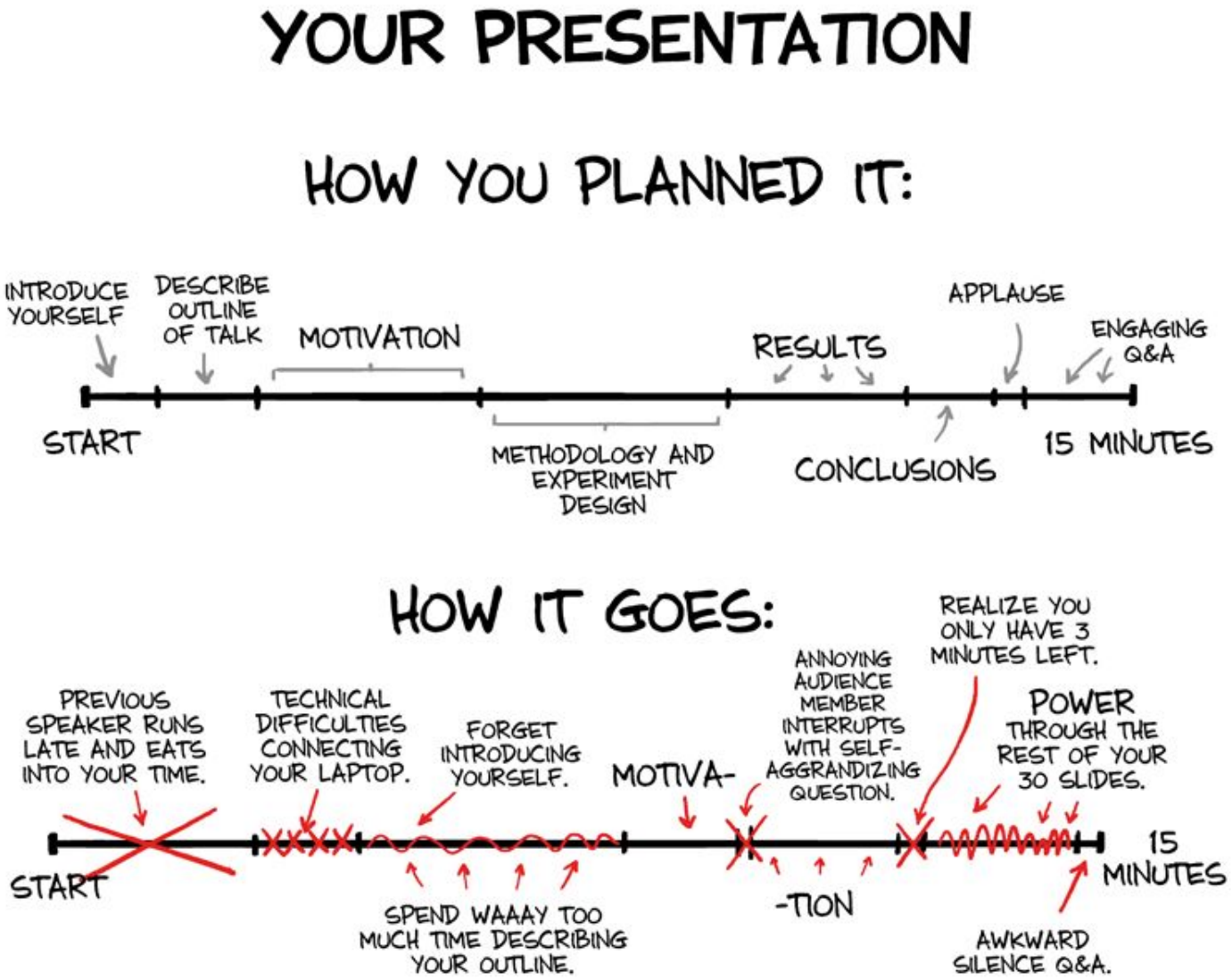
Presentation

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:
INTRODUCE YOURSELF
DESCRIBE OUTLINE OF TALK
MOTIVATION
RESULTS
APPLAUSE
ENGAGING Q&A
START
METHODOLOGY AND EXPERIMENT DESIGN
CONCLUSIONS
15 MINUTES
HOW IT GOES:
PREVIOUS SPEAKER RUNS LATE AND EATS INTO YOUR TIME.
TECHNICAL DIFFICULTIES CONNECTING YOUR LAPTOP.
FORGET INTRODUCING YOURSELF.
MOTIVA-
ANNOYING AUDIENCE MEMBER INTERRUPTS WITH SELF-AGGRANDIZING QUESTION.
REALIZE YOU ONLY HAVE 3 MINUTES LEFT.
POWER THROUGH THE REST OF YOUR 30 SLIDES.
START
SPEND WAAAY TOO MUCH TIME DESCRIBING YOUR OUTLINE.
-TION
AWKWARD SILENCE Q&A.
15 MINUTES

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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