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How to Prepare & Give a Talk

A few *very personal* advice

Goals of your Talk

- What is your *core* message?
  - Technical / Scientific detail
  - Overview over wider subject
  - Publicity for your team / company / yourself
  - …
- How do you want to appear?
  - Expert in the special subject, intelligent & clever
  - Demonstrate your overview & expertise in the field
  - Be cool & funny (‘dinner talk’)
  - …
- In which ‘style’ you want to talk?
  - Clear and educational (‘hope you understand…’)
  - High level (‘I am such a clever guy…’)
  - …

The Audience

- Who is the Audience ?
- What does the audience know ?
- What are the expectations ?
- In what state will the audience be ?
  - Tired from many talks.. (on a conference)
  - Eager to hear from you on a summer school
- This is *very important* to select you foci:
  - Which information do you have to introduce ?
  - What would be boring ?
  - Which results are most relevant for *that* audience ?
    - users want to see results and hear about applications, cost..
    - experts want to hear about details

Some Boundary Conditions

- What are the other talks in the session ?
  - If you are 5th speaker in a session on ATLAS results, you can be quite sure that the experiment has been presented. So do not repeat! (but have some slides ready in case...)
- Are there similar talks you should refer to ?
  - Make differences to other talks clear
  - This shows that you overlook the field and that you listen to the colleagues
- Do you want to advertise other talks / posters ?

The Title

- Does it describe your message ?
- Is it understandable (*for the audience*) ?
  - ‘A 7-3 compressor for a fast 16 x 16 ALU’
  - ‘Inverse Kinematics in Blender’
  - ‘Characterization of the XYZ ASIC’
  - ‘Development of Analog Readout, Digital Signal Processing, and Data Analysis Software for Ultra-High Rate HPGe’
- Is it too general ?
  - ‘progress in high speed computing’
- Does it sound interesting ?
  - ‘Getting Close to the Limit : sub Nanosecond Timing with LYSO’
- Is it too long ?
  - ‘Design and Evaluation of a New PEM Scanner Based on Pixelated Solid State CdTe Detectors to Overcome the Intrinsic Limitations of State-of-the-Art Devices Based on Scintillators’

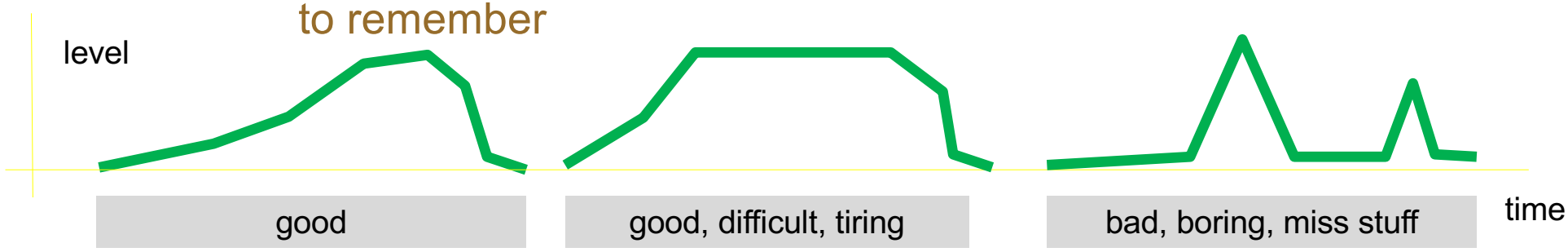
Structure of the Talk

- General Introduction / Motivation
  - Not too long. This is mostly stuff people know anyway!
- Overview
  - Short! Do not spend a minute to go through all bullets!!
  - In a short (12'-20') talk, I often skip that
- Introduction to your *specific* subject
- Your idea / methods / design
- Results / Highlights
- Further information / Outlook / Ideas
- Summary
  - Only mention few 'take home messages' you want the audience to remember

Main Parts

Gliederung

- 1. Allgemeines
  - 1.1 Der Begriff RFID
  - 1.2 Überblick der Anwendungsgebiete
  - 1.3 RFID Prognosen
  - 1.4 Frequenzbänder
- 2. Grundlagen
  - 2.1 Induktive Kopplung des ICs
  - 2.2 Radiative Kopplung des ICs
  - 2.3 Multi Tag Erkennung
  - 2.4 RFID Speicher
- 3. Anwendungsbeispiele
  - 3.1 LF RFID
  - 3.2 HF RFID
  - 3.3 UHF RFID
- 4. Quellen



Contents of the Talk

- What is the idea ?
- What is new ?
- What is state of the art (the competition) ?
- *Why* is it important what you do ?

- What are the challenges ?
- What are the solutions ?

Level

- The ‘average’ audience must be able to follow your talk
  - Can you say ‘MSpS’ or ‘SPECInts’ or do you have to explain?

- I think: few slides (topics) should be difficult to understand
  - This is then interesting also for the experts
  - Make clear for the ‘normal user’ that it is no problem to miss that particular point
  - This shows that you give a high level talk

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THE SLIDES

The Layout

- Is a matter of taste.
- Do not use a ‘standard’ (08/15) template.
  - This shows you did not put a any effort to chose or develop…
- Take a short moment to think about
  - Font, Font sizes
  - Colors
  - Positioning,
  - …
- Do you know the beamer format? 16:9? 4:3?
- Implement this in a template / style file!

The Layout

- Title not too large
- Put **page number, speaker name, date, location**, event on each slide (small, for later reference)
- Do not use too many colours. Use them to provide information!

- Difficult issue: How much text ?
  - In general I would say: not too much (just ‘reminders’). ***You*** are standing there to explain the things
  - Do not just read what is on the slides!
- But:
  - If you are unexperienced & nervous, put all items (not words) you want to treat on the slide to guide you (or use the notes).

- NOTE: (my) Lecture slides are NOT a good example: They can be used as Writeup and contain much too much text

Example

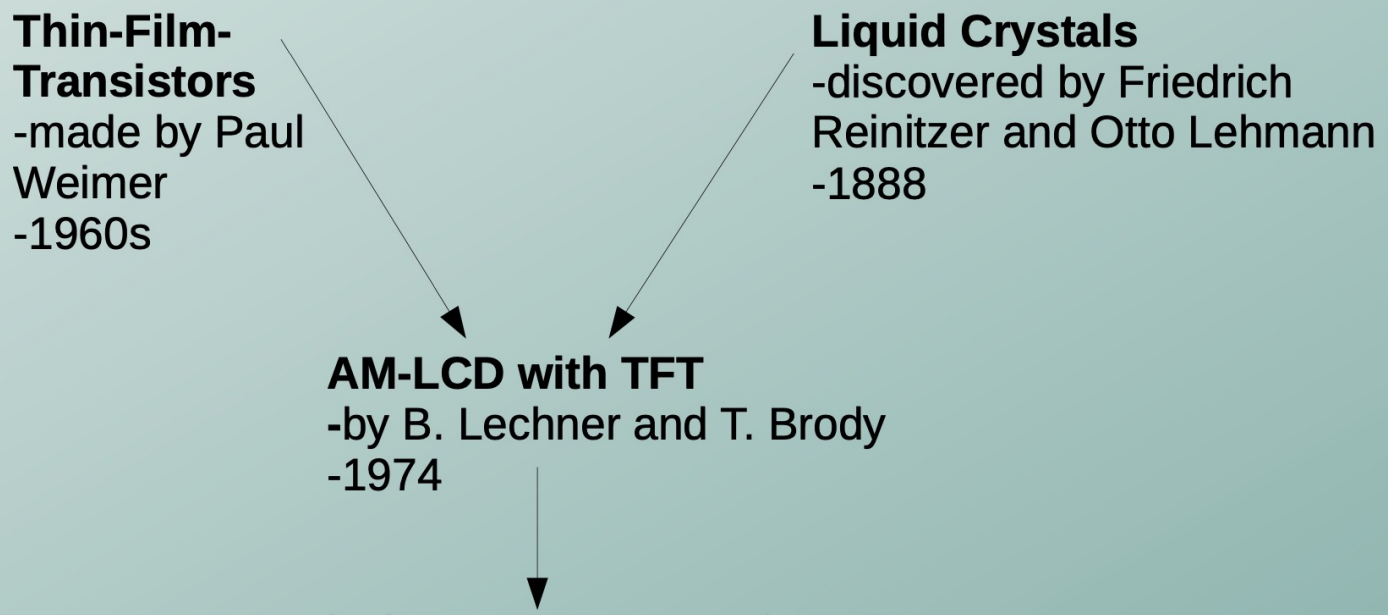
Gliederung

2

- **Implementierung ohne Hilfsmittel**
- Raytracing Hardware
- **Implementierung mit Frameworks**
- Raytracing Renderer
- **Implementierung mit Render-Engines**
- **„Realtime Raytracing“ mit 3D-Engines**

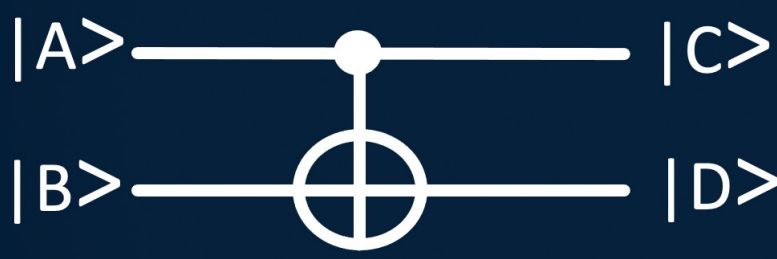
Example

2.1 The history of TFT-Displays



Example

Quantum Gates



CNOT

$$\begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 1 & 0 \end{pmatrix}$$

Example

LaTeX Beamer can be boring…

What is used for communication and what isn't?

Not used:

- Shape of the spike
- Amplitude of the spike (later weighted by the synapse)

Is used:

- Time the spike occurs
- Number of spikes in a time frame / frequency

Example

White text on black background ?

2.1.1 Datenübertragung durch Lastmodulation

- Durch Ein- und Ausschalten eines Lastwiederstands wird dem magnetischen Feld Energie entzogen.

  => Spannungsänderung an der Antenne des Lesegerätes

  => Amplitudenmodulation der Spannung

- Oft Problematisch da das Nutzsignal in der Praxis oft um viele Größenordnungen kleiner als die Ausgangspannung ist.

Capabilities

13

[4] [7]

$C = 3*10^8$ m/s

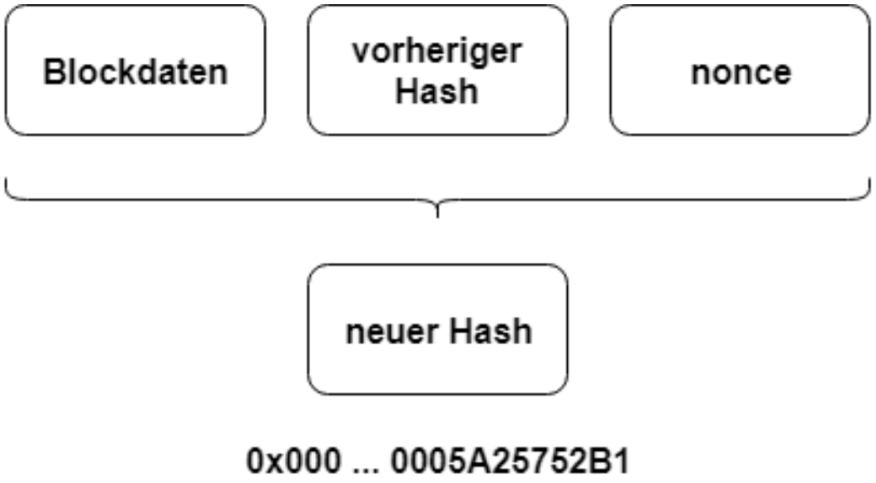
t = ~2ns

0,5 Meter

Example

Technische Einführung - Konsensfindung

- Proof-of-Work:
  - Nonce im header eines Blocks
  - Hashing des Blocks inklusive der (Transaktions-) Daten
  - Hoher Energieverbrauch



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Example

Exoskeleton vs Exosuit

Exoskeleton:

- Practically for medical use or rehabilitation in hospitals but not for for daily at-home use
- Misalignment problem
- Heavy and therefore increased muscle effort

Exosuit:

- Well designed for everyday activities at-home
- Lower material cost but not able to apply high forces
- Low power requirement

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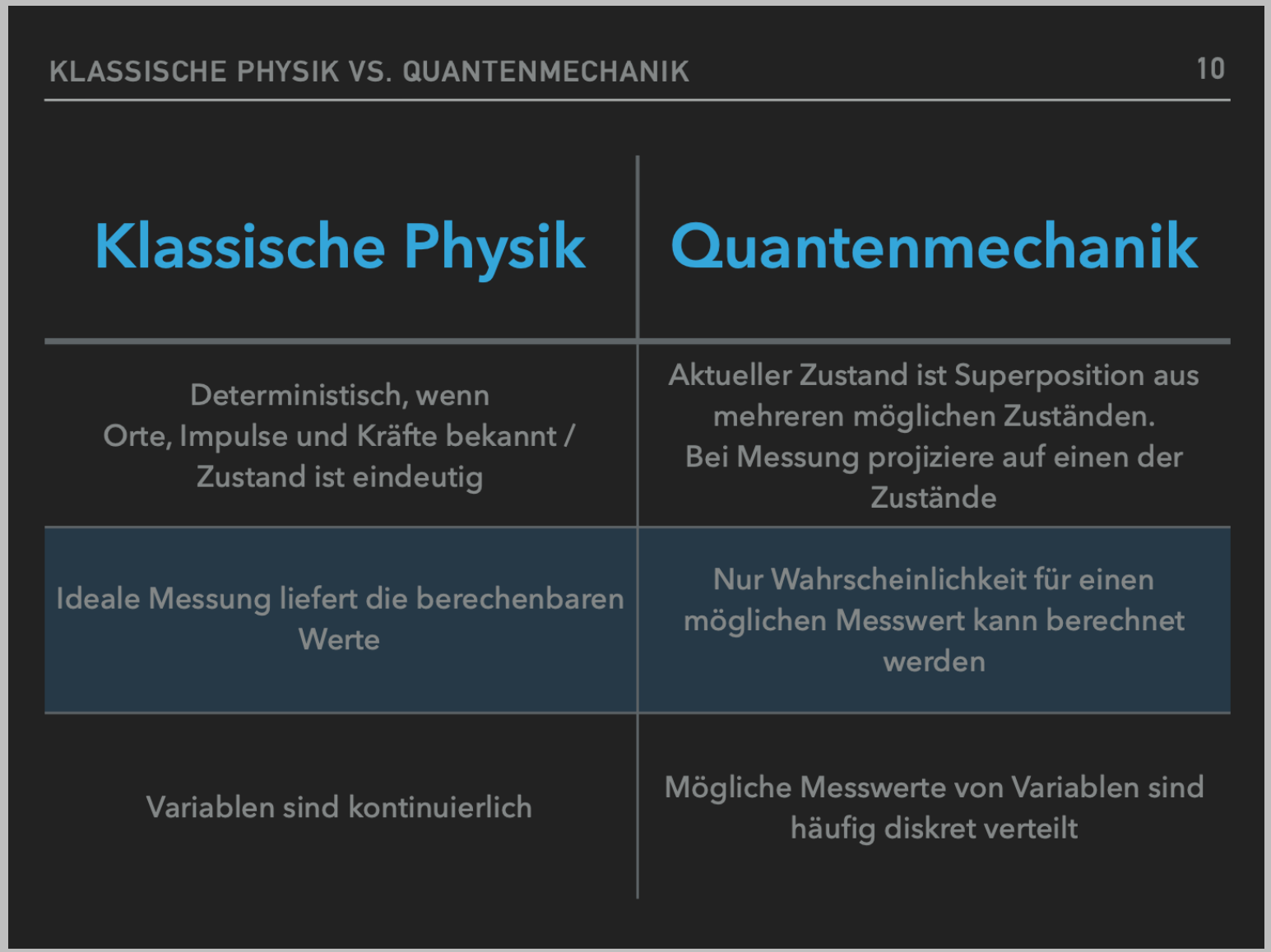
Example


KLASSISCHE PHYSIK VS. QUANTENMECHANIK
10
Klassische Physik
Quantenmechanik
Deterministisch, wenn
Orte, Impulse und Kräfte bekannt /
Zustand ist eindeutig
Aktueller Zustand ist Superposition aus
mehreren möglichen Zuständen.
Bei Messung projiziere auf einen der
Zustände
Ideale Messung liefert die berechenbaren
Werte
Nur Wahrscheinlichkeit für einen
möglichen Messwert kann berechnet
werden
Variablen sind kontinuierlich
Mögliche Messwerte von Variablen sind
häufig diskret verteilt

The Slides

- The *optical quality* of the slides shows the audience that you invested time & effort
- So: invest time & effort!

- Use a homogeneous layout throughout
- Do not use too small font (the slide should be readable on a 800 x 600 resolution screen...)

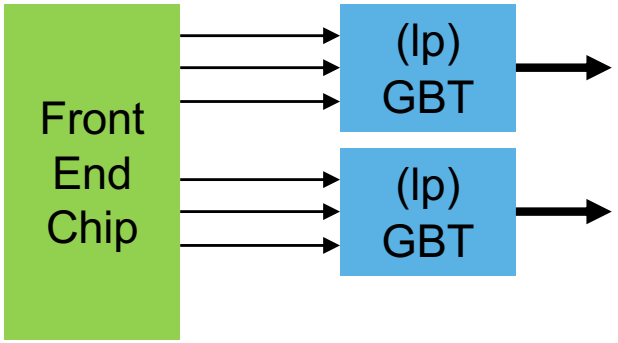
- Be careful with animation. They need good timing of the speaker
  - I find: Animation is not ‘out’ or bad ‘per se’
  - Never give the expression that you press the key to see what is next. You should know your talk by heart!
  - It’s much cooler if you talk about something and the animation comes *later*

The Slides – Pictures and Graphics

- Pictures make a talk clearer and entertaining
- Use *good quality* pictures. Make an *effort* to find them!
  - But do not copy 8Mpixel bitmaps in the .ppt file. This makes it huge and slow.
  - Do not use .jpg for geometric figures! The compression produces artefacts.
- Make sure the audience can read the text in pictures
  - Enlarge the text if it is too small (add text on top)
  - Delete unnecessary text
- Provide references to the pictures (below the picture, in a footnote, in an appendix) – as for all other information
  - Trivial information is exempt
  - This is most important is a ‘publication’ talk, not so much in a summary or entertainment talk.

The Slides – Pictures and Graphics

- If the quality of simple ‘block diagrams’ is poor: draw them again yourself!
  - This is not taking so long
  - It makes your talk much more homogeneous!
  - The audience sees you made an effort (so it is good if the picture is identified as hand-made)



- Remove unnecessary information from the pictures
  - Things you do not talk about should not confuse the audience

- NEVER say ‘this is difficult to see on this picture...’ – Use a better picture!

Example

- Each connection has a corresponding weight.
- Different kind of connections between layers.
- Input from previous layers are multiplied with corresponding weights and then summed.
- The result is passed to the activation function.

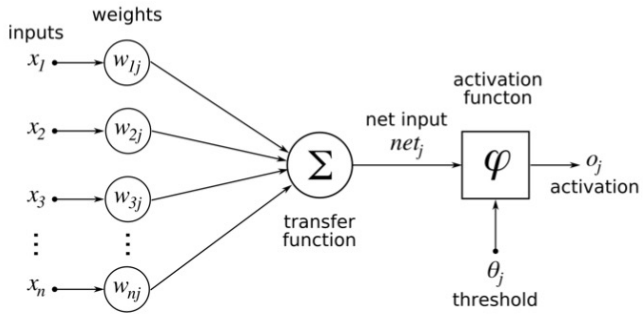
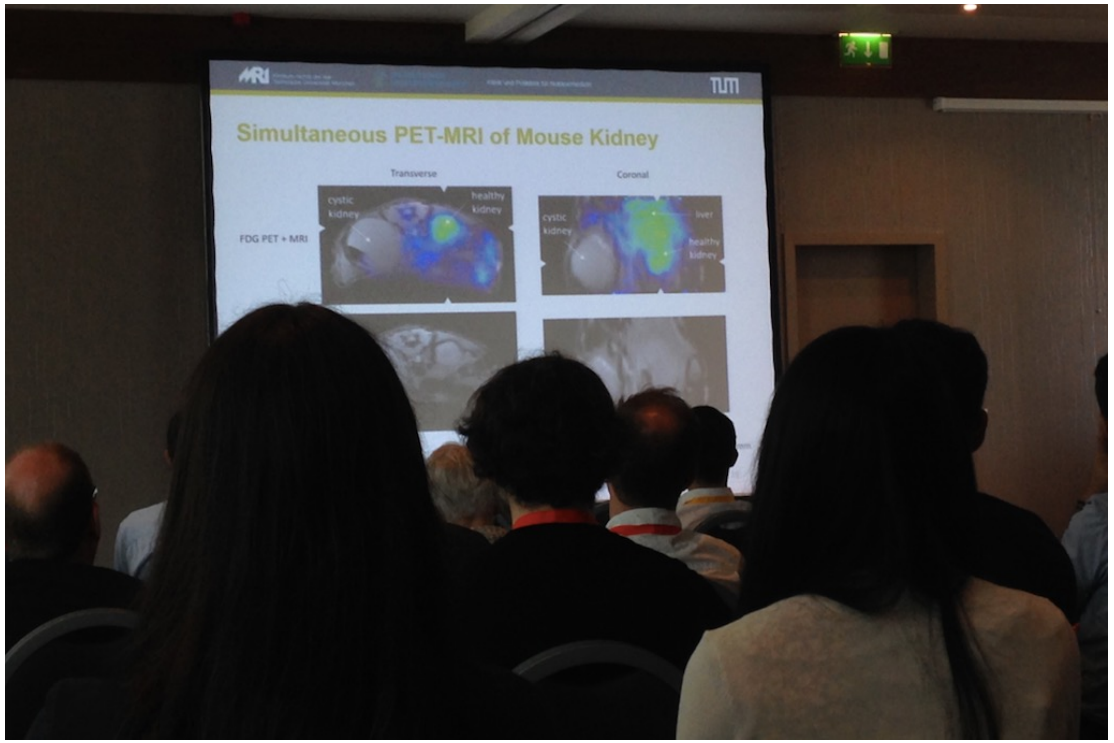


Figure: Neuron Architecture, *Source:* *https://m.tau.ac.il/~tsirel/dump/Static/knowino.org/wiki/Artificial_neural_network.html*

The Slides – How Full ?

- There is NO need to squeeze information on one slide.
  Use 2 slides!
  (But limit the amount of information in general)
- Avoid to put (important) information at the bottom of the slide: it may be difficult to see for a large part of the audience.



The Slides – Page Numbers & Co

- Page numbers are important!
  - With numbers, audience can refer to slides in questions
- Add speaker name
  - It's your 'copyright'
- Add the event of the presentation
  - Useful if slide 'shows up' later somewhere else.
    It's later good to know if content is 'old' or 'recent'

How Many Slides ?

- Depends on many things
  - How full is one slide ?
  - How fast can you talk / how much can the public digest ?
  - ...
- Do not squeeze stuff on one slide ‘to save time’
  - Two slides with the same sum content require the same time
  - They give better structure & are more readable
  - This was different when ‘transparencies’ were expensive...
- Use intermediate titles to structure your talk
- Rough orientation: 1-1.5 slides / minute
- I have seen fantastic talks with 5 slides only!

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A TALK IN A CONFERENCE

A Talk in a Conference

- In conferences with many speakers & parallel sessions, timing is kept *very (!)* strict
- The ‘chairperson’ will show you countdown cards:
  - 5 / 3 / 1 minutes to go
  - 0 minutes to go = Stop!
- Show the chairperson that you see this and that everything is ok...
- When you are not done @ 0, you *may* have 1-2 extra minutes. The chairperson will stand up and look angry. The audience will not be amused.
  - Say ‘Just one more slide before coming to my conclusions’ to announce that the end is near... Come to the end!

- Important: Try to put some slides in the second part of the talk which you could *skip* if you run out of time. Really skip them (with ‘G’ + slide number) if required!

Before your Talk

- Check Beamer & Laptop (if you use *your* laptop)
- In a conference:
  - Make sure your talk is uploaded to the presentation PC
  - This must be done BEFORE the session start!
    (sometimes even the day before)
  - Check that the file is ok. Videos are a big risk (missing codec!)
- Make sure you have a (mechanical or laser) pointer
- Maybe clean the blackboard & provide chalk / pen
- If there is a microphone, fasten it well
  - Not too close to your mouth, not too far away
  - Observe how it worked with the previous speakers
  - If you feel uncertain, ask the audience if they can hear you
  - It the clip is bad, better hold the microphone in your hand
    (Your talk makes NO sense if people cannot hear you!)

The Talk

- Be concentrated, motivated, enthusiastic,..
  - Stand upright
  - Do not be boring!
- Speak clearly (but do not shout). Do not speak too fast or too slow. Try not to be monotonic! Make breaks. Emphasize *important* things!
- Look at the audience! Look into some faces! Talk to individuals, not to the crowd or the room...
- Use the pointer. Use it well!
  - Really point on the relevant information (but not on text)
  - Do not wave around...
  - If you are nervous & shake, take the pointer in two hands or support it on your hip!

The Beginning & the End

- The start of your talk is very important!
- Think about a sentence for introduction ('Hello')
  - 'I hope you enjoyed the lunch and are fresh again after this exciting morning session for more results on ...'
  - 'I guess you are all tired after ... so I will do my best...'
  - 'Let me first say that it is a pleasure to be able to present...'
  - 'Good afternoon! My name is ... As a PhD student, I have worked on ... in the last 3 years and I would like to share a few interesting results with you'
- **Learn this by heart**! Do not mess it up!

- Prepare a nice end
  - Thank the audience for their attention
  - Ask for questions
  - 'I thank you for your attention despite the late time and would be happy to answer your questions'

Hints

- Stay in time. Better too short than too long
  - Nobody will complain that you have only used 11 minutes out of 12. But pass the message.

- Look at the talk schedule. If you are the 4th speaker on xxx, there is no need to bore the audience with repetitions. Skip these slides! (do not delete them – show the audience that you want to save their time!)

- If you are hectic (like I am), add soft slide transitions

- If the chairperson says ‘the title of the next talk is ...’ then do not say ‘the title of my talk is ...’!

- Why not start with the result ?

Training

- Train your talk!
  - I do that several (3-4) times before an important talk!
- Be serious when training!
  - Start a stop watch
  - Speak loud or at least *formulate out* every sentence
  - Do NOT just look at the slides and think about what you want to say...
- When training the talk seriously, I often discover
  - that the logical flow is broken and that I need another slide
  - that there are too many slides on one subject
  - that the structure is bad, e.g. I find no good step to the next slide
  - ...

Online Talks

- Hard job:
  - Audience manly sees slides, not you. Gets boring
  - You do not get any reaction

- **Make sure your sound quality is good**. HEADSET!!!!!

- Use the pointer even more to show where you are on the slide
- I suggest to use less content / slide so that slides change more often. This ‘wakes up’

Examples of Talks

- Here are slides of some of my talks.

- Preparation took ~1.5h per slide on average