ErUM-Data-Hub, HEP Software Foundation & DIG-UM present

Deep Learning Train-the-Trainer Workshop

September 15 - 19, 2025

Welcome

ERUM DATA HUB

HSF HEP Software Foundation

GEFÖRDERT VOM

Bundesministerium für Bildung und Forschung

Welcome to Potsdam!

Training future Deep Learning Speakers:

- **September 15 - 19, 2025** (Monday – Friday)
- GINN Hotel Berlin Potsdam Teltow
- **Many thanks to the HEP Software Foundation (Alex & Michel)!**

Local Organisation by ErUM-Data-Hub:

- Central networking and transfer office for the digital transformation in ErUM
- Jan Bürger, Luca Di Bella, Benjamin Fischer, Martin Erdmann, Ulla Lardinoix, Judith Steinfeld, Angela Warkentin

What is ErUM?
You are part of it!

Bundesministerium
für Bildung
und Forschung

Astroparticle Physics

Elementary Particles Physics

Research with neutrons

Research with nuclear probes and ion beams

Research with synchrotron radiation

German Observatory Council

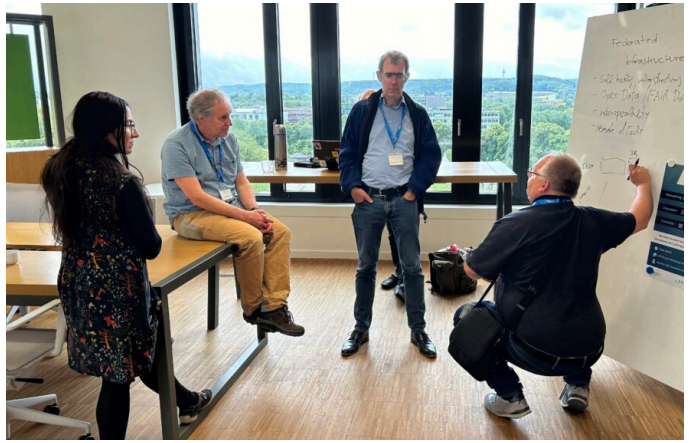
Accelerator Physics

Hadron and nuclear physics

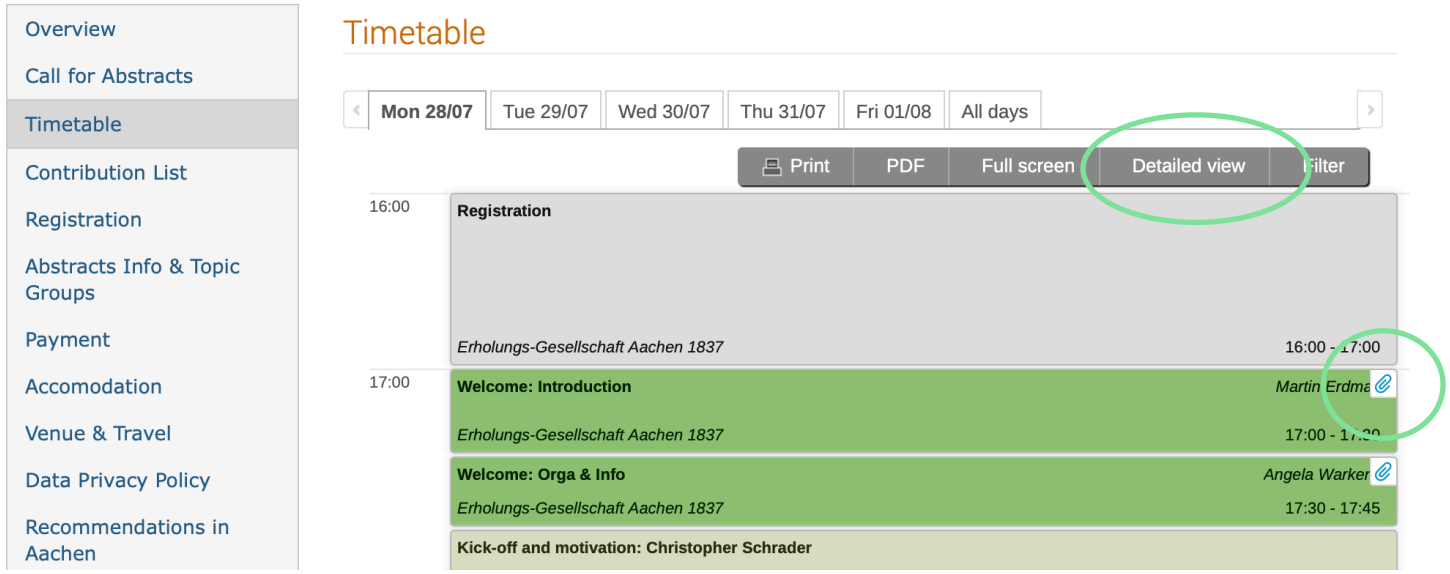
Related sciences and industry

Deep Learning Train-the-Trainer: Workshop Concept

1. **Teaching & Training:** How to teach digital topics and design trainings, seminars, etc.?
2. **Deep Learning:** How to apply deep learning: those who teach must be fit in terms of content!
    - Put yourself in the shoes of deep learning beginners. There is always something you can learn!
3. **Hands-On & Discussion:** How does the future of teaching look?



All Info & Materials on Indico: https://indico.desy.de/event/47263/



Internet Connection:

- ERUM-1: ERUM-1-GINN1
- ERUM-2: ERUM-2-GINN4

Catering:

- Breakfast, lunch, dinner & coffee breaks are included for you

Parking slots:

- Free slots available (ask Angela)

Any Questions?

- angela.warkentin@erumdatahub.de
- +49 241 8027490 (Redirected to my mobile during workshop)

City Tour & Dinner on Wednesday

- **You are invited (free of charge)**
- Please inform Angela, if you are not joining
- Bus leaves at GINN Hotel 4pm
- Ends 7pm at Trattoria Toscana Teltow

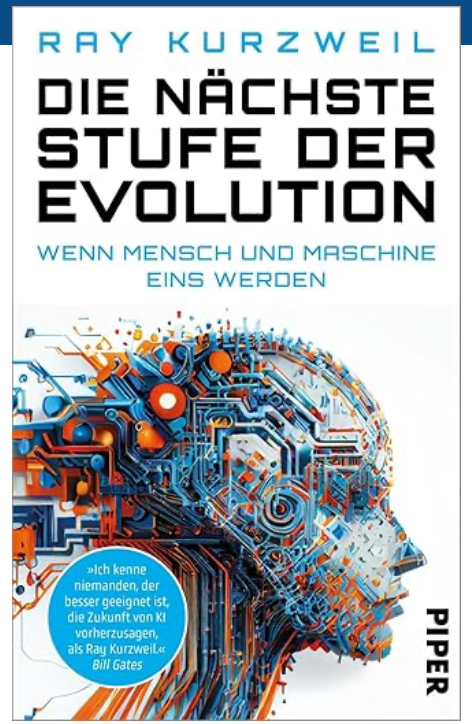
Evolution of information processing

Past to present

table translated by o3

	Epoch	Medium	Time span
	First	Non-living matter	Billions of years (non-biological atomic and chemical synthesis)
	Second	RNA and DNA	Millions of years (until natural selection introduces a new behavior)
	Third	Cerebellum	Thousands to millions of years (to evolve new complex abilities), hours to years (for very simple learning)
	Fourth	Neocortex	Hours to weeks (to learn new complex abilities)
4th	**Fourth**	**Digital neural networks**	**Hours to days (to learn new complex abilities at superhuman level)**
5th	**Fifth**	**Brain-computer interfaces**	**Seconds to minutes (to explore thoughts unimaginable to today's humans)**
	Sixth	**Computronium**	**< seconds (to push cognition step by step to the very limits of physical possibility)**

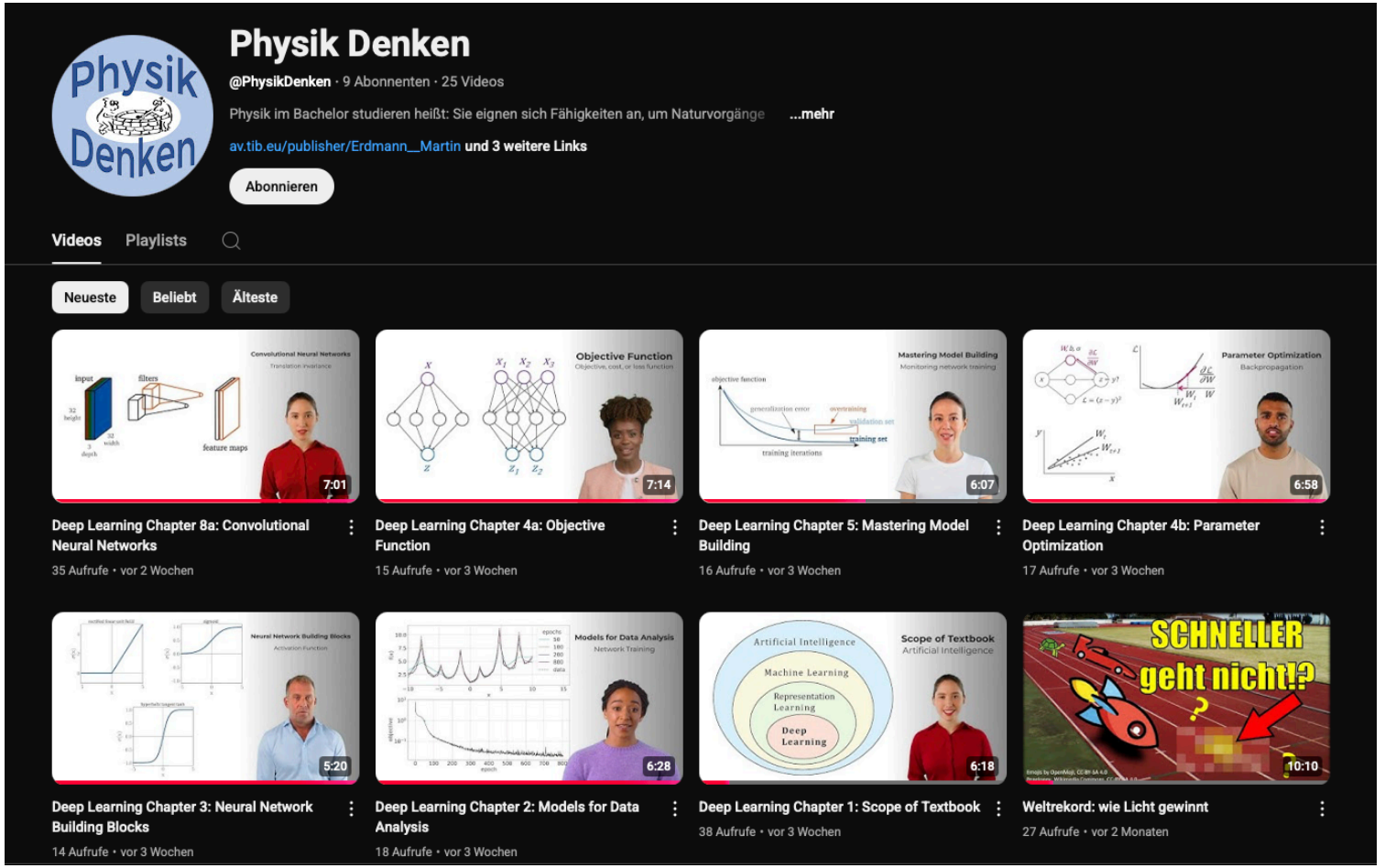
Future (next 30 years?)



Ray Kurzwell: Author, inventor, futurist, Director of Engineering at Google

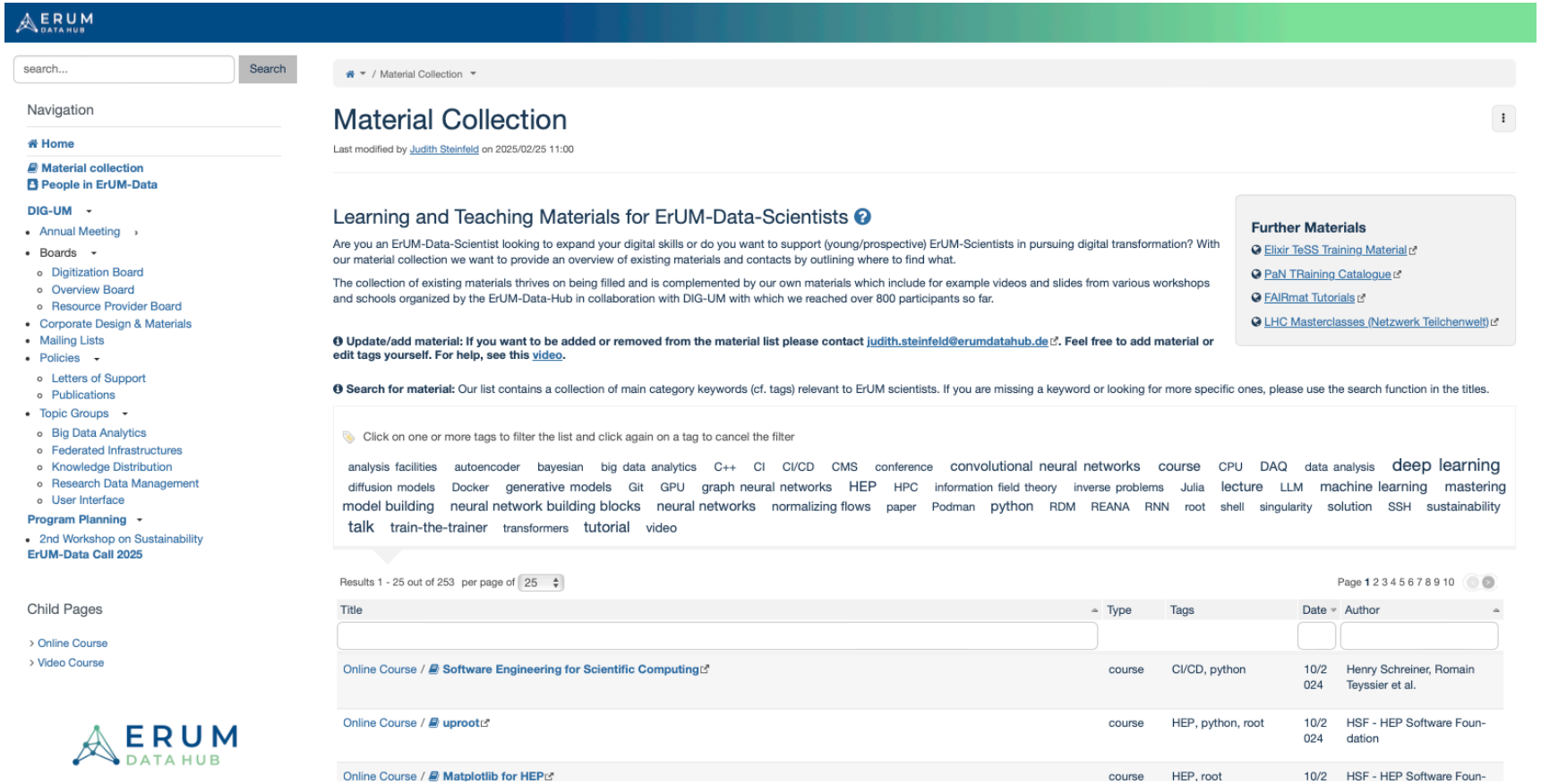
 Slide from Martin Erdmann, https://indico.desy.de/event/47133/sessions/19660/attachments/98565/136220/Sustainability-Ethics-Erdmann-20250728-v2.pdf

https://www.youtube.com/@PhysikDenken



Check out the ErUM-Data Knowledge Base

https://wiki.erumdatahub.de

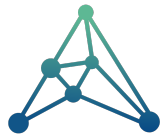


- Learning Materials
- Teaching Materials
- Contacts in ErUM
- Jobs in ErUM
- More Events

	Monday	Tuesday	Wednesday	Thursday	Friday
08:00					
09:00		Developing a Curriculum: Introduction & Hands-On	Mastering Model Building	Convolutional Neural Networks	Teaching of the Future: Guided Discussion on flipped classroom formats, asynchronous learning, etc.
10:00					
11:00		Organizing a Training Event: HSF Experience	Mastering Model Building: Hands-On	Convolutional Neural Networks: Hands-On	Dos and don'ts when teaching digital topics - a practical report
12:00					Wrap-Up: Review of Hands-On & Farewell
13:00		LUNCH TIME	LUNCH TIME	LUNCH TIME	LUNCH TIME
14:00	Arrival	Neural Network Building Blocks	Invited Talk: HSF	Teaching Methodology: Hands-On (Workshop Outcome)	
15:00					
16:00		Neural Network Building Blocks: Hands-On	Social Activity		
17:00	Welcome: Introduction Food for Thought: Future of Teaching				
18:00		Dinner		Dinner	
19:00			TRATTORIA TOSCANA		
20:00	Welcome Dinner				

Who are you?

1. Name
2. Where do you work?
3. What is a challenging task you are currently working on?



Networking Bingo

Can name 3 Star Wars characters	Joining from Sachsen	More than 5 years of teaching experience	Joining from outside Germany
Works in Astroparticle Physics (KAT)	First time participating in an ErUM-Data-Hub Event	Watched Oppenheimer in the cinema	Knows the difference between (un-) supervised learning
Joining from Nordrhein Westfalen	Works in Elementary Particles Physics (KET)	Joining from Berlin	Works in research with neutrons (KFN)
Uses AI to prepare lectures and exercises	Prefers tea over coffee	Could explain a transformer model	Uses AI to analyze data