

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

Deep Learning Train-the-Trainer Workshop

September 15 - 19, 2025

Welcome



GEFÖRDERT VOM



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

ERUM-DATA-HUB, HEP SOFTWARE FOUNDATION & DIG-UM PRESENT

DEEP LEARNING TRAIN-THE-TRAINER



SEP 15-19, 2025



POTSDAM

GINN Hotel Berlin Potsdam



Contact & Information:

www.erumdatahub.de
info@erumdatahub.de

<https://indico.desy.de/event/47263/>

Workshop Contents

- Understand the fundamentals of deep learning and current advances (Neural Network Building Blocks, Mastering Model Building, Convolutional Neural Networks & Transformer);
- Learn how to teach deep learning, how to develop a curriculum and how to organize teaching events;
- Benefit from a hands-on oriented program that explains and applies teaching methodologies and also includes current topics and experience reports (e.g. ChatGPT, Prompt Engineering & Teaching).

Follow Us !



Gefördert durch:



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

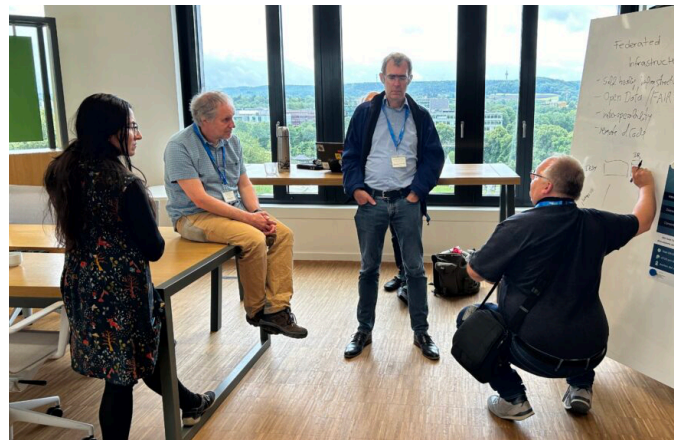
Hadron and nuclear physics

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/>

Overview
Call for Abstracts
Timetable
Contribution List
Registration
Abstracts Info & Topic Groups
Payment
Accommodation
Venue & Travel
Data Privacy Policy
Recommendations in Aachen

Timetable

	Mon 28/07	Tue 29/07	Wed 30/07	Thu 31/07	Fri 01/08	All days
	<div>Print PDF Full screen Detailed view Filter</div>					
16:00	Registration Erholungs-Gesellschaft Aachen 1837 16:00 - 17:00					
17:00	Welcome: Introduction Martin Erdma Erholungs-Gesellschaft Aachen 1837 17:00 - 17:30					
	Welcome: Orga & Info Angela Warkentin Erholungs-Gesellschaft Aachen 1837 17:30 - 17:45					
	Kick-off and motivation: Christopher Schrader					

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



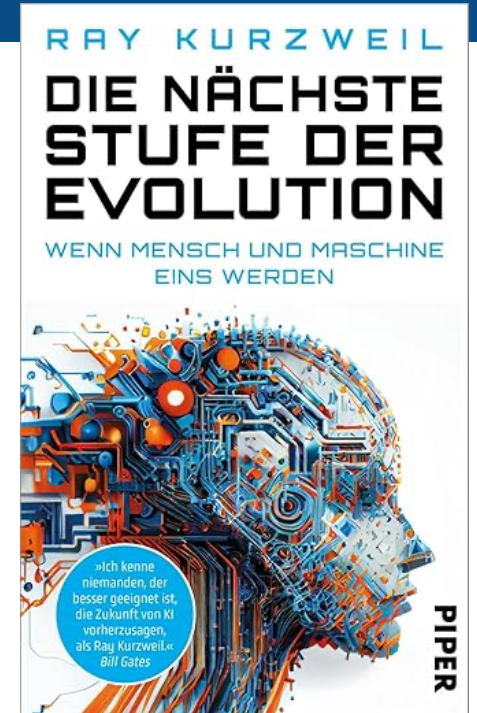
Evolution of information processing

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)
Fourth	Digital neural networks	Hours to days (to learn new complex abilities at superhuman level)
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 Kurzweil: Author, inventor, futurist,
Director of Engineering at Google



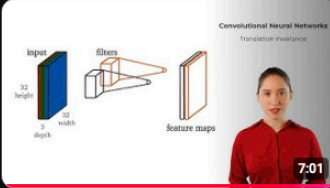
<https://www.youtube.com/@PhysikDenken>



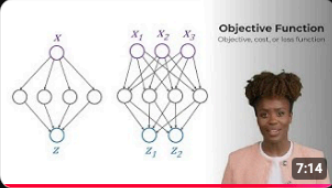
Physik Denken
@PhysikDenken · 9 Abonnenten · 25 Videos
Physik im Bachelor studieren heißt: Sie eignen sich Fähigkeiten an, um Naturvorgänge ...mehr
av.tib.eu/publisher/Erdmann_Martin und 3 weitere Links
Abonnieren

Videos Playlists

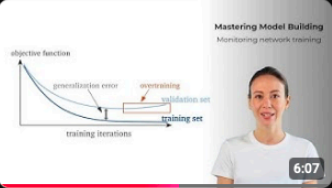
Neueste Beliebt Älteste



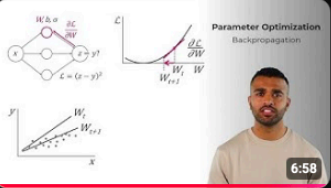
Deep Learning Chapter 8a: Convolutional Neural Networks
35 Aufrufe · vor 2 Wochen



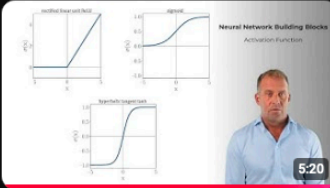
Deep Learning Chapter 4a: Objective Function
15 Aufrufe · vor 3 Wochen



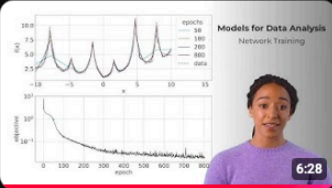
Deep Learning Chapter 5: Mastering Model Building
16 Aufrufe · vor 3 Wochen



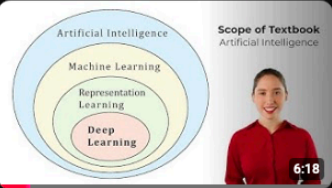
Deep Learning Chapter 4b: Parameter Optimization
17 Aufrufe · vor 3 Wochen




Deep Learning Chapter 3: Neural Network Building Blocks
14 Aufrufe · vor 3 Wochen



Deep Learning Chapter 2: Models for Data Analysis
18 Aufrufe · vor 3 Wochen



Deep Learning Chapter 1: Scope of Textbook
38 Aufrufe · vor 3 Wochen




Weltrekord: wie Licht gewinnt
27 Aufrufe · vor 2 Monaten



Check out the ErUM-Data Knowledge Base

<https://wiki.erumdatahub.de>



search...

Search

Navigation

Home

Material collection

People in ErUM-Data

DIG-UM

- Annual Meeting
- Boards
 - Digitization Board
 - Overview Board
 - Resource Provider Board
- Corporate Design & Materials
- Mailing Lists
- Policies
 - Letters of Support
 - Publications
- Topic Groups
 - Big Data Analytics
 - Federated Infrastructures
 - Knowledge Distribution
 - Research Data Management
 - User Interface

Program Planning

- 2nd Workshop on Sustainability ErUM-Data Call 2025

Child Pages

- Online Course
- Video Course

Material Collection

Last modified by [Judith Steinfeld](#) on 2025/02/25 11:00

Learning and Teaching Materials for ErUM-Data-Scientists

Are you an ErUM-Data-Scientist looking to expand your digital skills or do you want to support (young/prospective) ErUM-Scientists in pursuing digital transformation? With our material collection we want to provide an overview of existing materials and contacts by outlining where to find what.

The collection of existing materials thrives on being filled and is complemented by our own materials which include for example videos and slides from various workshops and schools organized by the ErUM-Data-Hub in collaboration with DIG-UM with which we reached over 800 participants so far.

Update/add material: If you want to be added or removed from the material list please contact judith.steinfeld@erumdatahub.de. Feel free to add material or edit tags yourself. For help, see this [video](#).

Search for material: Our list contains a collection of main category keywords (cf. tags) relevant to ErUM scientists. If you are missing a keyword or looking for more specific ones, please use the search function in the titles.

Click on one or more tags to filter the list and click again on a tag to cancel the filter

analysis facilities autoencoder bayesian big data analytics C++ CI CI/CD CMS conference convolutional neural networks course CPU DAQ data analysis deep learning diffusion models Docker generative models Git GPU graph neural networks HEP HPC information field theory inverse problems Julia lecture LLM machine learning mastering model building neural network building blocks neural networks normalizing flows paper Podman python RDM REANA RNN root shell singularity solution SSH sustainability talk train-the-trainer transformers tutorial video

Results 1 - 25 out of 253 per page of 25

Page 1 2 3 4 5 6 7 8 9 10

Title	Type	Tags	Date	Author
Online Course / Software Engineering for Scientific Computing	course	CI/CD, python	10/2 024	Henry Schreiner, Romain Teyssier et al.
Online Course / uprooft	course	HEP, python, root	10/2 024	HSF - HEP Software Foundation
Online Course / Matplotlib for HEP	course	HEP, root	10/2	HSF - HEP Software Foun-

- 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					
14:00		Neural Network Building Blocks	Invited Talk: HSF		
15:00	Arrival			Teaching Methodology: Hands-On (Workshop Outcome)	
16:00		Neural Network Building Blocks: Hands-On			
17:00	Welcome: Introduction Food for Thought: Future of Teaching		Social Activity 		
18:00					
19:00					
20:00	Welcome Dinner	Dinner		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

