2nd Community Meeting ErUM-Data 1-Jul-2021

Machine Learning Methods & Finding Project Partners

Erik Bründermann (KIT)
Martin Erdmann (RWTH Aachen University)
Christian Gutt (Uni- Siegen)
Andreas Haungs (IAP)
Bridget Murphy (CAU Kiel)
Markus Schumacher (Uni-Freiburg)
Kilian Schwarz (GSI)

Agenda today
https://indico.desy.de/event/30645/timetable/#20210701

Community Information Exchange on research interests (`Börse´)
https://indico.desy.de/event/28766/overview

PT.DESY ErUM-Data Informationsveranstaltung 24-Jun-2021
https://indico.desy.de/event/29587/

Programme Structure of Today: METHODS

Neural Networks & Data Symmetries

Autonomous Model Building

Analytics – Objectives - Uncertainties

Mathematics & Industry

DISCUSSIONS

How I could use this concept to advance my research and connect with other partners

Timetable today: information & discussion

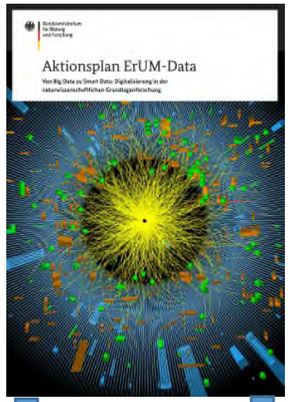
Time		Title	Speaker
8:30	8:40	Opening/Welcome	Prof. Dr. Martin Erdmann
Session 1	Neural Networks & Data Symmetries		Chair: Dr. Erik Bründermann, PD. Dr. Bridget Murphy
8:40	8:50	Convolutional NN	Prof. Dr. Stefan Funk, Univ. Erlangen
8:50	9:00	Recurrent NN	Prof. Dr. Uwe Klemradt, RWTH Aachen
9:00	9:10	Graph NN	Dr. Andreas Salzburger, CERN
9:10	9:40	3 Breakout Rooms	Lead by speakers
9:40	10:00	Short Coffee break plenary	
Session 2	Autonomous Model Building		Chair: Dr. Tobias Richter, Dr. Kilian Schwarz
10:00	10:10	Adversarial NN	Prof. Dr. Thomas Kuhr, LMU München
10:10	10:20	Outlier & Anomaly Detection NN	Jun.-Prof. Dr. Gregor Kasieczka, HH
10:20	10:30	Invertible NN	Dr. Anja Butter, Univ. Heidelberg
10:30	11:00	3 Breakout Rooms	Lead by speakers
11:00	11:30	Long Coffee break plenary	
Session 3	Analytics – Objectives - Uncertainties		Chair: Prof. Dr. Marcus Brüggen, Dr. Tim Ruhe
11:30	11:40	Introspection NN	Jonas Glombitza, RWTH Aachen
11:40	11:50	Reinforcement	Dr. Erik Bründermann, KIT Karlsruhe
11:50	12:00	Information Field Theory	PD Dr. Torsten Enßlin, MPA Garching
12:00	12:30	3 Breakout Rooms	Lead by speakers
12:30	14:00	Lunch Break	

Session 4	Mathematics & Industry		Chair: Prof. Dr. Christian Gutt, Prof. Dr. Judith Reindl
14:00	14:30	KoMSO	Prof. Peter Maass, Univ. Bremen
14:30	15:00	Science and Industry	Anna Pohle, Dr. Karl Trela, Fraunhofer Leipzig
15:00	15:30	2 Breakout Rooms	Lead by speakers
15:30	16:00	Discussion / Conclusions of the day	Dr. Andreas Haungs, PD. Dr. Bridget Murphy

ErUM-Data Ausschreibung
ErUM-Data-Hub
DIG-UM

BMBF driven

Aktionsplan



Jetzige Ausschreibung
Künstliche Intelligenz
& Machinelles Lernen

YOU

ErUM-Data-Hub
Transfer- & Vernetzungsstelle

RWTH AACHEN UNIVERSITY

Community driven

8 ErUM-Committees: Digitization Organization, Chairs meet tonight to discuss roadmap

Organization DIG-UM

	Overview Board (OB) 8 Committee Chairs, 1 Resource Provider, 1 Representative of the BMBF, 1 Representative of PT-DESY		
Coordination	**Spokesperson / 5 Co-spokespersons**	**Digitization Board (DB)** Spokesperson, 5 Co-spokespersons, 8 Experts from committees, 1 Resource Provider	**Resource Provider Board (RB)** 10 Resource Providers, 8 Experts from committees
	Annual Conference of the ErUM-Data Working Groups		

Topic Boards					
	Federated Infrastructures Coordinators, Experts *Compute power* *Utilization* *Workflows* ...	**Big Data Analytics** Coordinators, Experts *Algorithms* *Autonomization* *Control & Preservation* ...	**Research Data** Coordinators, Experts *Data models* *Management* *Curation* ...	**User Interface** Coordinators, Experts *Scientists questions* *Developers work* *User support* ...	**Knowledge Distribution** Coordinators, Experts *Workshops* *Schools* ...

Aufgaben ErUM-Data-Hub

Kontakt- und Transferstelle

- Außendarstellung und Büro für Kontakte} zur Industrie, Informatik, Mathematik, Studierende, Öffentlichkeit
- Aufbau und Pflege effizienter Datenbanken zu ErUM-Data Support bei der Suche nach passenden Projektpartnern
- Organisation einer multifunktionalen Web-Plattform mit Services in den Bereichen der Information, Dokumentation, Zugang zu Plattformen für wissenschaftliche Daten, Datenanalysen.

Aus- und Weiterbildung

- Koordinierung von Aus-, Weiterbildung, Wissens- und Innovationstransfer

Education/Schools

Workshops

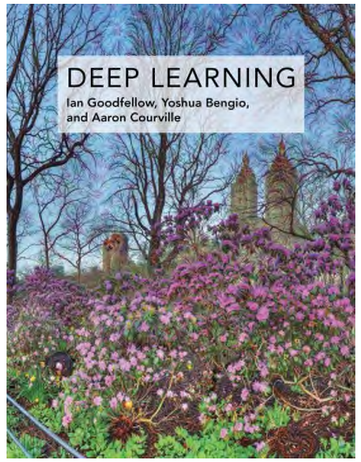
Medien

- Koordinierung der Öffentlichkeitsarbeit
- Maintenance effizienter Datenbanken zu Informationen, Ideen, Kontakten, Workshops, Konferenzen, Journale, Sprachdefinitionen

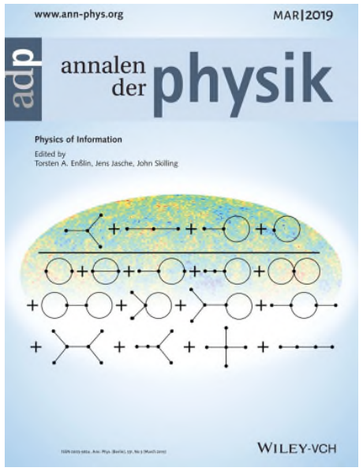
Social media

Selected Literature

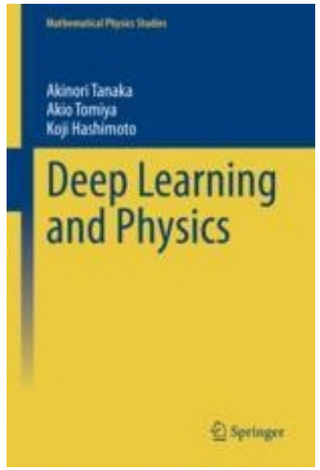
Textbook for University Courses



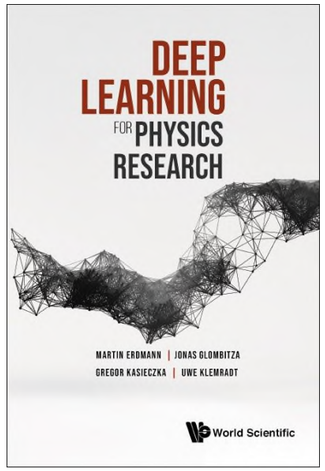
Deep Learning,
Goodfellow Bengio
Courville, MIT Press 2016,
http://www.deeplearningbook.org



Information theory for fields, Enßlin, Annalen Phys. 531, 3 (2019) 1800127, https://arxiv.org/abs/1804.03350



Deep Learning and Physics, Tanaka, Tomiya, Hashimoto, Springer Int. Pub. 2021, https://www.springer.com/gp/book/9789813361072



Deep Learning for Physics Research, Erdmann, Glombitza, Kasieczka, Klemradt, World Scientific 2021, https://doi.org/10.1142/12294