TEACH 3 - Explore, Exchange, Excel

Thursday 7 December 2023 - Friday 8 December 2023

Book of Abstracts

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Keynote: A primer on artificial intelligence applications in higher education

There is growing interest in applying artificial intelligence (AI) techniques in education (AIEd) and how these applications may transform teaching and learning practices. Multi-stakeholder dialogues that include educators and learners are needed to navigate the potential benefits and challenges of AIEd and to shape the future of education. However, the fast pace of technical advances and the large corpus of existing research make it difficult to engage with the breadth and depth of the AIEd field. This talk aims to give a primer on AIEd by first presenting a replication and extension of Zawacki-Richter et al.'s (2019) systematic review of AIEd research. Key issues within AIEd will then be highlighted by considering the cases of automated essay scoring and ChatGPT. This examination of the AIEd literature provides both a broad overview and a closer look into some of the ethical and practical challenges involved in integrating AI in higher education. In line with policy efforts for the ethical use of AI, this talk encourages educators and academics to engage in interdisciplinary research and continued dialogue on how AI is designed for and implemented in educational contexts.

POSTER / 5

Poster: The NFDI4Earth Academy –Your training network to bridge Earth System and Data Science

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The NFDI4Earth Academy connects early career scientists with a passion for integrating Earth System and Data Science across institutional boundaries. Our mission is to equip the next generation of scientists with the skills and mindset that enable them to navigate the dynamic landscapes of big data, open and data-driven research and artificial intelligence. We provide tailored training in Data Science, interdisciplinary networking opportunities, and support for innovative research, projects to achieve this. As a part of three research networks (Geo.X, Geoverbund ABC/J, and DAM) and the NFDI, Academy Fellows benefit from a dynamic and expanding research community that leverages the strengths and expertise of our collaborative partners. Core elements of the Academy is the integration of doctoral and postdoctoral researchers, who collectively form a think tank for bridging Earth System Sciences and Data Science.

Our two-year Academy program offers a complementary unique approach to traditional graduate school curricula. We prioritize peer-mentoring and flexible event structures to meet fellows' specific training needs. The first year focuses on Machine Learning and Data Science skills, starting with a Kick-off retreat, followed by virtual workshops and in-person/hybrid schools. During the Kick-off, we develop a code of conduct and a roadmap for the Academy to create a motivational and inspiring working environment. The second year emphasizes collaborative and networking events, including "Think tank" sessions and Hackathons with other NFDI consortia, where fellows can actively work on data science and AI problems and gain hands-on experience. Participation in NFDI4Earth events is encouraged, and access to relevant external training opportunities is provided.
Our first cohort of 39 fellows from 24 institutions in Germany successfully started in November 2022 and completed their first twelve months within the Academy.

WORKSHOP / 6

AI assistants in Education: Rocket or Ruin? Lets discuss!

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There has been a notable surge in the utilization of AI assistants like ChatGPT, Bing Chat, and GitHub Copilot. This increase pushes both educators and institutions to ponder: How should we adapt our courses in response to these AI-driven tools? To delve deeper into this query, we executed a focused experiment within the "Introduction to Machine Learning" course, promoting the use of these AI assistants. At the beginning of the course students were invited to use these tools. With surveys conducted pre and post-course, we've gained insights into the students' experiences, as well as the mentors impression with these novel tools. Join us in this interactive workshop, where we'll not only unveil our findings but also invite you to share your experiences, thoughts, and opinions, shaping a constructive discourse on the future of AI in education.

TALK / 7

Exploring the Evolution of Education: A Comparative Analysis of In-Person and Online Teaching

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The rapid advancement of technology and the sudden impact of the pandemic have ushered in significant changes in the field of education in recent years. Many educators and mentors today were originally trained in traditional in-person classroom settings and have had to swiftly adapt to this evolving landscape. Within the educational community, there is an ongoing discussion regarding the strengths and limitations of online teaching, often highlighting the essential role of in-person interactions. However, in this presentation, we aim to explore whether this shift toward online education is still reversible or if the world has undergone irreversible changes. Drawing from our experiences in conducting a 2-hour workshop titled "ChatGPT in Action: Enhancing your workflow", both in-person and online over the last months, we will examine the difference in the implementation and outcomes of these workshops in various educational settings.
We will offer insights into the distinct approaches taken in preparing the materials and the activities to be carried out during the workshop from a teacher's perspective. Furthermore, we will share our observations on participant's behavior during and following the delivery of these workshops.

WORKSHOP / 8

Unpacking Motivation: Strategies for Fostering Engagement in Projects and Tasks

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Are you constantly struggling with motivation? Or are you motivated sometimes but can't figure out the formula that keeps you going? Our "Unpacking Motivation"workshop is designed to help you understand what fuels your enthusiasm and identify the roadblocks that hinder your progress. By

engaging in interactive activities and sharing insights with peers, you'll walk away with actionable strategies to elevate your motivation.

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Switching offline to online and back, experiences from Helmholtz Munich

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The Core Facility Statistical Consulting has been running multiple courses in the areas of statistics, programming and reproducibility for several years. Our group started teaching (mostly in person) years before the start of the COVID-19 pandemic. As for most people, our format of working, and thus the way in which teaching was implemented, changed dramatically during this time. We managed a smooth transition from offline to online teaching and many of the implemented changes persist today. Now we are running courses in all different kinds of formats (online/offline/hybrid). In this talk, using our database, which contains data on more than 80 courses, we will describe the differences in attendance, covering no-shows and dropouts, depending on several aspects like the duration of a course and presentation mode (online vs offline). In addition to this, we will also discuss our experience when teaching online, hybrid and offline courses.

WORKSHOP / 10

The impact of supervision and working conditions on the mental health of early-stage academics and researchers

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The N-squared network (N2) unites the doctoral researchers (DRs) from the three largest non-university institutions in Germany: the Helmholtz and Leibniz Associations and the Max-Planck Society. In total, it represents the interests of around 16,000 DRs. As part of its activities, N2 conducts a bi-annual survey among all research centers and looks into all relevant aspects for the DRs, including mental health.
In 2019, around 5,000 DRs took part in the harmonized survey and the data revealed an underlying mental-health crisis among them: more than 15% of the doctoral researchers suffer from moderate to severe depressive symptoms, and more than 40% from anxiety. Three factors correlate prominently with mental health outcomes: high workload, unsatisfactory supervision, and an unsupportive working environment.
As doctoral researchers are the backbone of generating novel research results, patents, and publications at the Helmholtz Association, it is of paramount importance that we create a supportive and thriving environment for them and set an example that academic excellence and nurtured mental health can go hand-in-hand.
Therefore, this workshop will not only raise awareness by discussing the statistically-relevant findings for mental health in academia, but it will also aim at educating the participants (such as supervisors, group leaders, principal investigators (PIs), and professors) on how to early-on detect mental-health challenges among the doctoral researchers and how to better guide them during these difficult times.
The workshop will not provide medical advice; it will instead present softer techniques that the

supervisors can implement so that the DRs can be more satisfied with their supervision, workload, and working environment. Examples of these techniques are: constructive communication and time management, conflict resolution, setting boundaries and expectations, understanding the needs of the doctoral researchers, distinguishing between micro-management and supportive supervision, creating productive research plans, understanding the team dynamics, and creating productive teams.
The workshop will consist of around 30 minutes of presentation/lecture and 60 minutes of active/group work, but this is open for discussion if the organizers expect a different format.

TALK / 11

Moodle at the Forschungszentrum Jülich - Take a virtual tour

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Moodle is an established platform for E-Learning available for several years. Its strength is the flexibility in building trainings with different aims and target groups. Moreover, a broad community is supporting this open access software in developing. In particular, the Forschungszentrum Jülich, with over 6 000 employees, to from researchers from all disciplines to stuff in the infrastructures to trainees, benefits from this. However, a platform is not enough to provide good trainings. Developing pedagogical concepts for E-Learning and offer support to our trainers is essential.
Come on a virtual tour and learn more about how the Forschungszentrum Jülich implemented Moodle and what will come up in the future.

WORKSHOP / 12

Teaching patterns in Online Environments - An Interactive Tour

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Online learning poses new challenges for instructors and learners alike. Classical video conferences have been known to tire out participants quickly and limiting the interactivity and networking aspects of workshops and trainings.

With solutions like WorkAdventure and GatherTown, a new kind of video conferencing is now available in the educators' toolbox. These video conferencing systems take heavy inspiration from online multiplayer gaming, where

- remote interaction,
- ad-hoc grouping and
- emergent coordination

have been a successful component for decades to exchange knowledge, jointly overcome challenges and building networks.

Together with their hosts, the participants will explore the features available in GatherTown, see how to leverage them for possible online teaching interactions and experience them as the learners would.

No previous experience in GatherTown is required, an open-minded approach and a working microphone will prove beneficial though.

WORKSHOP / 13

Teaching & Reaching through the Screen - Discussion panel on how to successfully engage remote learners

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One of the most important challenges online course instructors face is reaching participants beyond the screen, motivating them to actively participate in the course, and maintaining a high level of interest throughout the course. Of course, this also needs to be achieved in in-person events - but in online courses, this hurdle is more daunting, as the means for involvement and motivation are much more limited. In this panel, we would like to talk and share with experienced trainers and trainers new to the training role about their experiences on this topic. Our goal for each participant is to gather new insights and ideas on how to engage learners of remote courses successfully and to be enabled to integrate these methods in future training events if needed. For the joint discussion we will prepare miroboards to gather and summarize ideas and possible solutions coming up during the collaborative discussion.

Prerequisite for participation: Please bring your own example on the mentioned discussion points to present in the group.

Discussion points:

- tools and methods:
- e.g. fun introduction rounds
- e.g. fun evaluation methods
- e.g. educational games
- didactically beneficial structuring of online courses
- general problems while teaching online courses and first approaches how to solve them
- lessons learned

WORKSHOP / 14

A roadmap for the responsible use of AI in research

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Advances in machine learning, such as transformers, have enabled developers to train models on massive datasets to create generative artificial intelligence (AI) chatbots. A pivotal moment in this ongoing transformation was last year's release of OpenAI's ChatGPT, which quickly gained popularity for its impressive performance on natural language processing tasks. Its release was followed by the emergence of a number of other AI assistants that are being used to perform a variety of tasks. In research, these tasks include helping to design experiments, enhancing literature reviews, improving writing, summarising and even brainstorming. On the one hand, it is clear that these tools could speed up the development of research. On the other hand, the integration of AI into research practices is not without its ethical challenges. Some argue that AI tools in research could introduce biases and inaccuracies that reduce the validity of scientific knowledge. As banning the technology seems unrealistic, institutions should focus on ensuring and promoting the responsible use of generative AI. This will require the engagement of a wide range of scientific stakeholders, the development of best practice guidelines that keep pace with the technology, and financial investment in the training of scientists. In this workshop, I will present a roadmap for the responsible use of AI in research. The steps include understanding how generative AI works, understanding current ethical concerns regarding the use of AI, applying these tools to research tasks, and validating AI outputs. This workshop is a teaser of the Digital Research Academy course on 'Boosting Research Productivity with Artificial Intelligence'. At the end of the session, participants will be able to understand the AI landscape in research and apply these tools responsibly and effectively to scientific tasks.

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A fully-booked course half empty - A discussion round on no-shows

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Currently, many organizers of courses and events face the same problem: High registration numbers but plenty of no-shows, i.e., people that miss the event without cancelling. No-shows are particularly problematic when there is a limited number of participants accepted to an event as they occupy seats that could have gone to someone who was interested in the event but was rejected due to number limitations. While no-show rates seem to be particularly high in online events that are free of charge, their number also increases in offline, in-person settings. There, they cause additional expenses to the organizers, such as costs for location, catering and/or (training) personnel.
This workshop will be a guided discussion in which the audience can share their experiences, ideas and best practices on the topic of no-shows. Together, we want to discuss reasons behind increased no-show rates, talk about ways to deal with and develop strategies to minimize them.

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Welcome

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Farewell

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Scientific documentation as complete as humanly possible: An introduction to Problem Arcs

Science builds on prior knowledge. Or at least it should. Unfortunately, like so much in science, we are never taught how to document the science we do so that others can build on it. We describe our efforts in research papers with the primary goal of 'getting past reviewers', and not necessarily to make the science we did understandable, and thus reproducible by others*. In this workshop we introduce the concept of the Problem Arc as the core of scientific documentation. A problem arc is comprised of all steps involved in addressing any of the myriad tasks involved in completing a scientific process, from identifying a problem, to postulating possible solutions, to selecting a solution and applying it, to evaluating our results, to considering the problem solved. We show how science is by definition a non-linear sequence of problem solving events, and use our evidence-based understanding of how humans organize and understand sequences of events to teach how best to document the science we do for comprehension and reproducibility.

*Others includes ourselves 6 months after completing a scientific process. The fact is that our memories are terrible when it comes to remembering what we did in enough detail to reproduce it.