UFZ-Workshop: Big Data and Modelling

Monday 10 February 2025 - Monday 10 February 2025

KUBUS

Scientific Programme

Simulation Session:

Christian Klassert* - Integrated hydro-economic modeling of water scarcity crises

Almudena García-García - Generation and evaluation of energy and water fluxes from the HOLAPS framework

Jasmin Heilemann - From Gut to Data: Deep clustering the Human Microbiome for Fingerprints exploration and AutoML-Driven Bioindicator Discovery

Michael Strauch - SWAT+: A brief introduction into the Soil and Water Assessment Tool and how it is used in UFZ research

Gokul Govind - Enhancing Predictive Accuracy in Honeybee Colony Dynamics through Coupled mechanistic Simulations and Informed Machine Learning Models

Karin Frank - AI and Simulation Models: Some thoughts from the Department OESA

Accounting Session:

Walther Zeug* - Holistic and Integrated Life Cycle Sustainability Assessment: Background, Methods and Results from Two Case Studies

Ricardo Siqueira da Silva - Ecological Niche Modeling For Biological Invasion Predictions In Environmental Change Scenarios For Prioritized Absent Quarantine Pests

Tobias Meisel - Workflow Management Software: Experiences from Research Projects

David Manske - Monitoring Renewable Energy Landscapes

Matthias Welker - Regional biophysical boundaries and their application in Life-Cycle-Assessment studies – A review

AI Session:

Ali Forootani* - Climate aware Deep Neural Network for Wind Power Forecast

Mariana Madruga de Brito - Advancing hydrological extremes research through NLP

Taimur Khan - DeepTrees: Deep-Learning based spatiotemporal tree inventorying from public orthoimages

Kabiru Nata'ala Muhammad - Unveiling the carbon fixation potential of marine Prokaryotes using MarMAGs, a novel user-friendly database with over 130 thousand metagenome assemble

genomes

Jana Schor - Streamlining Data Access: An LLM Chatbot for Eco-Toxicological Knowledge Graphs

Jonas Kasmanas - rom Gut to Data: Deep clustering the Human Microbiome for Fingerprints exploration and AutoML-Driven Bioindicator Discovery

Fan Wu -
Jürgen Groeneveld - Digital Twins and mechanistic insect pollination models

Ulisses Rocha - Entering the twilight zone: expanding the boundaries of the protein annotation with language models

Ni Li - Wikimpacts 1.0: A new climate impact database using generative AI and Wikipedia

Lennart Schmidt - Preprocessing and model building strategies to tackle common obstacles in machine learning applications for urban waste water systems
Optimization Session:

Andrea Kaim*- CoMOLA - Constrained Multi-objective Optimization of Land use Allocation

Mohammad Sadr - Optimizing Bioenergy with Carbon Capture and Storage (BECCS) for Climate Mitigation

Matthias Jordan - BENOPTex: Modeling scenarios for the transformation of the German bioeconomy and energy system with a linear optimization model

Sandra Gutjahr - Adding stochastic programming to Bioenergy optimization model

Mansi Nagpal - Measuring crop acreage adaptation to changing yields and prices in Germany using DroughtMAS

Husain Najafi - Advancing High-Resolution Flood and Drought Forecasting: Insights from UFZ's Hydrological Models and Data Systems

Danial Esmaeili - The emerging threat of artificial intelligence on competition in liberalized electricity markets: A deep Q-network approach