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ÖAW AUSTRIAN ACADEMY OF SCIENCES

DECEMBER 7, 2022
09:00–18:00
AUSTRIAN ACADEMY OF SCIENCES
FESTIVE HALL
DR. IGNAZ SEIPEL-PLATZ 2, 1010 VIENNA
AND ONLINE

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COLLOQUIUM DIGITALE
"DIGITIZATION, HUMAN BEINGS, AND SOCIETY"

DIGITALLY SUSTAINABLE?

THE (IN)VISIBLE HAND OF ARTIFICIAL INTELLIGENCE IN THE AGENDA 2030

HYBRID SYMPOSIUM – REGISTRATION REQUIRED :
Please use the following link to register for this symposium by November 30, 2022:
www.oeaw.ac.at/anmeldung/colloquium-digitale

It is hard to imagine achieving the sustainable development goals laid out in the Agenda 2030 without digital technologies, and artificial intelligence (AI) in particular. Both elements offer numerous opportunities, but also involve challenges. This symposium will add to the discourse of how digitization and AI might contribute to reaching the SDGs by looking at how AI can be used in environmental monitoring or as a tool for better decision making. The other side of the coin, the sustainability implications novel technologies have, will likewise be discussed.

PROGRAM

09:00–09:10 **Welcome**
Christiane Wendehorst | Austrian Academy of Sciences

09:10–09:30 **Introductory Remarks by the Program Committee**

09:30–10:15 **Ricardo Vinuesa** | KTH Royal Institute of Technology, Sweden
The Role of Artificial Intelligence in Achieving the Sustainable Development Goals

10:15–10:50 **Sustainable Decision-Making: Governance & Capabilities in the Digital Age**
Chair: ***Matthias Karmasin*** | *Austrian Academy of Sciences and Alpen-Adria-University Klagenfurt, Austria*

Mitzi Bolton | Monash Sustainable Development Institute, Australia
Leveraging Artificial Intelligence for Enhanced Sustainability Governance

10:50–11:20 COFFEE BREAK

11:20–12:50 **Sustainable Decision-Making: Governance & Capabilities in the Digital Age (continued)**
Discussion input by ***Michael Weilch*** | *Österreichische Studienstiftung, Austria*

Lynn Kaack | Hertie School, Germany
Governance of AI and Climate Change

Sigrid Kannengießer | University of Münster, Germany
Shaping Infrastructures of AI in a More Sustainable Way

12:50–14:00 LUNCH

14:00–15:30 **Global Commons and Science & Technology**
Chair: ***Verena Winiwarter*** | *Austrian Academy of Sciences and University of Natural Resources & Life Sciences, Austria*

Discussion input by ***Sofia Scherer*** | *Österreichische Studienstiftung, Austria*

Victor Galaz | Stockholm Resilience Center and Royal Swedish Academy of Sciences, Sweden
Intelligent Machines, Emotions, and Sustainability

Eeva Furman | Prime Minister's Office and Commission on Sustainable Development, Finland
Enhancing Agenda 2030: AI and Digitization in Environmental Monitoring – Too Good to be True

Shivam Gupta | Detecon International, Germany
Digitainability: Mindful Action with Digitalization for Sustainability

15:30–16:00 COFFEE BREAK

16:00–17:00 **Interactive Circle Session**
Moderated by ***Ulrike Bechtold*** | *Institute of Technology Assessment, Austrian Academy of Sciences, Austria*

Circles of approx. 10-12 participants each with speakers and/or members of the program committee to lead through interactive discussions. Participants move from circle to circle.

17:00–17:50 **Presentations and Open Discussion**
Moderated by ***Ulrike Bechtold*** | *Institute of Technology Assessment, Austrian Academy of Sciences, Austria*

17:50 **Closing Remarks**

ABSTRACTS

Ricardo Vinuesa
KTH Royal Institute of Technology, Sweden
The Role of Artificial Intelligence in Achieving the Sustainable Development Goals

The emergence of artificial intelligence (AI) and its progressively wider impact on many sectors requires an assessment of its effect on the achievement of the Sustainable Development Goals. Using a consensus-based expert elicitation process, we find that AI can enable the accomplishment of 134 targets across all the goals, but it may also inhibit 59 targets. However, current research foci overlook important aspects. The fast development of AI needs to be supported by the necessary regulatory insight and oversight for AI-based technologies to enable sustainable development. Failure to do so could result in gaps in transparency, safety, and ethical standards.

Mitzi Bolton
Monash Sustainable Development Institute, Australia
Leveraging Artificial Intelligence for Enhanced Sustainability Governance

The arrival of the Anthropocene unequivocally demonstrates the need for system wide change to ensure a prosperous future for people and planet. Many Western countries look to their governments and public sectors to facilitate such change in an orderly manner, so the change does not become more disruptive than the threat it aims to address. Yet, as this presentation will discuss, public decision-makers encounter 40 influences that push and pull them from sustainable public decisions. This presentation will discuss how leverage point theory might provide a mechanism to overcome the influences that are locking in unsustainable public decisions. In doing so, it will explore the potential of advanced data science tools to act as policy levers, and how reframing information may lead to greater action toward sustainable outcomes.

Lynn Kaack
Hertie School, Germany
Governance of AI and Climate Change

Climate change is one of the most pressing issues of our time, and addressing it will require rapid, systemic approaches involving technology, policy, and society. Artificial intelligence (AI) and machine learning (ML) offer new techniques that are driving innovation across many sectors, and as such have a multi-faceted relationship with climate change. This talk will provide an overview of how ML can play a role in supporting climate change efforts. We will also cover how the technology can affect climate action in negative ways, and discuss what policy makers can do to shape the effects of AI on climate change mitigation.

Sigrid Kannengießer
University of Münster, Germany
Shaping Infrastructures of AI in a More Sustainable Way

The increasing use of AI poses diverse problems to societies; one of the most pressing challenges is how to shape digital infrastructures, which are the material foundations of AI, in a more sustainable way. The infrastructures needed for AI cause tremendous socio-ecological effects not only regarding the emissions which are produced, e.g. through the data centers needed, but also because of the way the technologies used are produced and disposed after usage. On the background of the socio-ecological injustices which are inscribed in AI, the presentation discusses initiatives with which different actors, companies, non-governmental organizations, and users try to shape the infrastructures of AI in a more sustainable way. Moreover, the responsibility of research focusing on AI for shaping infrastructures in a more sustainable way and thereby also addressing some of the SDGs will be reflected by arguing that more transformative and transdisciplinary approaches are needed.

Shivam Gupta
Detecon International, Germany
Digitainability: Mindful Action with Digitalization for Sustainability

Digitalization is considered a transformative power for supporting sustainable development. However, a fragmented understanding of the opportunities offered by digitalization for sustainability hurdles the progress we made in the SDGs. Moreover, research on inhibiting or enabling the effects of digitalization, considering its multi-faceted interlinkages with the SDGs and their targets, is scarce. There are limited instances where the impact of digital interventions on SDGs as a whole is examined and categorized. This talk discusses the context-aware practical digitainability assessment approaches developed in the project digitainable and beyond for uncovering the hidden implications of digitalization for holistic sustainability.

Victor Galaz
Stockholm Resilience Center and Royal Swedish Academy of Sciences, Sweden
Intelligent Machines, Emotions, and Sustainability

Artificial intelligence (AI) and associated technologies are often argued to create untapped opportunities to help societies mitigate and adapt to climate change. There is a growing number of applications of AI in sectors related to climate change and the SDGs, including weather prediction, energy production, health applications, and others. Many of these proposed applications focus on the way AI affects the rational assessments made by people, decision-makers, corporations, and others. In this talk, I argue that the influence of AI technologies on decision-making and human behavior spans far beyond simplistic rational analysis and behavioral changes. I review emerging evidence across disciplines and focus on the ways AI and associated technologies are increasingly able to extract, measure, analyze, simulate, and respond to individual and collective human emotions such as joy, fear, empathy, and awe. I discuss to what extent these affective aspects of AI relate to sustainability and climate action; some of its controversies and risks; and the ways such technologies can be leveraged to support sustainability and climate action. I also identify pressing research needs at the interface between AI, emotions, and sustainability.

Eeva Furman
Prime Minister's Office and Commission on Sustainable Development, Finland
Enhancing Agenda 2030: AI and Digitization in Environmental Monitoring – Too Good to be True

The Agenda 2030 is a compass which shows where to go, what to strive for. However, implementing it requires a systems approach. Making a radical transformation in our key societal systems enables progress in all sustainable development goals. The key areas of transformation take different forms in various institutions and there are several frameworks for this. Most of them include the following: well-being-producing food systems, energy systems, education and lifestyles, health and social inclusion, and managing environmental commons. What is the role of environmental monitoring in these areas of transformation? What will digitalization bring along when used here? I will discuss some of the actions taken. I will look at the side effects linked with them. Also, I will point out some steps that have not been taken and the effects arising from the inaction. Finally, I will discuss the necessity of risk taking in sustainability transformation. The risk taking does bring along manifold failures but also breakthrough innovations. Are societies ready for risk taking? Are we able to experiment with novel breakouts of digitalization that hold major risks to be able to tackle the needs arising from environmental monitoring? My talk will touch upon issues such as rebound effects, active consumerism, changing access to data, and missing standardization.

The working language of the workshop is English.

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This symposium is part of the event series "Colloquium Digitale: Digitization, Human Beings, and Society" which aims at expanding the discourse about societal and individual opportunities of digitization and artificial intelligence, their risks and other repercussions. The questions range from including patients' perspectives in digital medicine to early digital education in our education systems, gender bias in technology development, or energy and the sustainability of digital technologies.