SANORD 2025

Panel 2: Decolonial technology design

Organizers: Christian Ulrik Andersen, Aarhus University; Rachel Charlotte Smith, Aarhus University; Gertraud Koch, Hamburg University & Louis Fendji, University of Ngaoundéré

This panel addresses how technological development relates to the formation of decolonial futures through critical engagement with core concerns of: What are state-of-the-art examples of decolonizing practices and epistemologies in and for contemporary technology design? How are theoretical discourses of decoloniality and responsibility integrated into concrete practices, policies, methodologies, and modes of knowledge production in research and technology design in and across global south(s) and global north(s)?

Developments of technology design (AI, wireless networks, crypto currencies, and much more), are typically understood and studied as a Western/Northern phenomenon – designed, through particular perceptions of 'intelligence', 'smartness', 'openness', 'usability', and 'growth'. Little attention has been given to how advanced digital technologies and systems are developed, perceived, used, infrastructured, designed, regulated, critiqued, or in other ways practiced the global south(s).

The promotion of Western epistemologies, one-size-fits-all technologies, and the transferability of design methods to diverse contexts, continues to suggest the idea of universality of design. Yet, contemporary challenges of social injustice, economic inequality, political instability, and ecological crisis pertaining to worldwide concerns, urge the design and tech communities to address aspects of power, equity, inclusion, and decoloniality in technology design research and practices. Through two hybrid and interactive sessions, the panel will offer critical theoretical and methodological reflections on the position of social, participatory research and cases in diverse global contexts, to advance decolonising design practices for digital emerging technologies.

Venue: AIAS, Høegh-Guldbergs Gade 6B, building 1630, room 301
Online: https://aarhusuniversity.zoom.us/j/66007806381
Meeting ID: 660 0780 6381

IMPORTANT INFORMATION

- Online presence is free, and you are welcome to share the confernce link with students and colleagues.
- Online presenters are required to log on 15 mins in advance of the session.
- Presentations are 15 mins + 5 mins Q&A. At the end of each session, we will collectively share our reflections. We invite all to take part, including online participants.
- For collective reflections during the panel (for all audience), please use our etherpad: https://ctp.cc.au.dk/pad/p/Sanord2025_panel2

PROGRAMME

WEDNESDAY AUGUST 13

[12:00-12:45 – LUNCH AT BSS CANTEEN. NB! 15 MINS WALK TO AIAS]

13:00-15:00 – DECOLONIZING AI - SUSTAINABILITY & HEALTH
Moderator: Christian Ulrik Andersen

Retrofitting AI-driven hydroponics micro-farming across global South(s) and North(s)
Rachel Charlotte Smith, Sarina Till, Rikke Hagensby Jensen, Bjarke Vognstrup Fog, Taryn Wilson, Reece Wanwig, Mikkel Øbom Feddersen, Oliver Giandrup Klausen, Gustav Dyngby Johannesen, Casper Lyngholm Bertelsen, Chris MuAshekele, Heike Winschiers-Theophilus, Aarhus University, Varsity College Durban, Namibia University of Science and Technology

Decolonizing AI & Tech: Equity, Inclusion & Innovation (ONLINE)
Junaid Sattar Butt, Dalia Kadry Abdelaziz – Islamabad Bar Council, Pakistan

Mentorship, AI and Digital Acceleration: Building Inclusive Innovation Ecosystems through Cross-Regional Collaboration
Kari H. Voldsund, Glenn Hole – University of South-Eastern Norway

Micro-digester technology: A solution for energy crisis and climate change in rural households of Limpopo Province?
Dikeledi Manyekwane, Phetoho Rasebechele, Clare Kelso, Kristy Langerman – University of Limpopo

Decolonizing AI Toolchains: Innovative Pathways for Equitable Access to Medical Knowledge for maternal and child health care
Seid Muhie Yimam, Katrin Schöning-Stierand, Rahel Bekele Teklegiorgis, Martin Semmann – University of Hamburg & Addis Abeba University

[15:00-15:30 – COFFEE BREAK AT AIAS]

15:30-17:00 – CRYPTO, CYBERSECURITY & DECOLONISATION
Moderator: Gertraud Koch

Decolonial Crypto-Philanthropy (ONLINE)
Itumeleng Kgololo-Ngowi, Georg Schmerzeck – Central University of Technology, University of Gothenburg

Ruto Must Go: Generation Z, Bitcoin, and the Second Decolonisation
Samwel Moses Ntapanta – Aarhus University

The Need for the Decolonisation of Approaches Used in the Development of a Cybersecurity Framework for Rural Schools in South Africa
Layane Mabasa – University of Limpopo

THURSDAY AUGUST 14

[10:00-10:30 – COFFEE BREAK AT AIAS]

10:30-12:30 – DECOLONIZING AI: KNOWLEDGE & INNOVATION
Moderator: Rachel C. Smith

Newsroom Adoption of Artificial Intelligence and the reproduction of Coloniality: Perceptions of Zimbabwean Journalists
Tendai Joseph Chari – University of Venda

Generative AI as decolonial technology tool for education in Africa
Jussi S. Jauhiainen – University of Turku

Digitalising learning in the Global South - the experiences of a home-grown South African maths program.
Kjetil Torp – Awarenet / Rhodes University

Building Sustainable Entrepreneurial University Ecosystems through Cross-Cultural Innovation and Mobility
Kari H Voldsund, Inger Beate Pettersen, Stuart Henry – University of South-Eastern Norway

Navigating AI Ethics in Academic Research: Innovation, Integration, and Cultural Bias in Sub-Saharan Africa
Stanley Nhamoinesum Tanya De Villiers-Botha – Stellenbosch University

[12:30-13:30 CONFERENCE LUNCH AT BSS CANTEEN]

ABSTRACTS

WEDNESDAY AUGUST 13, 13:00-15:00
"DECOLONIZING AI - SUSTAINABILITY & HEALTH"

Retrofitting AI-driven hydroponic micro-farming across Global South(s) and North(s)

Rachel Charlotte Smith, Sarina Till, Rikke Hagensby Jensen, Bjarke Vognstrup Fog, Taryn Wilson, Reece Wanwig, Mikkel Øbom Feddersen, Oliver Giandrup Klausen, Gustav Dyngby Johannesen, Casper Lyngholm Bertelsen, Chris MuAshekele, Heike Winschiers-Theophilus, Aarhus University, Varsity College Durban, Namibia University of Science and Technology

Contemporary climate changes urgently call for technological alternatives to drive green transitions that engage diverse communities. Hydroponic farming is a sustainable alternative to traditional farming and food insecurity, allowing rural and urban communities to grow plants with little water and no soil. In this paper, we present experiments with retrofitting hydroponics growth tents, designed and implemented with rural farmers in KwaZulu-Natal, and in the Eastern Cape regions of South Africa – and retrofitted into two diverse contexts across Global South(s) and North(s) communities: 1) Namibia's northern and eastern regions with Indigenous Ovahimba and San communities, and 2) sustainable urban food production at a municipal workplace and a local energy community, Aarhus, Jutland region in Denmark. We focus on the collaborative process of researchers and students retrofitting the AI/IoT-enabled hydroponics from the Global South to North. In this setting, the back-end of the AI-driven hydroponics growth tents are designed by South African software engineering researchers and students, and retrofitted through a Scandinavian user-driven design approach, with students and researchers across local communities in Brabrand, Aarhus. We reflect on the visions of responsible AI for diverse communities, the potentials of tiny tech over big tech, and the reversing of decolonial algorithmic design of AI and computational practices from "the rest of the world"/Global South to North. Tracing the challenges of back-end-to-front-end, south-to-north, we argue that the slow processes of retrofitting align with the de-linking, rethinking, and redesigning that enable technology to support locally situated solutions alternative and co-design that align with local practices, knowledges, and lifeworlds for green transitions.
Keywords: retrofitting AI, hydroponic farming, participatory design, global south-north, sustainable futures

Decolonizing AI & Tech: Equity, Inclusion & Innovation (ONLINE)
Junaid Sattar Butt, Dalia Kadry Abdelaziz – Islamabad Bar Council, Pakistan

Artificial Intelligence (AI) and digital technologies are predominantly designed through Western epistemologies, often reinforcing existing power hierarchies and marginalizing local knowledge systems. This study critically examines the role of AI in perpetuating digital colonialism and explores pathways for fostering inclusive, decolonial technological futures. The research employs a mixed-method approach, combining discourse analysis of AI policy frameworks with qualitative case studies from African and Global South contexts. Findings reveal that AI-driven systems, from algorithmic decision-making to digital infrastructures, often embed biases that privilege Western narratives while undermining indigenous knowledge and local innovation. Additionally, existing regulatory frameworks remain inadequate in addressing issues of data sovereignty, ethical AI governance, and equitable access to technological resources. To counter these imbalances, the study highlights emerging decolonial strategies, including community-driven AI models, Afrocentric digital infrastructures, and alternative knowledge networks that prioritize local agency. The research underscores the urgent need for interdisciplinary collaboration among policymakers, scholars, and technologists to develop AI systems that are culturally responsive, socially just, and contextually relevant. By advocating for AI policies that embrace plurality and challenge dominant paradigms, this study contributes to the broader discourse on knowledge economies, equity, and sustainable innovation. The findings have significant implications for rethinking global technology governance, fostering ethical AI practices, and ensuring that digital futures are shaped by diverse voices and lived experiences.
Keywords: AI Justice; Tech Sovereignty; Algorithmic Equity; Inclusive Innovation; Digital Decolonization

Mentorship, AI and Digital Acceleration: Building Inclusive Innovation Ecosystems through Cross-Regional Collaboration
Kari H. Voldsund, Glenn Hole – University of South-Eastern Norway

As global knowledge economies continue to evolve in response to climate change, geopolitical shifts, and technological transformation, regions outside dominant innovation hubs must develop new strategies to strengthen local innovation capacitywhile remaining globally connected. This study examines how structured mentorship, in combination with academic-industry collaboration and digital tools, can serve as a foundation for inclusive and sustainable regional innovation. Drawing on qualitative insights from 14 semi-structured interviews with startups, incubators, and academic stakeholders in Vestfold and Telemark, Norway, the research highlights how mentorship facilitates knowledge transfer, strengthens ecosystem

connectivity, and enhances startup development. Building on these insights, a digital accelerator program is under development, combining mentorship with tools for feedback, ecosystem mapping, and tailored support. The study also explores how AI can contribute by identifying developmental needs, matching resources, and enabling adaptive learning for entrepreneurs. In light of shared challenges and opportunities across regions, there is interest in exploring how similar approaches to digital mentorship and innovation support might be adapted and co-developed in collaboration with academic institutions in other parts of the world, including Southern Africa. Such cross-regional dialogue may contribute to more equitable and resilient knowledge ecosystems.
Keywords: Mentorship, digital accelerator, AI for innovation, academic-industry collaboration, regional development, knowledge ecosystems, inclusive innovation.

Micro-digester technology: A solution for energy crisis and climate change in rural households of Limpopo Province?
Dikeledi Manyekwane, Phetoho Rasebechele, Clare Kelso, Kristy Langerman – University of Limpopo

The consumption of modern and sustainable forms of energy is an important determinant of the socio-economic status of citizens across the globe. In contrast, rural areas in South Africa, including Limpopo Province, have been historically characterised by persistent service delivery challenges, including inconsistent and unaffordable energy options. Consequently, lower-ranked energy sources such as biomass and firewood are used, posing health risks and contributing to land degradation and climate change. To address energy challenges, micro-digester technology (MDT) has been introduced in rural communities through donor-funded initiatives. However, there remains a knowledge gap regarding whether this technology aligns with the socio-cultural practices, aspirations, and energy needs of users. Energy use frameworks, such as the energy ladder and energy stacking model, highlight socio-economic factors and cultural practices as key determinants of energy use patterns, hence the initiation of this study. A qualitative research design using key informant interviews and field observations was employed to collect data. Nineteen respondents who had donor funded MDT plants were selected using purposive sampling within 5 villages of Limpopo Province. The data was analysed using thematic and narrative analysis. The findings align with certain hypotheses from energy use frameworks. Energy stacking was predominately used with 95% of the respondents indicating using at least two energy sources while only 5% followed the energy ladder model, relying solely on electricity—a choice correlated with higher income and living alone. Respondents continue to use firewood due to socio-economic factors and cultural practices which poses health impacts and exuberates climate change.

Decolonizing AI Toolchains: Innovative Pathways for Equitable Access to Medical Knowledge for maternal and child health care
Seid Muhie Yimam, Katrin Schöning-Stierand, Rahel Bekele Teklegiorgis, Martin Semmann – Hub of Computing and Data Science, University of Hamburg & School of Information Science, Addis Abeba University

Existing maternal and child healthcare challenges highlight the uneven information distribution between mothers and healthcare professionals. While AI solutions can help bridge this gap by providing language-specific, culturally relevant healthcare information, many AI-based solutions stem from a predominantly Northern Hemisphere perspective, limiting transferability, increasing resource demands for adaptation and localization, and ultimately, delaying impact across the Global South. As such, current AI-based solutions in health often neglect language and cultural dynamics essential for effective patient interaction. Empirical evidence also shows that the lack of language accessibility and cultural relevance can lead to misdiagnosis and suboptimal maternal and child healthcare outcomes. Along this line, local language inclusivity becomes crucial for appropriate maternal and child healthcare service delivery in the Global South. By embracing open science principles, we propose adopting a decolonial approach, using Ethiopia as a case study, to design an expandable AI based solution for maternal and child healthcare service delivery. This will be achieved through a co-creative process that integrates local language needs and cultural context, ensuring more accessible and effective healthcare interactions. Our aim is to bridge the gap between medical terminologies and local language comprehension, reshaping healthcare dynamics and fostering accessibility. Starting with Amharic, the goal is to develop a cognitive assistant model that enables the exchange of medical information in the Amharic language. The next step will be to expand to other regional languages in Ethiopia and neighboring Sub-Saharan countries, thereby, integrating local languages into AI toolchains to promote equitable access to vital information.

WEDNESDAY AUGUST 13, 15:30-17:00
CRYPTO, CYBERSECURITY & DECOLONISATION

Decolonial Crypto-Philanthropy (ONLINE)
Itumeleng Kgololo-Ngowi – Central University of Technology
Georg Schmerzeck – University of Gothenburg

The rapidly rising use of digital ledger technology (DLT) in charitable giving, known as crypto-philanthropy, risks entrenching colonial power dynamics in overseas charitable giving. Crypto-philanthropy enables donors to donate directly to projects of their choice, and to control the conditions under which funds are disbursed. This increase in donor control is hailed in the Western

technology and development literatures as bringing DLT's promise of higher transparency, accountability and lower transaction costs to charitable giving. However, increases in Western donors' control over the use of donations further reduce the self-determination of recipients in the Global South. The more fine-grained charitable donations are targeted and conditioned, the more development projects need to correspond to Western imaginaries of Southern needs and priorities to receive funding. This paper proposes a decolonial design for DLT in charitable giving that respects the economic self-determination of the Global South. Its key idea is to place donations in the hands of Southern intermediaries who have a proven ability and incentive to use them to fund successful solutions for local needs. One category of such intermediaries are small financial institutions, which use deposits to finance economic ventures that are adapted to local requirements. A DLT solution for depositing donations in such financial institutions is presented. This approach avoids colonialism by leaving the decision on which projects to fund to locals, while preserving DLT's superior transparency and low transaction costs. In addition, it is sustainable as its effects last for as long as deposits are held.

Ruto Must Go: Generation Z, Bitcoin, and the Second Decolonisation
Samwel Moses Ntapanta – Aarhus University

"Bitcoin will take us to Kanaan, and Satoshi is our Moses," Sarah, a middle-aged Bitcoiner, told me. Several of my Bitcoin-affiliated interlocutors in Nairobi expressed a shared belief: that Bitcoin will finally bring about Africa's economic emancipation and mark the end of Western imperial domination on the continent. At first glance, this appeared to be yet another expression of crypto-utopian imagination. However, in July 2024, this rhetoric found an unexpectedly tangible form. Kenyan youth—especially those identified with Generation Z—took to the streets of Nairobi in what became the first major protest in the country untethered from traditional party politics and elite mobilization. These youth-led demonstrations demanded the rejection of the 2024 Finance Bill and called for a wholesale restructuring of Kenya's financial system.Amid the unfolding protests, I witnessed my Bitcoin acquaintances at the front lines, brandishing a poster that read: "Vote Bitcoin." This moment revealed how Bitcoin is not only embraced as a digital financial tool but is also being reimagined as a medium of political expression and resistance. In this paper, I explore how Bitcoin, as a social and technological assemblage, is being appropriated in Kenya as a language of protest and a symbol of economic decolonisation. I argue that for many young Kenyans, Bitcoin functions as both an infrastructure of disaffection and an imaginary of freedom, resonating with broader calls for a "second decolonisation"—one centered not on territorial sovereignty but on financial self-determination in the wake of global economic dependencies

The Need for the Decolonisation of Approaches Used in the Development of a Cybersecurity Framework for Rural Schools in South Africa
Layane Mabasa – University of limpopo

The need for the decolonisation of language used to communicate cyber issues in rural areas is of serious concern. This is because language and concepts may be exclusive and disempower some stakeholders such as parents from participating in protecting their children from cyber-attacks that are more pervasive in rural schools. This paper is based on a study that focuses on cybersecurity threats in rural schools in South Africa. The study was meant to develop a framework likely to assist schools in assessing themselves for readiness to deal with cybersecurity threats. The qualitative methodological approach was adopted using a case study design. Eight schools were selected as settings for the study using a purposive sampling strategy (Two primary and two secondary schools in each Province in the Western Cape and Limpopo Province). The report focuses on the data generated from the four schools in Limpopo. Four methods of data generation were used to construct data. They are interviewing, observation, documents, and questionnaires. The thematic Analysis approach was used to analyse data. The study findings revealed that schools are faced with cybersecurity threats. They include hacking from learners, not knowing how to protect the school infrastructure, online bullying, and parental exclusion due to language used. Some of the concepts used are exclusive including hacking, ransomware, and phishing. The paper argues that there is a need to decolonise approaches in developing cybersecurity frameworks for rural schools to make them responsive and relevant to the local contexts. Keywords: decolonisation; approaches; rural schools; cybersecurity; framework

THURSDAY AUGUST 14, 10:30-12:30
DECOLONIZING AI: KNOWLEDGE & INNOVATION

Newsroom Adoption of Artificial Intelligence and the reproduction of Coloniality: Perceptions of Zimbabwean Journalists
Tendai Joseph Chari – University of Venda

Artificial Intelligence (AI) technologies have significantly redefined the way in which newsrooms gather, produce, and disseminate news. The launch of ChatGPT in November 2022 accelerated the uptake of AI in all sectors of the economy, journalism included. Extant literature is largely predicated on Western epistemologies and “one size fits all” notions about the adoption of AI tools in newsrooms while downplaying the reality of the digital divide. Consequently, there is a knowledge lacuna on the experiences of economically fragile African countries where the uptake of AI tools in newsrooms is assumed to be low and slow. Drawing insights from decolonial theories this

qualitative exploratory study examines the discursive constructions of Artificial Intelligence adoption in Zimbabwean newsrooms. It shines the spotlight on journalists' knowledge, perceptions, and attitudes towards the adoption of AI tools in the newsroom and how such knowledge and discourses are shaped by coloniality. The study addresses the following questions: How do Zimbabwean print media journalists discursively construct their experiences of AI tools in the newsroom? To what extent do such discourses reinforce or disrupt coloniality in the design of technologies? To address these questions, empirical data were drawn from in-depth interviews with 16 purposively selected Zimbabwean print media journalists representing eight (8) newsrooms in the two biggest cities, Harare, and Bulawayo respectively. The study contributes towards building a body of knowledge which enhances understanding the extent to which the appropriation of digital technologies in the new media ecology can be decolonized.

Generative AI as decolonial technology tool for education in Africa
Jussi S. Jauhiainen – University of Turku

Education technology is undergoing rapid transformation in the mid-2020s with the integration of generative Artificial Intelligence (GenAI) and Large Language Models (LLMs). According to UNESCO, GenAI is reshaping how educational content is created and delivered, positioning human–AI interaction as a central mechanism for knowledge production. When responsibly developed and implemented, GenAI has the potential to enhance teaching and learning at all levels—from early childhood to lifelong learning. Despite these opportunities, significant concerns remain. As of 2025, most LLMs are trained on data sourced predominantly from the Global North, particularly in English, and are developed by corporations based in countries such as the United States and China. This concentration risks reinforcing existing global knowledge inequalities. Without deliberate and inclusive integration of GenAI in education systems, especially in linguistically diverse but economically disadvantaged regions, such as many parts of Africa, the technology may exacerbate educational disparities. This presentation explores the potential of GenAI—and LLMs in particular—as tools for decolonizing technology design, and in particular education technology. It argues for the urgent development of pan-African strategies, driven by both public and private actors, and supported through equitable collaboration with Global North institutions. Such efforts are essential for ensuring that GenAI contributes to narrowing, rather than widening, global knowledge gaps, while supporting the protection and expansion of diverse knowledge commons.

Digitalising learning in the Global South - the experiences of a home-grown South African maths program.
Kjetil Torp – Awarenet / Rhodes University

In the Southern African context, digitalisation of learning is often touted as a panacea to many of the educational challenges the subcontinent's technology-poor public schools are facing. At the same time, in the Nordic countries the pendulum has swung the other direction, as in later years critique has emerged which point out that the widespread digitalisation of schools in the region might be affecting learning outcomes negatively. Through discussing the experiences of a blended online-offline mathematical after-school program in Makhanda, South Africa, this presentation seeks to overcome such a generalised dichotomy between pros and cons of digitalisation of learning - instead rooting the debate of the usefulness of digital educational interventions in the Global South in the concrete space, time and educational setting in which they are implemented. The Olico maths program was designed in South Africa as a reaction to the dismal performance of the country in international maths rankings - creating an interactive online platform with focus on mathematical issues South African learners typically struggle with. Furthermore, as it is implemented locally in Makhanda by civil society organisation Awarenet in partnership with Rhodes University, the program is an example of a locally driven digital intervention in the Global South which goes beyond the generic educational digital offerings of Western tech corporations. The presentation will highlight the quantitative and qualitative results of the program and discuss how such locally rooted initiatives can inform decolonised partnerships in the realm of digital education between Southern Africa and the Nordic countries.

Building Sustainable Entrepreneurial University Ecosystems through Cross-Cultural Innovation and Mobility
Kari H Voldsund, Inger Beate Pettersen, Stuart Henry – University of South-Eastern Norway

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Navigating AI Ethics in Academic Research: Innovation, Integration, and Cultural Bias in Sub-Saharan Africa

Stanley Nhamoinesum Tanya De Villiers-Botha – Stellenbosch University

The integration of artificial intelligence (AI) in academic research presents both opportunities and challenges, particularly in the Global South, where issues of cultural representation, bias, and digital colonialism remain significant concerns. This study explores how AI tools, particularly large language models (LLMs), are being employed in research to enhance literature reviews, streamline data analysis, and augment scholarly writing. However, as AI algorithms often privilege Western epistemologies, they risk homogenizing knowledge production, reinforcing stereotypes, and marginalizing local research perspectives. Drawing on a critical desk study methodology, this study examines proficiency in AI tools, ethical literacy, and the role of AI literacy in mitigating biases. The research also highlights policy considerations, regulatory frameworks, and curriculum strategies that can promote culturally sensitive AI use in higher education. This study is expected to propose an equitable AI adoption model that advocates for a balanced approach to encourage open multi-cultural innovation while preserving the integrity and diversity of knowledge utility in the Global South.