ColibrAI Workshop Series Report

The ColibrAI workshop series is a joint initiative organized by KTH, the Technical University of Darmstadt, the University of Innsbruck, and Aalto University to explore AI through the interconnected perspectives of justice, decoloniality, sustainability, (media) education, and participatory design. Across three online meetings, the discussions gradually developed a shared understanding of AI as a socio-technical infrastructure embedded in relations of power, knowledge production, labor, and ecological impact. Each meeting was led by one of the partner institutions and highlighted a particular perspective, which together formed a coherent exploration of how AI systems are developed, whose interests they serve, and how their trajectories might be redirected toward more just and community-centered futures.

The first meeting, hosted by KTH, laid the conceptual foundation for the series by framing AI as a structure of power rather than a neutral technological artifact. Drawing on ecofeminist perspectives, the discussion highlighted how existing power dynamics within AI systems shape whose voices are heard, whose knowledge is recognized, and whose needs are prioritized. Although AI is often presented as objective and data-driven, the discussion reflected on how its design and deployment can reproduce broader social, economic, and political hierarchies. From this perspective, AI was understood not only as a computational infrastructure but also as a political one.

Building on this framing, the discussion turned to what remains hidden within AI systems. The concept of epistemic omission, inspired by Gayatri Spivak's idea of epistemic violence, helped explain how certain communities, experiences, and forms of knowledge fall outside mainstream AI development. When particular realities are never recorded, labeled, or modeled, their absence shapes the systems that are ultimately built. Examples from areas such as healthcare research, urban planning, smartphone design, and crash-test standards illustrated how missing data can translate into unequal recognition of risks and needs. The discussion also highlighted how such omissions may stem from privilege hazard and/or broader forms of structural ignorance. In both cases, gaps in awareness or perspective can become normalized and embedded in technological systems without appearing intentional.

This focus on invisibility also extended to the many layers of labor that sustain AI infrastructures. Participants discussed the global supply chains behind digital technologies, including the extraction of minerals such as cobalt and lithium, hazardous working conditions in manufacturing, the energy-intensive operation of data centers, and the large workforce of annotators and moderators who support machine learning systems. Much of this work is low-paid, repetitive, and psychologically demanding, yet it remains largely invisible behind the smooth interfaces of AI systems. Even users contribute forms of labor through everyday interactions with digital platforms, while educational institutions increasingly face shifts in authority and responsibility as technology companies reshape roles traditionally held by educators.

Environmental impacts formed another key part of this discussion. Carbon emissions, water consumption, and the rapid accumulation of electronic waste were considered not as accidental side effects but as structural features of digital infrastructures. The idea of green colonialism helped capture how environmental burdens associated with digital technologies are often displaced onto marginalized regions. By connecting epistemic omission, invisible

labor, and ecological impact, the conversation highlighted how AI operates within a global supply chain shaped by extractive economies and uneven geopolitical relations.

Against this critical background, ecofeminist AI was introduced not only as a critique but also as a possible direction for practice. Rooted in feminist and indigenous ecofeminism emphasizes relationality, care, plurality, and ecological responsibility. Applied to AI, this perspective encourages rethinking technological development in terms of justice and sustainability rather than efficiency and profit. Participants discussed the need to move beyond individual notions of AI ethics toward structural transformations in governance, accountability, and ownership. This shift also involves epistemic work: questioning dominant narratives of technological neutrality, critically engaging with existing systems, and exploring forms of resistance such as subversion, hacking, and community-driven interventions.

Within this context, the idea of community-accountable AI emerged as a key question: what would it mean for AI systems to be grounded in collective consent and shared agency?

The second meeting, led jointly by the Technical University of Darmstadt and the University of Innsbruck, extended the conversation by approaching AI through a decolonial and educational lens. The discussion began with a fundamental question: What is education? And what is education for? Rather than reducing education to schooling or vocational training, the German term "*Bildung*", which is hardly translatable and therefore often remains as it is, frames education as lifelong personal development by cultural and social experiences. From this perspective, education is closely connected to broader social and technological transformations. As digital technologies increasingly shape everyday life, participants reflected on how educational institutions, practices, and even ideas of personhood and communities are being reshaped.

This discussion introduced the concept of digitality and the postdigital conditions. Instead of viewing digitalization as a sequence of technological innovations, postdigitality was described as a condition in which digital technologies are deeply embedded in everyday social life. In this context, AI is not simply a new technological breakthrough but part of a wider media ecology that reorganizes communication, perception, social organization, subjectivity, and cultural transition. This perspective shifts attention away from technological novelty and toward deeper structural transformation.

Understanding this transformation also required acknowledging the material foundations of digital systems. The apparent immateriality of "the cloud" conceals extensive infrastructure, including mining operations, industrial production chains, satellite networks, and globally distributed data centers. These infrastructures involve environmental costs, labor exploitation, and geopolitical inequalities. Recognizing the materiality of digital technologies challenges narratives of frictionless innovation and reveals the global power relations embedded in AI systems.

Sustainability, therefore, became a central theme in this discussion. Drawing on established frameworks of sustainable development, participants emphasized the importance of justice both within the present and across generations. Sustainability was framed not only as a technical issue but also as a normative and political one: how should present needs be balanced with those of future generations? Different approaches to sustainability, such as efficiency, sufficiency, and consistency, were discussed in relation to digital technologies.

From this perspective, AI does not simply predict the future; it also shapes and limits collective imaginaries about what futures appear possible or desirable.

These reflections also highlighted the full lifecycle of digital technologies, from development and production to use, disposal, and recycling. Questions about exploitative labor conditions, unequal access to digital infrastructures, disparities in digital skills, linguistic dominance online, and the export of electronic waste to the Global South illustrated how the so-called digital divide reflects deeper structural inequalities. AI development, in this context, is closely connected to colonial histories and contemporary global asymmetries.

The historical relationship between media technologies and colonial power further deepened this analysis. European scientific and technological advances were historically framed as universal progress, while tools such as writing, cartography, surveying, and documentation served as instruments of governance and control. Literacy and certain languages became markers of intelligence and legitimacy. These historical dynamics help explain why contemporary AI systems often privilege particular datasets, epistemologies, and linguistic norms while marginalizing others, frequently under the appearance of neutrality.

Alternative cartographic practices clearly illustrated this point. Mapping is not simply a representation of the world; it is a way of constructing it. Maps establish perspectives, hierarchies, and boundaries. In a similar way, AI systems participate in world-making through processes of data selection, classification, and prediction. They do not merely reflect reality but actively shape it. This insight highlights the importance of questioning the epistemological assumptions embedded in data collection, modeling, and evaluation processes.

Within this framework, participation itself was also critically examined. Digital infrastructures are often associated with openness and democratization, yet they frequently reproduce existing asymmetries of power and knowledge. The idea of “Potemkin AI”, systems that appear fully automated while relying on hidden human labor, illustrated how technological narratives can obscure underlying structures. Participation risks becoming symbolic if it leaves deeper power relations unchanged. In response, the concept of coliberation was proposed as a more demanding alternative, emphasizing shared responsibility, critical engagement, and transformative collaboration.

The third meeting, hosted by Aalto University, shifted the focus toward design and participation as means of transforming AI systems and their surrounding infrastructure. The discussion began from the premise that design is not simply about producing technological artifacts; it also shapes practices, institutions, and cultural imaginaries. AI systems are therefore embedded in broader socio-technical assemblages that include infrastructures, governance structures, and epistemic hierarchies. Designing AI inevitably involves rethinking the environments and institutions that sustain it.

Participation became a central theme in this session. While often described as inherently democratic, participation can also become symbolic when it is added to systems whose underlying architectures remain unchanged. Meaningful participation was therefore framed as a process of negotiation involving questions of authority, problem definition, and infrastructural intervention. Who defines the goals of an AI system? Who sets the criteria of fairness? Who has the authority to reshape the system itself?

Traditions of participatory design and participatory action research offered potential pathways to address these challenges. These approaches emphasize mutual learning, distributed experimentation, and the ongoing development of infrastructures rather than isolated product design. This shift, from focusing on individual tools to engaging with broader socio-technical infrastructures, became a key point of the discussion. If AI systems depend on data pipelines, evaluation metrics, governance frameworks, and institutional contexts, then participatory processes must engage with these broader structures rather than focusing only on visible interfaces.

An important distinction also emerged between designing with AI and designing AI. Designing with AI treats AI systems as creative media within collaborative or speculative processes. Designing AI, by contrast, involves critically examining the architectures, training data, and assumptions embedded within these systems. Together, these perspectives highlight a dual responsibility: to explore AI's creative possibilities while critically interrogating the infrastructures and epistemologies that shape its operation.

Throughout the session, participants reflected on whether dominant narratives of AI, centered on efficiency, automation, and optimization, can be shifted toward values such as care, plurality, relationality, and collective world-making. Examples of participatory and speculative design projects illustrated how alternative practices can create spaces for experimentation and critique. For instance, participatory AI initiatives involving queer nightlife communities demonstrated how speculative design laboratories can foster counter-practices and alternative imaginaries for social and urban futures.

The session also included an exploratory exercise titled "Adventure(s) with SCOPUS and AI", which revisited the literature review process as a site of inquiry. By experimenting with different search combinations involving AI, participatory design, inclusivity, intersectionality, decolonization, and speculative design, participants examined how academic databases shape the visibility of research topics. Searches explicitly including justice- and decolonial-related terms produced surprisingly few results, particularly within design-oriented research. Removing these terms increased the number of results but weakened the justice-centered focus. This exercise highlighted how knowledge production itself is shaped by infrastructural conditions, disciplinary conventions, and keyword logics that reinforce dominant research agendas while marginalizing emerging perspectives.

Taken together, the three ColibrAI workshops traced a shared direction. The discussions moved from uncovering the hidden infrastructures and power relations embedded in AI systems to placing these systems within broader historical, educational, and colonial contexts, and finally to exploring participatory and design-oriented ways of rethinking and reshaping them. Across these conversations, one central insight became clear: AI is not only a technological development, but also a space where political, epistemic, and ecological tensions and struggles unfold. By connecting perspectives from ecofeminism, decolonial theory, sustainability studies, education, and participatory design, the workshop series highlighted the value of interdisciplinary collaboration that combines technical knowledge with critical and creative approaches. In this sense, ColibrAI views AI not as a fixed technological path but as a contested space in which alternative futures can be imagined and shaped.