The Role of Design in the Future of Human-AI Interaction

JANIN KOCH, Université de Lille, Inria, CNRS, Centrale Lille UMR 9189 CRIStAL, France

WENDY E. MACKAY, Université Paris-Saclay, CNRS, Inria ExSitu, LISN, France

ALBRECHT SCHMIDT, LMU Munich, Germany

As AI systems increasingly shape human experiences in work, communication, and decision-making, the way we design interactions with these systems plays a critical role in ensuring ethical, transparent, and human-centered AI. However, HCI and design researchers are often underrepresented in AI teams and discussions. Hence, this workshop explores the future of design in Human-AI Interaction (HAI) by addressing key challenges such as explainability, trust, job augmentation, social AI, and sustainability. Through interactive discussions and hands-on design sprints, participants will prototype AI interfaces that foster trust, inclusivity, and responsible AI usage. We will reflect on how design practice will change over the next decade as well as how design and HCI methods can address these challenges for shaping an AI-powered future that enhances rather than replaces humans.

CCS Concepts: • **Human-centered computing** → **Interactive systems and tools**; • **Applied computing** → *Arts and humanities*.

Additional Key Words and Phrases: Human-AI Interaction, Design Practice, Trustworthy AI, Responsible AI

1 MOTIVATION

Artificial intelligence becomes increasingly embedded in our daily life and with that is shaping work, education, healthcare, and social interactions. Designing responsible, reliable, and sustainable human-AI interaction (HAI) is more important than ever, especially when AI's influence goes beyond simple automation and affects social interactions, ethical issues, and environmental sustainability. Yet, many AI systems risk being developed without attention to human needs, often resulting in opaque, difficult-to-control technologies that have unpredictable impacts on individuals and society. This workshop seeks to explore and identify the role that design and interaction research can play in steering the future of human-AI systems toward a more human-centered paradigm.

Generative AI and LLMs have and will change design practice and how we design interaction fundamentally [8] (see Fig. 1b). This includes on the one hand using LLM in the human-centered design (HCD) processes, particularly for streamlining design and development activities [6], which includes using LLMs to investigate user behavior, assist designers with user needs assessments, and facilitate the prototyping and development phases (see Fig. 1a). The main promise is that generative AI will increase the tools available to HCI researchers and practitioners rather than replace direct interaction with users and studies. On the other hand, it refers to using and adapting existing design practices

Authors' addresses: Janin Koch, janin.koch@inria.fr, Université de Lille, Inria, CNRS, Centrale Lille UMR 9189 CRIStAL, Lille, France; Wendy E. Mackay, mackay@lri.fr, Université Paris-Saclay, CNRS, Inria ExSitu, LISN, Paris, France; Albrecht Schmidt, albrecht.schmidt@ifi.lmu.de, LMU Munich, Munich, Germany.

to improve human-AI interaction. This requires rethinking design methodology in order to solve current issues and develop meaningful interactions with AI. Recent work by Yang et al., for example, presented a framework how to conduct HCD for AI while addressing its challenges [8]. Focusing on human-centered AI design is a critical component in developing systems that are transparent, trustworthy, and intuitive. Ben Chaaben et al. have highlighted how taking an HCD stance can help to explore sustainability improvements of ML life-cycles [2].
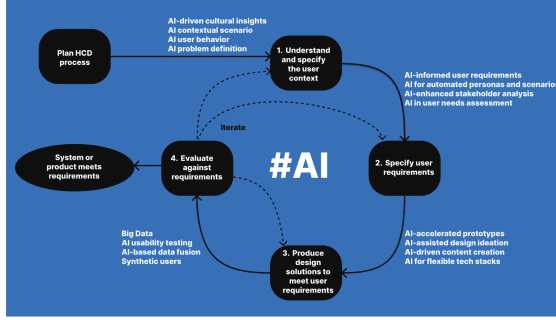
(a) The human-centered design cycle according to ISO 9241-210:2019, including how AI may be used. (Origin: [6])
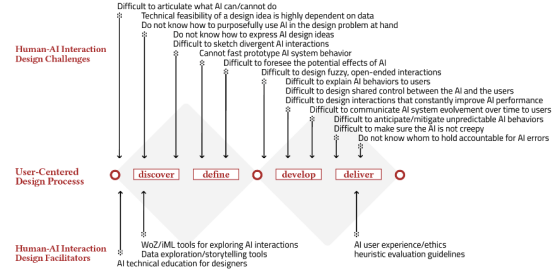
(b) Mapping the human-AI interaction design challenges in the literature onto a user-centered design process. (Origin: [8])

Further, Amershi [1] demonstrate that thoughtful interaction design can help users understand AI decision-making processes and foster better collaboration between humans and machines. Moreover, as Luger and Sellen [5] illustrate, neglecting human-centered design can create a disconnect between user expectations and system performance, ultimately leading to reduced trust and engagement. Similarly, Kulesza [4] found that incorporating explanatory debugging features in interactive machine learning systems not only enhances transparency but also empowers users to build accurate mental models of system behavior. We see a large potential of using HCD to reflect on and mitigate widespread concerns in the use of AI and avoid an AI 'crises'.

We will hence explore the role of design for current and future human-AI systems and aim to explore:

- Design Guidelines for ethical and human-centered AI development.
- New Research Directions on trust, transparency, and AI augmentation.
- Cross-Disciplinary Collaboration between designers, engineers, and policymakers to shape responsible AI adoption.
- Practical Frameworks that can be applied to AI development in industries such as healthcare, hiring, and social media.

By focusing on these questions, we aim to develop a roadmap for integrating design and interaction research into AI development. Shneiderman [7] argues that placing human-centered design at the core of AI innovation is essential for creating systems that are not only effective but also ethical and reliable. Our workshop will explore these themes through case studies, interactive discussions, and collaborative sessions, fostering an environment where interdisciplinary perspectives can converge to redefine the future of human-AI collaboration.

2 ORGANIZERS

The workshop organizers are all active researchers in the area of interactive systems and human-centered AI. The contact person will be Janin Koch (Janin.Koch@inria.fr).

Janin Koch is a permanent researcher at Inria Lille. Her research interests include collaborative artificial intelligence for exploratory creative tasks. Her work aims to define, study and evaluate human-machine interaction to construct ideas and concepts together with intelligent machines.

Wendy E. Mackay is a Research Director at Inria and head of the ExSitu research group focused on the design of human-computer partnerships, with an emphasis on interactive tools that support early-stage creative design.

Albrecht Schmidt is a Professor in Computer Science at Ludwig-Maximilian University Munich. He conducted research in ubiquitous computing, intelligent interactive systems, and digital technology for human augmentation and recently focused on how to use foundational models in the interaction design process.

3 PRE-WORKSHOP PLANS

Website We will create a website to introduce the subject of our workshop, including the call for participants, workshop schedule, and contact information under https://uni.ubicomp.net/Aarhus2025/. After the workshop, we will use the website as a platform for fostering further discussion about the subject, presenting selected position papers and a brief summary of the workshop.

Recruitment We aim to recruit researchers and practitioners from diverse fields such as art, design, social science, computer science, and HCI. The participants will be valued for their unique knowledge and viewpoints that can bring into the discussion: Experts in design with less understanding of AI or vice versa will be all welcomed. We will recruit participants via diverse channels such as social media (e.g., LinkedIn, Bluesky, and Facebook) as well as mailing lists of HCI, Computational Design, and Design research communities. We aim for 16-20 participants. The participants will be asked to submit 2 to 4 pages of a position paper. We will select participants by the relevance and quality of their position papers and by considering the diversity of participants.

Mode of Workshop We intend to conduct our workshop in-person only. Based on participants' position papers and backgrounds, we will predefine groups of 4-5 participants that can include multiple viewpoints in each group.

WORKSHOP PROGRAM

We aim to bring together mixed viewpoints of researchers and practitioners from diverse fields. We intend to explore the understandings and expectations of human actors, AI, and social interaction on the role, responsibility and change of design practice. This will help to gain a better understanding and overview of potential challenges and opportunities during the workshop. With consent, we will record the entire workshop sessions and document the artifacts of workshop activities. We expect 16-20 participants and aim to structure our workshop around interactive discussions, hands-on design exercises, and collaborative reflections. We outline our detailed program as follows:

09:00 - 09:30: Registration & Welcome
- Participants receive workshop kits (notebooks, markers, agenda).
- Icebreaker: "AI in My Life" Scientific speed dating – Each participant shares a personal example of AI interaction.

09:30 - 10:30: Keynote & Discussion – The Future of Human-AI Interaction
- Short keynote on major AI challenges, including trust, ethics, bias, job augmentation, social AI, and sustainability.

- Breakout groups discuss: "What challenges and opportunities do we foresee for design practice regarding Human-AI interaction?"
- Groups write key points on a shared board to identify key design challenges and create awareness of the topics.

10:30 - 11:00: Morning Coffee Break

11:00 - 12:30: Design Sprint 1 – Dark Scenario: (Un)Ethical & Explainable AI

- **Task:** Design a user-friendly AI interface for a complex decision-making system (e.g., AI-supported health platform, AI-driven dating application) that exploits and misleads users. It should appear friendly and helpful but should have an underlying dark agenda.
- **Steps:** (1) Define aspects where AI can trick the user (e.g., lack of transparency in AI decisions); (2) Create a paper prototype of apparently explainable AI features (e.g., transparency dashboards, justification pop-ups), and (3) Discuss challenges of interaction and design (see more method details [3]).
- **Presentation:** Each team shares their prototype and discuss the risks they identified as well as how design can hinder or enhance explainability and trust.

12:30 - 13:30: Lunch Break

13:30 - 15:00: Design Sprint 2 – AI & the Future of Work

- **Task:** Develop an AI-powered tool that augments human work rather than replace it.
- **Steps:** (1) Identify a job or industry (e.g., healthcare, customer service, education); (2) Ideate how AI can assist rather than replace workers; and (3) Create a interactive scenario with a focus on human-AI collaboration.
- **Debrief:** Each team discusses their solution's potential impact (e.g., ethical considerations, training needs).

15:00 - 15:30: Afternoon Coffee Break

15:30 - 17:00: Discussion – AI's Impact on Social Behavior & Sustainability

- **Task:** Brainstorm and map AI's social and environmental impact.
- **Steps:** (1) Groups pick a focus (e.g., AI-supported writing, reviewing); (2) List positive and negative impacts; and (3) Design intervention strategies from an HCI perspective (e.g., AI that fosters meaningful human connections, sustainability indicators in AI interfaces).
- **Output:** Each group presents a poster with their findings and reflect on strategies for mitigating negative impacts through design.

17:00 - 17:30: Final Reflections & Wrap-Up

- Recap of key discussion points.
- Each participant writes one actionable insight on a sticky note and adds it to a "Future of AI Design" board.
- Closing remarks & next steps for sharing insights with the broader HCI community in the form of articles and follow-up workshops.

4 POST-WORKSHOP PLANS

The workshop results will be summarized and published on the website. Participants will be able to revise their previously submitted opinion papers based on the workshop results, which we will publish as a special CEUR workshop proceeding. Taking into account the combined viewpoints, we see the opportunity to create a special issue in both design and HCI publications (e.g. ToCHI). This will encourage more research in the community and potential collaboration among participants. To reach a larger audience, we will also share thoughts on active social networks for the design and AI communities.

ACKNOWLEDGMENTS

REFERENCES

[1] Saleema Amershi, Maya Cakmak, William B. Knox, and Tanya Kulesza. 2019. Guidelines for Human-AI Interaction. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*. https://doi.org/10.1145/3290605.3300233

[2] Eya Ben chaaben and Janin Koch. 2023. Addressing Sustainable ML Life-cycles through Human-Centered Design. In *SIGCHI 2023 - Conference on Human Factors in Computing Systems*. ACM, Hamburg, Germany. https://hal.science/hal-04740051

[3] Luke Haliburton, Alexander Heimerl, Stephanie Böhme, Elisabeth André, Albrecht Schmidt, and Andrew L. Kun. 2021. Teaching Ethics as a Creative Subject: Ideas From an Interdisciplinary Workshop. *IEEE Pervasive Comput.* 20, 3 (2021), 68–71. https://doi.org/10.1109/MPRV.2021.3094814

[4] Tanya Kulesza, Matthew Burnett, W. K. Wong, and Sarah Stumpf. 2015. Principles of Explanatory Debugging to Personalize Interactive Machine Learning. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*. https://doi.org/10.1145/2702123.2702203

[5] Erik Luger and Abigail Sellen. 2016. Like Having a Really Bad PA: The Gulf between User Expectation and Experience of Conversational Agents. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*. https://doi.org/10.1145/2858036.2858337

[6] Albrecht Schmidt, Passant Elagroudy, Fiona Draxler, Frauke Kreuter, and Robin Welsch. 2024. Simulating the human in HCD with ChatGPT: Redesigning interaction design with AI. *Interactions* 31, 1 (2024), 24–31.

[7] Ben Shneiderman. 2020. Human-Centered AI. *IEEE Intelligent Systems* 35, 4 (2020), 22–31. https://doi.org/10.1109/MIS.2020.2981269

[8] Qian Yang, Aaron Steinfeld, Carolyn Rosé, and John Zimmerman. 2020. Re-examining whether, why, and how human-AI interaction is uniquely difficult to design. In *Proceedings of the 2020 chi conference on human factors in computing systems*. 1–13.