

# Application of Creativity and Collaboration Software for an AI-Supported Analysis of User Research Insights

Lara Thorissen<sup>1</sup>, Alexandra Matz<sup>2</sup>, Andreas Valentin<sup>2</sup> and Martin Hofmann<sup>1</sup>

<sup>1</sup> Cooperative State University, Mannheim, BW, Germany, <sup>2</sup> SAP SE, Walldorf, Germany  
s222424@student.dhbw-mannheim.de, alexandra.matz@sap.com,  
andreas.valentin@sap.com and martin.hofmann.bs@outlook.de

**Abstract.** In the field of software design and development, incorporating User Research (UR) effectively into all phases of the lifecycle remains a critical challenge. Current practices often neglect to adequately involve the target user group, resulting in products and services that do not optimally meet user needs. This research explores the potential of Artificial Intelligence (AI)-based creative and collaborative software to enhance the synthesis process within a Design-Led Development (DLD) framework of a business software provider [1]. The focus is particularly on the qualitative data analysis from user interviews, which is traditionally a manual and labour-intensive task [2, 3]. The study specifically involved UX professionals who design business software applications. Through workshops utilizing affinity mapping - a technique for organizing qualitative data - the effectiveness of AI support was evaluated. The research method combined qualitative observations with quantitative data from pre- and post-study surveys, adopting a mixed-methods approach to gain a comprehensive understanding of the implications of AI-driven tools in UR.

**Keywords:** Human-centered AI, Human computer interaction (HCI), Collaborative and social computing systems and tools.

## 1 Background and Motivation

Creative and collaborative software has become indispensable in project-based work within the software industry [4]. With continuous advancements aimed at improving usability, AI features are increasingly integrated into these tools [5]. This study investigates whether the AI functionalities currently being developed genuinely enhance the everyday workflow of UX professionals. The focal point is the synthesis phase of the DLD process, addressing the transition of UR insights to subsequent design stages [2]. Efficient consolidation of qualitative data from activities such as interviews and usability tests is essential in creating user-centered designs [6,7].

## 2 Objectives and Relevance

The primary objective is to assess and compare the potential application of AI in evaluating and consolidating UR data through qualitative and quantitative methods. The central research question asks: "To what extent do AI functionalities in creative

and collaborative software support UX professionals in analyzing qualitative interview data?" This question is crucial, given the growing interest in AI functionalities within the industry, as highlighted by a 2023 survey on "Digital Whiteboarding" [8].

### **3 Methodology**

The research adopts a mixed-methods approach: (a) a preliminary quantitative survey to explore and refine hypotheses, (b) an empirical investigation that combines qualitative observation and quantitative surveys [9, 10], (c) Workshops with participants (n=12) simulated typical workflows in which they used AI-driven tools for the affinity mapping of a collection of notes from fictitious user interviews. This methodology allows for triangulation, enhancing the validity and reliability of the findings [11, 12].

### **4 Findings**

The results indicate significant interest in and high expectations for AI capabilities in collaborative software. Participants recognized the potential benefits, such as speed in the overall time for synthesizing the interviews and the generation of unanticipated clusters, which could save time and offer fresh perspectives. However, technical limitations at time of study execution hinder the reliability and accuracy of AI-driven affinity mapping. Observations revealed that while AI tools performed some clustering tasks effectively, participants reported that there were numerous inaccuracies and misclassifications, leading to scepticism and reduced trust in AI results by the participants.

### **5 Conclusion and Further Research**

Although AI shows promising potential as a supportive tool in the UR process, it requires significant refinement to fully meet the needs of UX professionals (which goes in line with similar results reported Lu, Zhang, Zhang and Li [3]). Further the finding of this study highlights that the current state of AI functionalities offers only partial support and that experienced professionals often prefer manual adjustments to AI-generated outputs (as also reported by Knearem, Khwaja, Gao, Bentley and Kliman-Silver [13]). Future research should involve samples with a broader demographic across various design disciplines and more participatory project settings to better understand and enhance the applicability and reliability of AI tools in user-centered design practices. An ongoing evaluation of the AI tool advancements should be maintained, with possible re-evaluation of the study to observe results over time. We suggest that practitioners should explore the integration of AI functionalities into different stages of a DLD process. Emphasis should be placed on ensuring that AI tools can handle more complex and specific tasks within UR to truly augment the UX design process. By addressing these points, the study aims to contribute valuable insights into how AI can be effectively harnessed to improve UR methodologies in UX design, ultimately leading to more user-centered and successful design outcomes.

**Disclosure of Interests.** The authors have no competing interests to declare.

## References

1. Chromik, M., Lachner, F. und Butz, A.: ML for UX? - An Inventory and Predictions on the Use of Machine Learning Techniques for UX Research. In: Proceedings of the 11th Nordic Conference on Human-Computer Interaction: Shaping Experiences, Shaping Society. Association for Computing Machinery, New York (2020)
2. Kolko, J.: Exposing the Magic of Design: A Practitioner's Guide to the Methods and Theory of Synthesis. online edn. Oxford University Press, Oxford (2010)
3. Lu, Y., Zhang, C., Zhang, I. und Li, T.: Bridging the Gap Between UX Practitioners' Work Practices and AI-Enabled Design Support Tools. In: Extended Abstracts of the 2022 CHI Conference on Human Factors in Computing Systems. Association for Computing Machinery, New York (2022)
4. L. E.: Kollaboration in Zeiten von KI. In: Page 01, 80-81 (2024)
5. Hwang, A.: Too Late to be Creative? AI-Empowered Tools in Creative Processes. In: Extended Abstracts of the 2022 CHI Conference on Human Factors in Computing Systems. Association for Computing Machinery, New York (2022)
6. Interaction Design Foundation Homepage, <https://www.interaction-design.org/literature/topics/user-research>, last accessed 2024/10/04
7. Jacobsen, J. and Meyer, L.: Praxisbuch Usability und UX: was alle wissen sollten, die Websites und Apps entwickeln. 3rd edn. Rheinwerk Verlag, Bonn (2022)
8. Geoco, T., Palmer, T. and Bowman, J.: Design Tools Survey, in: UX Tools, <https://ux-tools.co/survey/2023/digital-whiteboarding>, last accessed 2024/10/06
9. Döring, N.: Forschungsmethoden und Evaluation in den Sozial- und Humanwissenschaften. 6th edn., Springer, Heidelberg (2023)
10. Roch, S.: Der Mixed-Methods-Ansatz. In: Winkel, J.; Fichten, W.; Großmann, K. (eds.): Forschendes Lernen an der Europa-Universität Flensburg. vol. 1., pp. 95–110. Europa-Universität Flensburg, Flensburg (2017)
11. Hussy, W., Schreier, M. und Echterhoff, G.: Forschungsmethoden in Psychologie und Sozialwissenschaften für Bachelor: mit 54 Abbildungen und 23 Tabellen, 2nd edn. Springer, Heidelberg (2013)
12. Hesse-Biber, S. and Johnson, R.: The Oxford Handbook of Multimethod and Mixed Methods Research Inquiry. online edn. Oxford University Press, Oxford (2015)
13. Knearem, T., Khwaja, M., Gao, Y., Bentley, F. and Kliman-Silver, C.: Exploring the future of design tooling: The role of artificial intelligence in tools for user experience professionals. In: Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems. Association for Computing Machinery, New York (2023)