Exploring the Role of AI in UX Research: Challenges, Opportunities, and Educational Implications

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Presently, artificial intelligence (AI) is primarily utilized in user experience (UX) research for handling routine tasks like text conversion (e.g., transcription, survey preparation) to manage large volumes of data efficiently. However, its potential as a collaborative partner in generating ideas and insights remains largely untapped, possibly due to the limited AI education among UX researchers. There is a recognized need to enhance AI literacy among Human-Computer Interaction (HCI) students to effectively utilize AI tools in UX research for an AI-driven future. Despite its growing importance, the integration of AI literacy into HCI curricula remains insufficient. This study aims to explore AI's potential in addressing current challenges in UX research and assess UX researchers' readiness to adopt AI tools. Through in-depth interviews with five early-career UX researchers, it examined their experiences, challenges, and perspectives on integrating AI. Thematic analysis of the interview data uncovers insights, revealing that AI has significant potential to overcome challenges in collecting, interpreting, and synthesizing qualitative data, as well as in translating user needs into design concepts. The findings are intended to inform strategies for incorporating AI literacy into HCI education, aligning with industry demands for AI-enabled expertise in UX design.

Keywords: UX research, UX design process, AI, HCI education, qualitative research, interviews

Introduction

User experience (UX) research focuses on understanding users' needs, behaviours, attitudes, and pain points through various research methods across different phases within the UX design cycle. It is essential within Human-Computer Interaction (HCI) design, playing a critical role in the development of user-friendly and effective products, systems, and services. The rapid development of artificial intelligence (AI), especially generative AI like ChatGPT, is significantly altering the approach UX researchers take in research. A recent survey found that 20% of UX researchers currently use AI in their research, with an additional 38% planning to incorporate it in the future (Burnam, 2023).

The gap in understanding AI capabilities and limitations creates a significant barrier to its adoption by UX researchers (Kuang et al., 2024; Yang et al., 2020). Consequently, the most common uses of AI in UX research are limited to text conversion and analysis tasks such as transcription, note-taking, and survey preparation. These tasks leverage AI to improve efficiency in handling large volumes of data, allowing researchers to focus on more nuanced aspects of UX analysis. However, the full potential of generative AI, like ChatGPT, has yet to be harnessed to make AI a collaborative partner in generating insights for the UX design process.

There is a growing acknowledgment of the need to cultivate HCI students' AI literacy to equip them to leverage AI effectively in their future careers (Li et al., 2024; Wells, 2024). However, teaching AI literacy has not yet become an integral part of curricula in higher education. Some universities, such as the University of Liverpool (Saunders et al., 2024), have started integrating generative AI into interdisciplinary higher education. Despite these efforts, a significant lack of studies remains on how AI literacy and AI-enabled UX tools should be taught as essential components of HCI curricula. To meet future demands, higher education must equip HCI students with AI skills to effectively apply suitable AI tools in UX research to enhance efficiency, generate insights, and evaluate AI-assisted UX design to validate its impact on user experience.

Therefore, this study aims to deepen our understanding of whether AI can mitigate current challenges faced by UX researchers in conducting UX design projects. It also seeks to assess the preparedness of UX researchers to adopt AI tools in UX research, providing insights for future HCI curricula design. This study poses the following research questions: (1) What are the main challenges that UX researchers encounter when conducting design projects? (2) To what extent are UX researchers prepared to use AI tools in their UX research? (3) Can AI potentially help to overcome these challenges? To address the research questions, we recruited five early-career UX researchers and conducted in-person interviews with them. During these interviews, we performed a retrospective analysis, examining their past experiences and challenges in UX research. We also explored their perspectives on the adoption of AI in UX research. The results were examined using thematic analysis to identify recurring themes and patterns in their responses. Finally, we share insights on how AI literacy could be integrated into HCI education.

Background

Use of AI in UX Research and Human-Computer Interaction Education

In general, UX research involves four key phases: (1) planning research goals and methodology, (2) collecting, interpreting, and synthesizing qualitative data, (3) translating user needs into design concepts, and (4) validating and refining designs based on user feedback. The rapid advancement of AI technology is transforming these phases by introducing new tools that enhance tasks such as understanding the context of use, identifying user needs, evaluating designs, and facilitating solution development (Stige et al., 2023). Currently, AI tools are primarily used to automate tedious and repetitive tasks like notetaking, transcription, and qualitative coding (Lu et al., 2024). An increasing number of UX researchers are now exploring various generative AI tools, particularly based on Large Language Models such as ChatGPT, Claude, and QoQo.ai, for tasks involved in defining, ideation, and UX evaluation (Stige et al., 2023). These tools aid in understanding the context of use, including tasks such as generating personas and mapping user journeys to grasp the characteristics and expectations of the targeted end users. Kuang et al. (2024) highlighted the benefits of using proactive conversational AI assistants to provide automatic suggestions during UX evaluation processes, enhancing efficiency and instilling trust in evaluation outcomes. Looking ahead, AI is expected to evolve into a thought partner in generating insights for the UX design process, promising further advancements in the field.

At present, foundational AI courses are not typically considered a core component of HCI education at most universities. However, researchers like Kharrufa and Johnson (2024) are investigating the educational impact of AI in HCI courses. Kharrufa and Johnson conducted an experiment to encourage undergraduate HCI students to integrate generative AI models into their studies. Their findings suggest that incorporating generative AI into HCI curricula could enhance students' ability to develop project ideas and understand concepts. The growing variety of AI tools presents numerous opportunities for integrating them into the UX design process. For instance, Maceli et al. (2024) demonstrated that HCI students could creatively use various AI tools for tasks such as UI generation and branding. These studies underscore the importance for HCI educators to foster comprehensive AI literacy among students, empowering them to fully harness their creativity in today's AI-driven environment.

Methodology and Design

This study employed a qualitative research methodology, which is well-suited for gaining a deeper understanding of the research problem (Creswell & Guetterman, 2024). We obtained ethics approval for the research from the university (reference ID: 20833). To explore the challenges faced by early-career UX researchers, we used interviews as the primary data collection method. We recruited and interviewed five UX researchers, aged 21 to 25, based in Melbourne, Australia. These participants were chosen due to their availability, recent HCI education, relevant UX project experience, and sufficient proficiency in AI, all of which were crucial for providing valuable insights into the challenges encountered by early-career UX researchers in

that region. The interviews followed a semi-structured format and included a retrospective walkthrough of each participant's past project experiences. This approach allowed us to explore their perspectives on integrating AI into UX research to address these challenges. The goal was to use the findings to inform strategies for incorporating AI literacy into HCI education. We employed the retrospective cued recall (RCR) approach, which enabled participants to review and comment on their past behaviours and projects (Russell & Chi, 2014). This method facilitated detailed discussions about their past UX projects, with participants referencing UX design materials to elaborate on their experiences. Thematic analysis and affinity mapping were used to identify recurring themes and patterns in their responses.

Findings

Main Challenges Encountered by UX Researchers

UX researchers highlighted significant challenges, particularly in two phases of UX research: (1) collecting, interpreting, and synthesizing qualitative data, and (2) translating user needs into design concepts. The primary challenge UX researchers face during qualitative data collection is the inability to thoroughly explore all issues in depth during user interviews. For instance, many participants have reported discovering critical questions that were overlooked during the interview process upon later reflection and analysis. As one participant explained, 'Even now, I always reflect after an interview on why I didn't ask a particular question at the time.' This required follow-up sessions with users to ensure all aspects were thoroughly addressed. Another challenge is that UX researchers often encounter insightful moments during observations and interviews but may fail to recall them later, as recording these thoughts in real time is not always feasible. Consequently, researchers often rely on memory, which can be unreliable. Additionally, while the laborious process of transcribing data is time-consuming, the greater challenge lies in organizing, interpreting, and synthesizing the large volume of information. For instance, one participant noted that initial insights gained from observational photographs might be overlooked during later reviews, especially when dealing with a high volume of photos.

Subsequently, another challenge is accurately capturing and transforming users' goals into practical and effective design solutions. For example, one participant emphasized that refining design ideas from broad concepts to detailed functions posed a significant challenge, requiring continuous examination of users' thought processes and experiences. Occasionally, the outcomes anticipated by UX researchers diverge from users' expectations, as several participants mentioned ongoing difficulties in achieving user satisfaction with their design solutions. This highlights the complexity of comprehending and addressing user needs. Additionally, the daunting task of processing vast amounts of data gathered from user research presents difficulties in conceptualizing this extensive information into visually appealing and user-friendly designs. Participants also highlighted the challenge of fully understanding and incorporating the perspectives of all user groups, particularly when addressing broad, overarching issues.

The Potential of AI to Overcome the Challenges

In response to these challenges, participants suggested three primary ways to leverage AI in supporting UX research. First, AI could automate repetitive tasks such as real-time speech transcription and automatic summarization of discussions, streamlining information gathering and allowing researchers to concentrate on in-depth analysis and generating more valuable insights. Second, AI could help overcome the challenges of interpreting and synthesizing data from multiple sources, which often leads to fragmented insights. Third, participants viewed AI as a tool to boost creativity and enhance brainstorming sessions, envisioning it as a collaborative partner capable of generating diverse and robust design concepts tailored to specific projects.

Readiness of UX Researchers

The study revealed varied opinions among UX researchers regarding the use of AI tools like ChatGPT in the UX research process. Some believed these tools could broaden options and stimulate divergent thinking. However, others preferred the traditional, human-centric approach to ideation, expressing concerns that AI might stifle creativity or overlook ideas that arise naturally in traditional brainstorming sessions. Engagement with AI posed challenges, particularly in knowing how to effectively interact with it. Many participants struggled with formulating the right questions and questioned the accuracy of AI-generated responses. Some found AI outputs too generalized, while others appreciated their utility when given specific inquiries. These findings reveal a gap in UX researchers' understanding of how to leverage current AI capabilities, highlighting the need for AI education and the development of more robust AI skills for innovative applications.

Discussion

AI's Capabilities in Supporting the UX Research Process

The interviews underscore the challenge of thoroughly exploring all issues in depth during user interviews. In addition to the suggestions offered by participants, AI could potentially assist by providing proactive guidance and suggestions during interviews (Kuang et al., 2024). By analysing the interview context in real-time, AI could suggest prompts or follow-up questions based on the conversation flow and topics covered. This would help identify areas needing more exploration, increasing the chances of capturing comprehensive insights. Working alongside an AI assistant that provides real-time suggestions can potentially enhance UX researchers' efficiency and allow them to focus on accurately recording their thoughts (Kuang et al., 2024). Furthermore, an innovative application of AI in UX design thinking could involve moving beyond text generation alone—such as generating textual insights—to incorporating multimodal creations (Kuang et al., 2024). For example, AI could summarize key ideas and organize them visually, offering a clear and structured representation of complex information. This could also encompass visual and immersive experiences to deepen UX researchers' contextual understanding and better support their design thinking processes.

Insights on How AI Literacy Could Be Integrated into HCI Education

Based on the findings, integrating AI literacy into HCI education can be achieved by introducing fundamental AI concepts—such as capabilities, limitations, and ethical considerations—into the curriculum and incorporating hands-on practice with AI tools throughout the UX research process. Firstly, developing AI competency is crucial for using AI effectively and ethically in UX research. This study found that many UX researchers with HCI backgrounds lack the AI literacy skills needed to fully grasp AI's potential and use it effectively in their research. Additionally, many participants were unaware of critical ethical issues, such as privacy, bias, and misinformation. Secondly, offering practical experience with AI tools through projects will allow students to apply AI techniques to real-world HCI challenges, such as developing prototypes or analysing user data. This hands-on approach helps students gain practical skills and confidence in integrating AI into their work, bridging the gap between theoretical knowledge and practical application (Long & Magerko, 2020).

Conclusion

This study identified several challenges faced by UX researchers during the UX research process, particularly in two key phases: collecting, interpreting, and synthesizing qualitative data and translating user needs into design concepts. To address these challenges, the potential of AI was explored in several areas. However, the study also revealed differing opinions among UX researchers about AI tools, highlighting a gap in their AI proficiency and understanding of current AI capabilities. This underscores the need to improve AI education and develop stronger AI skills and hands-on experience for HCI students. While this study provides initial insights into integrating AI into HCI education, it is limited by its small sample of early-career HCI researchers. Further research is needed to better understand how rapidly evolving AI technologies, such as multimodal creations, will impact the future practices of UX research. Additionally, while the focus is on HCI education, the findings could also be valuable for other related disciplines considering how to integrate AI into their curricula.

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