Co-creation With and For AI: The Case of Mental Well-Being AI Companion

(article starts on next page)

25. Co-creation With and For AI: The Case of Mental Well-Being AI Companion

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Abstract

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Introduction and Background

AI in workplaces offers both benefits and challenges. It could lead to changes that may require adaptation efforts and raise ethical and privacy concerns. However, AI may aid mental well-being by enabling evidence-based decisions and interactive companionship.

The concept of responsible, human-centred AI, particularly in healthcare, addresses challenges like ethics, autonomy, and trust (Siala and Wang 2022). Literature recommends human-centred design and user participation in AI development, including healthcare applications (Peters et al. 2020). However, the ability of AI to make decisions and learn over time raises questions about the applicability of human-centred design, where AI can also act as an active agent (Coulton and Lindley 2019). To address this ambiguity, this research integrates AI as an active collaborator in a human-centred, participatory design process focused on an AI companion system for mental well-being. AI companions, which can be digital, physical, or hybrid artefacts, offer personalised interaction and empathy (Oxford Analytica 2022).

Moreover, literature suggests strategies for responsible AI in mental health: involving diverse stakeholders in design, viewing AI as a healthcare professionals' support tool rather than a replacement, and adopting a holistic approach over standalone solutions. This study thus explores the concept of an AI ecosystem with various interfaces, focusing on improving knowledge workers' mental well-being through an AI companion system. Prevalent in sectors like healthcare, education, and technology, these workers often encounter mental health challenges.

Method

To integrate participatory design in this study, we aligned with Sanders and Stappers (2008), adopting their definition of Co-creation as a collective activity shared by two or more individuals, such as designers and non-designers. We also employed co-design as a joint design activity focused on generating knowledge and identifying solutions to complex problems (Sanders and Stappers 2008; Simonsen and Robertson 2012). Additionally, we involved generative AI as a collaborator throughout the process.

To conform to the literature's recommendations for a holistic and systemic design approach and to view AI as a facilitator rather than a replacement for mental health experts, the design brief focused on a solution that offers multiple interfaces. These interfaces include, but not limited to various physical, virtual, and blended form factors catering not only to knowledge workers but also to family and friends, colleagues, management and HR personnel at the workplace, and occupational and public health support services (figure one).
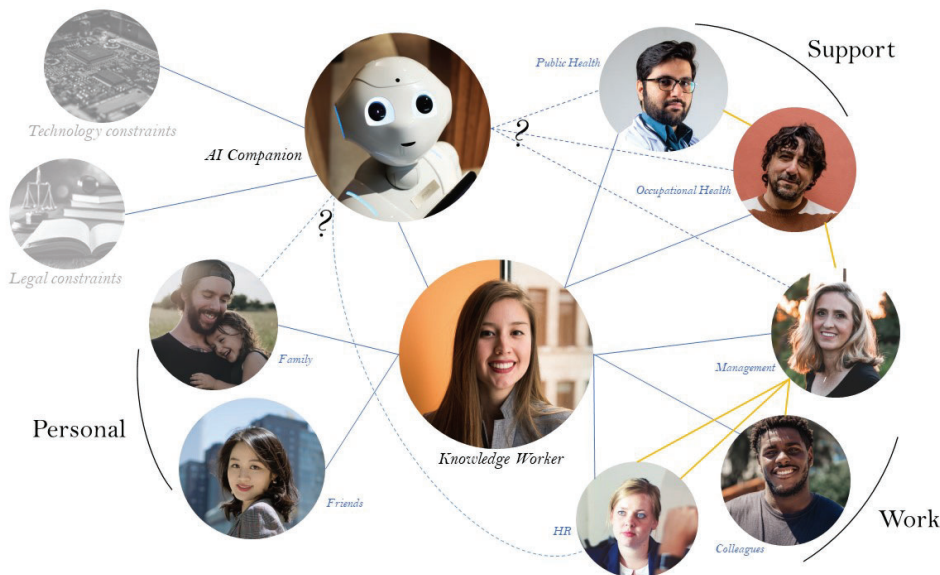
Figure 1. *The visualisation used in the briefs of the collaborative workshops to provide an understanding of the holistic and systemic approach to design referred to as the 'AI Companion Ecosystem'.*

Co-creation Stakeholder Workshop

The study began with a co-creation stakeholder workshop, which included participants such as innovation strategists, healthcare professionals, and user experience designers. Participants with similar backgrounds were grouped together, ensuring each group represented a distinct stakeholder perspective. The workshop's goal was to co-create a concept for an AI companion system (as shown in figure one), focusing on stakeholders' wishes, needs, and requirements for the core well-being stages: prevention, support, and rehabilitation. Participants utilised a nine-block matrix template (figure two) to identify 'wishes', 'needs', and 'requirements' for each stage.

	Prevention	Support	Rehabilitation
Wishes			
Needs			
Requirements			

Figure 2. *The nine-block matrix template*

Each group used a distinct sticky note colour, making it possible to understand the origin of wishes, needs, and requirements. In the final stage, they also evaluated other groups' entries, using coloured dots: green dots indicated agreement, red dots disagreement, and yellow dots differences (figure three). The colour codes were used to analyse the results in relation to different disciplinary perspectives through iterative collaboration between researchers and Generative AI's image processing.
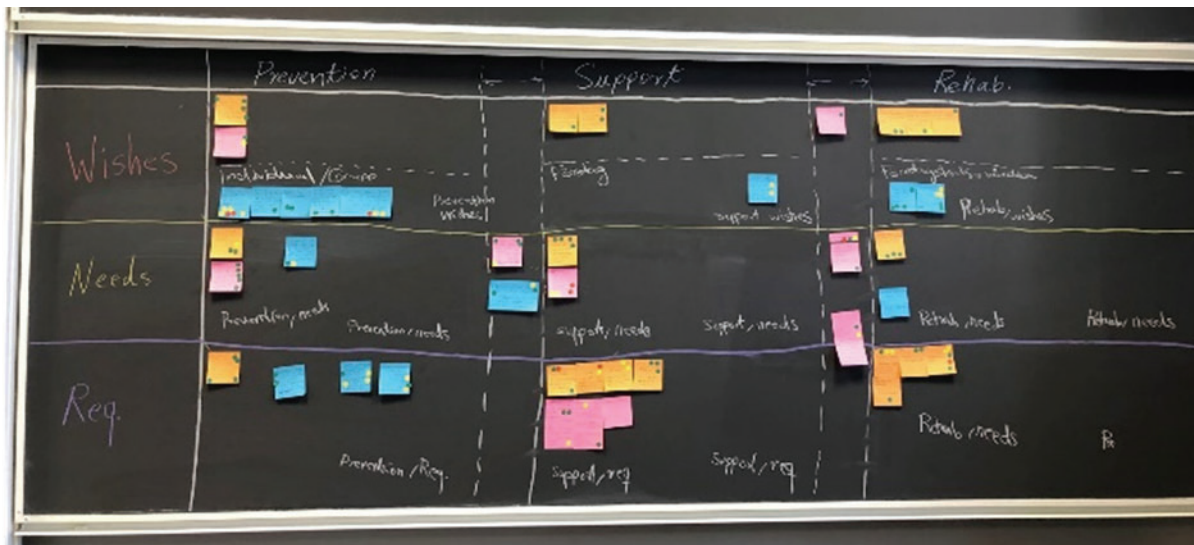

Figure 3. *The nine-block matrix structured discussions on the blackboard*

Co-design Workshop

The subsequent stage of the study involved a co-design workshop with both stakeholders and knowledge workers. Generative AI summarised the results of the stakeholder co-creation workshop in the form of a card deck, bridging the workshops with language understandable to a diverse audience. It also generated additional card decks outlining AI technologies, data sensors, AI companion form factors, and sensory

experiences, using simple, clear language, visuals, and examples (figure four). In this workshop, participants formed mixed groups to maximise diversity in disciplinary backgrounds and blend stakeholders with knowledge workers (figure five). Therefore, these cards were crucial in empowering informed participation, bridging diverse professional perspectives, and building trust among participants.

They helped form a shared knowledge base on the card topics within each group.
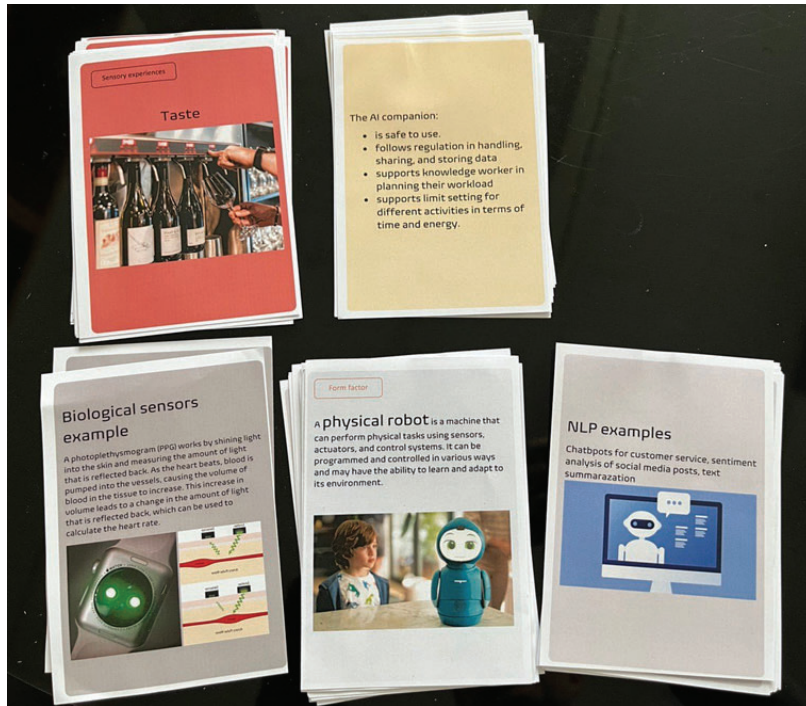
Figure 4. Card decks used in the co-creation workshop

The card exploration led to the design of an AI companion at an abstract level, using a system diagram that illustrated different user interfaces, their connections, and form factors. Based on this diagram, participants created user scenarios, demonstrating the AI companion's support for knowledge workers' well-being in daily life.

Researchers and generative AI collaboratively analysed the results of the co-design workshop to identify core themes. This iterative process involved researchers transforming scenarios and system diagrams into text, followed by generative AI conducting thematic analysis based on these text entries. Researchers then reviewed and revised the prompts several times. Similarly, participants co-designed scenarios were amalgamated into a comprehensive scenario, capturing common features and core themes from the thematic analysis.

Figure 5. Participants collaborating in a co-design workshop, with the system diagram and scenario template visible in the picture.

Qualitative Synthesis

Using the same iterative and collaborative approach, the findings from the co-creation stakeholder and co-design workshops were synthesized, revealing core themes such as dual functionality, user control and data privacy, adaptive support, interfacing and trusted networks, and balancing health and work-life. These themes align with the literature's advocacy for holistic AI designs in mental health and treating AI as a mental health facilitator. The study also highlighted new privacy challenges and a tendency to merge work tasks with mental well-being support, blurring personal and professional domains—a trend less noted in existing literature.

Reflections

Generative AI proved to be an effective tool in bridging the gap between the co-creation stakeholder workshop and the co-design workshop, particularly by facilitating the summarization of information, as well as qualitative analysis and synthesis. It helped participants achieve a unified understanding of knowledge by simplifying and summarizing information. It also synthesized participants' scenarios into a single comprehensive scenario, addressing a key co-creation challenge. However, its evolving machine-learning nature can lead to variability in outputs. Additionally, integrating different data types, such as text and visuals, can be still challenging, potentially slowing down the design solution process. These limitations, however, might be overcome as the technology advances.

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