

## Summary

Chatbots represent a novel mode of interaction with web services and smart devices, offering conversational interfaces that surpass traditional ones in terms of intuitiveness and naturalness. Defined as computer programs simulating human-like natural language interactions,<sup>[1]</sup> chatbots serve as ground-breaking intermediaries, fostering connections with online services and smart devices through user-engaging conversations. Originating in the 1960s, ELIZA<sup>[2]</sup>, ALICE,<sup>[3]</sup> and PARRY<sup>[3]</sup> pioneered this field. Their approachability fosters trust, yet emotional awareness and quality lag behind humans. This study enables user-driven exploration of diverse chatbot interfaces, yielding insights into their effectiveness, user-friendliness, and efficiency for specific tasks. These insights inform current chatbot capabilities, guiding innovation in this dynamic tech domain. Guided by the research question, "What design variations and functionalities of digital assistants can enhance their effectiveness in providing assistance to users?", this study contributes to the digital assistant domain by shedding light on their optimization for enhanced user service.

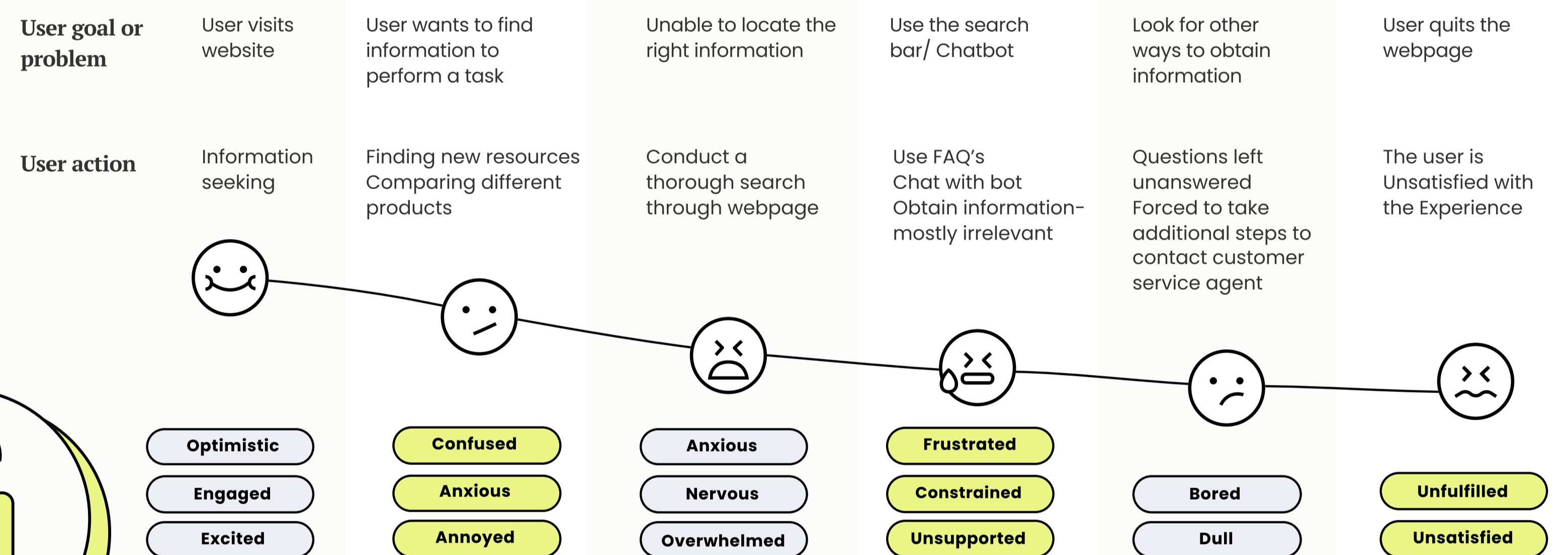
## Methodology

Evidence was gathered from 15 participants to uncover limitations in contemporary Chatbot systems. The testing framework aimed to compare two conversational AI interaction styles: task-oriented and direct conversation. Participants undertook two tasks. The first involved interacting with task-oriented dialogue bots, like "SciSpace Copilot" designed to aid comprehension of academic content. The second task featured live conversational chatbots hosted on websites, such as HSBC's "MOBA," NatWest's "Cora," and the Goldsmiths Bot, assessing their responsiveness in real-world scenarios. This experiment sought to assess information-seeking intuitiveness, user interaction frequency with chatbots, and user contentment. Employing the "Think Aloud" technique, post-interaction interviews, and screen recordings, insights into cognitive processes, decision-making, and problem-solving were gleaned. This method enriched qualitative data, enhancing understanding of chatbot interfaces. The study aimed to create a dynamic environment for users to organically explore diverse chatbot interfaces.

## Research Results

The analysis of the data gathered revealed participants' actual attitudes regarding chatbots and their interactions with them. Based on how willing they were to engage with chatbots, participants were divided into three groups, and data was shown using word clouds. Following study, an intriguing discovery was made: most users choose to avoid conversing conversational chatbots. Participants preferred easier interactions based on a small number of keywords, with chatbots responding appropriately. This lead to the hypothesis that users could gain from more targeted and succinct keyword-driven chatbot encounters. Accordingly, the design of chatbot systems must be modified. It is important to understand the user's needs and how to meet them in addition to merely presenting the user with all the features and content that are accessible.<sup>[4]</sup> The design must take into account how the system will interpret the needs of the user and deliver the proper answer. The personality of the chatbot must be taken into account while designing the system because it might affect how users interact and perceive it.

## User Journey



## Conclusions & Future Work

The design hypothesis was modified to take a more targeted approach to incorporating user engagement. This method allows people to engage in a focused manner. However, it raises the question of whether emphasising dialogue with the chatbot may become obtrusive to the overall user experience. Finding the proper balance will be critical in maintaining a smooth and user-friendly engagement. Rule-based chatbots, as opposed to conversational chatbots, take a more structured approach, using qualifying questions depending on user input to offer relevant results. Notably, a proactive chatbot interface emerged as a critical component in accelerating users' task completion. Proactive chatbots can dramatically improve the speed and efficacy of task execution by actively assisting users and anticipating their needs.

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