Towards an Understanding of Human-AI Interaction in Prompt-Based Co-Creative Systems

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Abstract

Co-creative AI (Artificial Intelligence) has witnessed unprecedented growth in text-to-image generative systems. In this paper, we posit that a better understanding of the drivers of user interaction with prompt-based co-creative AI tools will significantly improve how they are designed for, used by, and explained to current and future users. Much remains unknown about how users understand, engage with, and evaluate such systems. To fill this gap, we propose a framework for understanding human-AI interaction in prompt-based creative tools informed by semi-structured interviews of 19 users.

1 Introduction

Collaboration with AI in text-to-image tools [4, 3, 7] has experienced an exponential growth in 2022 after the introduction of CLIP by OpenAI [5] in 2021. Communicating with AI tools through text input ("prompt") [6] is a step towards bridging the linguistic divide between humans and AI [1]. Yet, implementing a human-centered approach in prompt-based co-creative AI tools requires a comprehensive understanding of how users use and evaluate these tools.

In this paper, we propose a socially situated framework of human-AI interaction with prompt-based co-creative systems. Our framework presents the integral components of these systems as well as a set of guiding questions to inform the evaluation, design and development of current and future prompt-based systems.

2 A Framework to Examine Prompt-Based Co-Creative Tools

We recruited 19 participants via social media and snowball sampling. For data analysis, we conducted inductive coding [8] and thematic analysis [2] to examine approximately 17 hours of interview data. The first author (using open coding) grouped the codes into themes which team members discussed and refined. The team subsequently came to agreement that the resulting themes fit the data.

Through synthesizing our findings, we propose a socially situated framework for prompt-based human AI Interaction (Figure 1). Additionally, informed by our findings, we provide a set of questions for

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each component to guide the exploration, evaluation, and design of current and future prompt-based tools. Next, we briefly discuss the components of the framework.

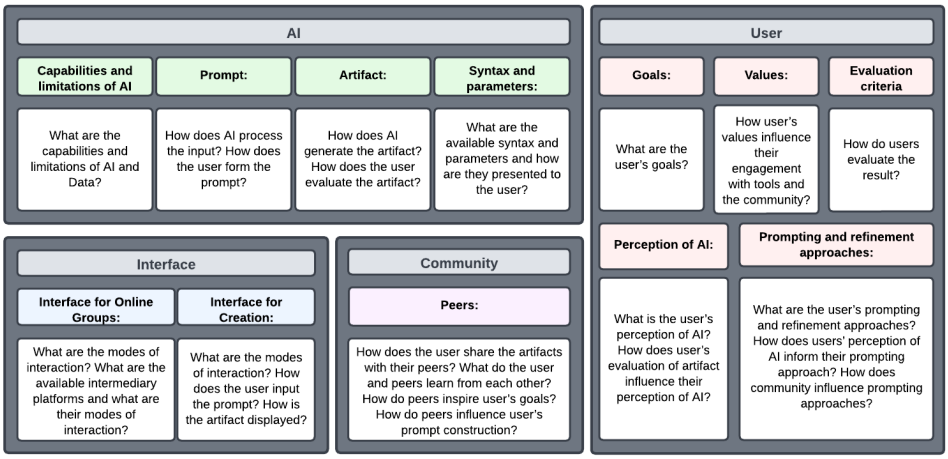

Figure 1: Framework for human-AI interaction in prompt-based co-creative AI tools

User. From our interviews, we identified five key factors impacting users' experience and behavior in prompt-based AI tools. We noticed that participants had one or more perception(s) of AI which influenced their prompt-making strategies. The perceptions we identified include: tool, collaborator, friend, child, artist, game, and slot machine. These perceptions are not mutually exclusive; for example, the same participant may view the AI tools as both a tool and a game. Moreover, we identified two overarching themes around user goals: curiosity around the AI and tool, and personal creative goals, that influenced their decision-making and behavior. We also noticed that participants' values and attitudes toward referencing or using peers' prompts influenced their involvement with the community. Users often employed different strategies to write their prompts, which could also impact their experience with co-creative tools.

AI. Participants often asked questions about the capabilities and functionalities of AI: how the prompt is processed and how the artifact is generated, what data was provided to AI, what parameters are available, and what text-to-image systems are capable of. Participants' hypothetical answers to these questions also affected their expectations of the system. Moreover, the underlying syntax and parameters provided by the AI tool and the range of values for each sometimes caused confusion for participants.

Community. A common theme across the interviews was the role of community in participants' experiences with these tools. Active users in the community often engage with their peers to share successes or knowledge and ask questions. However, we observed that the degree of engagement with the community varied among participants. We noticed that participants' values and attitudes toward referencing or using peers' prompts influenced their involvement with the community. Participants with a negative attitude towards versioning prompts tend to have a private approach to prompting whereas those who have a positive attitude tend to enjoy collaborative prompting. For example, one participant expressed their feeling about using peers' exact prompt: "I feel really uncomfortable with doing variants from other people's work."

Interface. Whether through platforms like Discord or simple interfaces dedicated to prompt-based art generation, participants interact with the system using options available to them. Differences in modalities, availability of parameters, or even the device they use influences their prompts and result. Similarly, group dynamics on social media or establishing smaller communities with closer friends may impact users' involvement with their peers.

3 Next Steps

Future research can investigate the dynamics between our proposed components in this framework. Moreover, we are planning to use our framework with the HCI and machine learning experts to propose actionable interventions for human-centered prompt-based co-creative AI tools.

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