Engaging with AI painting: exploring motivations and challenges in laypeople's creative information practices

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Abstract

Introduction. The advent of generative AI has democratized art creation, enabling individuals without formal training to produce visually appealing digital artworks. However, it is not yet well-understood why and how laypeople engage with AI in creative information practice.

Method. This study conducted semi-structured interviews with 17 participants, aiming to understand the motivations for laypeople's engagement with AI painting and the challenges they encounter.

Analysis. The interviews were analysed using open coding and thematic analysis, with two independent coders achieving a substantial inter-coder reliability score.

Results. Our findings reveal that laypeople's engagement with AI painting is a practice-oriented information practice, influenced by social and contextual factors. The engagement process is iterative, starting with a user prompt and AI-generated initial output, followed by continuous refinement. Laypeople engage with AI painting for emotional motivations, personal utilitarian motivations, and social interaction. Notable challenges include image quality, technological limitations, and personal constraints.

Conclusion. These findings provide empirical evidence of the potential and limitations of AI in creative information practice. This understanding is vital for informing the design of future AI tools to enhance the human-AI collaborative experience in creative endeavours.

Introduction

The increasing capacity to manage complex tasks of artificial intelligence (AI) has expanded from industrial production (Asan et al., 2020; Di Vaio et al., 2022; Holstein et al., 2020; Lee et al., 2022) to various creative fields that traditionally require significant time and effort (Saharia et al., 2022; Zhu et al., 2018). This expansion is evident in AI's ability to generate new content in creative and artistic fields, including drawing (Sun et al., 2019), music composition (Choi et al., 2016), fiction writing (Yang et al., 2022), urban planning (Cooney, 2021) and dance (Li et al., 2021). Especially in the domain of painting, AI-generated artworks, and tools have increasing attention and impact. In 2018, the first AI-generated '*Portrait of Edmond de Belamy*' for $432,500 at Christie's New York (Cohn, 2018). AI image generators such as Midjourney, Stability AI, and Novel AI can generate photo-realistic images from textual prompts such as a word, phrase, image, or style, empowering users to swiftly create stunning artworks. This not only accelerates the creative process but also marks a shift in the way of art creation.

The popularity of AI image generators is not limited to professionals; they hold immense appeal to laypeople without specialized training in a particular domain (Bromme et al., 2001). A notable example of this trend is observed in China, where a survey indicated that a mere 24.2% of AI painting tool users are professionals in art and design (6pen, 2022). This reflects a shift towards more accessible artistic creation. Traditionally, painting was considered a skill requiring extensive training, thus presenting barriers to many interested in art. However, AI painting tools have lowered these barriers, enabling laypeople to produce paintings more easily and efficiently. In this context, AI acts as the *magic brush* of Ma Liang in traditional Chinese mythology, empowering laypeople to bring their imaginations to life.

Such role of AI in blurring the lines within creative activities has sparked the critical need for a deeper exploration. Firstly, the increasing integration of generative AI into creative activities has the potential to revolutionize how we perceive and engage with creative information practices, thus calling for a deeper and broader consideration of the accessibility, universality and usability of these technologies. Secondly, insights from a broad audience are crucial to inform the future development of AI-assisted tools. This will ensure that they not only address the diverse needs and concerns of users effectively but also embody better user-centered design principles. Laypeople's engagement with AI painting presents a unique research opportunity into these uncharted territories. Therefore, this study aims to explore how laypeople use AI for painting, delving into their motivations, experiences, and challenges they face during this creative information practice. Specifically, it addresses the following research questions:

RQ1: *How do laypeople engage with AI painting, and what variations exist in their engagement process and experience?*

RQ2: *What motivates laypeople to engage with AI painting?*

RQ3: *What challenges do laypeople face while engaging with AI painting, and how do these challenges affect their creative information practices?*

To achieve the research objectives, we conducted interviews with 17 laypeople to understand their experiences with AI painting, and analysed the data using rigorous thematic coding. By exploring these research questions, we can gain a better understanding of why and how AI can facilitate the democratization of creative activities, providing realistic, authentic, and comprehensive empirical evidence of this creative information practice, offering valuable insights for optimizing AI-assisted tools' capacity.

Literature review

Creative information practices

Information practices are a set of socially and culturally established ways of identifying, seeking, using, and sharing information from various sources (Savolainen, 2008). These practices are common in creative fields such as photography (Cox, 2013), music (Lavranos et al., 2016; Vesga Vinchira, 2019), visual arts (Mason and Robinson, 2011), cultural heritage (Zhao et al., 2024), architecture (Annemans et al., 2014),

curation (Ferrara, 2017), or academia (Willson, 2022), involving information seeking, sharing, creation, and utilization. These practices are habitual (Caidi et al., 2010; Costello and Floegel, 2021; Savolainen et al., 2009), deeply influenced by the specific needs, complex social rules and culture (Jarrahi and Thomson, 2017; Lloyd, 2010a; McHugh, 2012; Savolainen, 2007; Tulloch, 2022).

Previous research in creative information practice has focused primarily on understanding information needs and seeking. Studies have investigated how people use search engines and online resources to solve creative tasks, uncovering multiple stages of the creative process (Lee et al., 2005; Li et al., 2022; Zhang and Capra, 2019). These needs include searching for creative techniques, materials, sources of inspiration, educational purposes, and furthering career goals (Kolyvas and Kostagiolas, 2023; Kostagiolas et al., 2015; Medaille, 2010). Information seeking extends beyond mere data gathering; it extends to the integration of diverse information sources into the creative process, influencing inspiration, ideation, and execution (Ferrara, 2017; Lee et al., 2005). Most information is accessed via the internet and social networks, with traditional printed tools and libraries serving as valuable supplements (Mason and Robinson, 2011), creating a supportive and, information-rich environment for practitioners (Annemans et al., 2014; Meyer and Fourie, 2018; Willson, 2022).

Information literacy is crucial in shaping creative information practices. It resides in the experiences, skills, and intuitions of practitioners (McKenzie, 2009; Moring and Lloyd-Zantiotis, 2013; Nicolini, 2016), influencing how people interpret and personally experience a creative information practice (Medaille, 2010; Meyer and Fourie, 2018; Tulloch, 2022). In information practices, information literacy is co-constructed by individuals sharing the same information landscape (Lloyd, 2010b). It involves collective knowledge about shaping and enabling information, identifying legitimate sources, and operationalizing relevant skills and activities (Lloyd, 2012).

Although most studies have focused on information seeking, a smaller but growing body of research has been paying attention to creative information creation across different groups and domains (Athukorala et al., 2013; Chavula et al., 2022; Gorichanaz, 2019; Harviainen and Melkko, 2022; Huvila, Börjesson, et al., 2022; Huvila, Douglas, et al., 2022). These studies highlight the rich, contextual nature of creative information creation in everyday and artistic contexts. Information creation is a way of sensemaking where people make sense of the world not only by acquiring sufficient information but also by creating new information (Harviainen and Melkko, 2022; Koh et al., 2019). Moreover, creative information creation is not just a solitary activity; instead, it involves social interactions and the integration of information in various forms (Campbell-Meier and Krtalić, 2022; Given and Kuys, 2022; Guo, 2022; Ju et al., 2022).

Despite the deep understanding provided by current literature, the advent of generative AI has introduced a new dimension to creative information practice, especially prompting a shift in information seeking and creation. In this context, creative information practice shifts from a traditional search for materials and inspiration to a more direct and intuitive engagement with AI during the creation phase (Qiao et al., 2022). Additionally, while much of the existing research focuses primarily on explicit aspects such as information seeking (Zhong et al., 2023), the field of information creation has not received as sufficient attention (Gorichanaz, 2019; Huvila, 2011). This oversight is notable, especially considering the often-neglected embodied dimensions of practice (Zhao et al., 2021), which are crucial in information science research. Future investigations are needed to offer valuable insights and complement empirical and practical studies, especially in the realm of understanding the information creation practices of laypeople, an area that is currently not well explored.

Generative AI and democratization of art creation

Research in generative AI spans a wide range of themes and directions, including algorithm

development, human perception and evaluation, broader societal implications, and human-AI collaboration. To improve the quality, diversity, and originality of generative AI, researchers have extensively studied methods such as generative adversarial networks (GANs) (Goodfellow et al., 2014) and neural style transfer (Gatys et al., 2016). Researchers also investigate user perception and evaluation of AI-generated art, focusing on aesthetic preferences, emotional responses, attitudes, and acceptance, as well as how professional competence or domain knowledge affects cognitive and behavioural aspects (Bellaiche et al., 2023; Cabitza et al., 2021; Chong et al., 2022; Dikmen and Burns, 2022; Hu et al., 2022). Furthermore, human-AI collaboration has been of significant interest, with a focus on the generation framework, user experience, and interface design of AI-assisted systems (Chen et al., 2021; Demirel et al., 2023; Oh et al., 2018; Rezwana and Maher, 2022; Zhang et al., 2022). Moreover, broader societal implications have been explored, including questions related to ethical, legal, authorship, and social implications of AI-generated content (Epstein et al., 2023; Epstein et al., 2020; Jiang et al., 2023; Peeters et al., 2021).

Previous research has primarily focused on human-AI co-creation of artists and experts (Guzdial et al., 2019; Karimi et al., 2020), and has compared the differences in cognition and behaviour between professionals and non-professionals. However, the engagement of larger groups has not received sufficient attention, such as laypeople in the field of art. Empowered by AI-assisted tools, digital painting creation and reproduction can be more accessible and convenient for laypeople, potentially reducing the demand for handmade art creations. Concurrently, the rise of AI-generated artwork has intensified competition in the art market, with an increasing number of individuals utilizing AI tools leading to a larger pool of artists and artworks, thereby posing challenges for traditional artists to stand out.

In conclusion, advancements in AI have led to the evolution in user experience and interaction form with generative AI in creative domains, which is not comparable to prior findings. Moreover, this engagement has been insufficient in current research. In light of these considerations, this study aims to bridge the knowledge gap by delving into their motivations for using AI in creative practices, the challenges they encounter, and their concerns about the broader implications of AI in this context.

Method

Participants

In China, the majority of students receive an introduction to basic art education in their early schooling years, such as in kindergarten and primary school. This foundational education typically includes simple drawing and painting practice on paper, aiming to foster creativity and appreciation for art. However, as students advance to higher education levels, their exposure to art education decreases. While a select few may enrol in specialized art programs in high school to prepare for entrance examinations to fine arts academies, the vast majority do not receive formal art training that delves into the theories, techniques, and practices of art beyond these initial experiences.

Given this backdrop, purposive sampling was used to recruit participants. The study targeted participants with the following criteria: (a) people who have experience in using AI for painting and (b) who are not professional painters or haven't received formal training in fine art. Seventeen participants were recruited from different social media platforms or discussion groups, such as Weibo, RED, and Douban. In adherence to ethical research practices, this study implemented stringent protocols to safeguard participant anonymity. Specifically, real names were not collected at any stage, and measures were rigorously applied to maintain anonymity throughout the interview process.

Table 1 summarizes participant information. The sample consisted of 12 males and 5 females, aged between 20 and 45 years, with one opting not to disclose his age. Participants came from diverse backgrounds, such as finance, IT, medicine, manufacturing, and education. All participants reported their painting level as *non-expert*, *non-professional*, or *unskilled*.

None had majored in art or received formal art training, particularly in painting. While some participants dabbled in painting out of interest, they eventually either gave up or failed to attain proficiency. They all met the definition of *laypeople* for this study. Typically lacking refined or professional painting skills, they were nevertheless able to generate painting works with the aid of AI.

Participants ID	Gender	Age	Background	Usage Duration
P1	Male	23	Graphic design	6 months
P2	Male	N.A.	Finance	1 month
P3	Female	21	Architecture	8 months
P4	Male	32	Accounting	3 months
P5	Male	35	Trade	1 week
P6	Male	26	NGO	5 months
P7	Female	43	IT	2 weeks
P8	Female	20	Medicine	2 weeks
P9	Male	24	Electronics	7 months
P10	Female	20	Unemployed	4 months
P11	Male	30	Manufacturing	1 month
P12	Male	45	Optics	6 months
P13	Male	22	Information system	3 months
P14	Female	20	Education	4 months
P15	Male	34	IT	6 months
P16	Male	25	IT	9 months
P17	Male	22	Geography	5 months

Table 1. Demographics of participants

Data collection and interview procedure

Semi-structured interviews were conducted to gather insights into participants' exposure and duration of use, frequency of engagement with AI painting, motivations, engagement strategies, positive and negative experiences, and challenges encountered while engaging with AI painting. Prior to the interviews, we obtained permission and participant consent and informed the participants that there were no right answers. Due to geographical and time constraints, interviews were conducted online through Tencent Meeting or Zoom, and all the interviews were in Chinese and were recorded. Each interview lasted approximately 90 minutes, and each participant received a 50 CNY honorarium. After the interviews, all the interview data were transcribed by Tencent Cloud and iFLYTEK and manually checked for accuracy.

Data analysis

An open coding method and thematic analysis were employed for qualitative data analysis to identify key themes and patterns relevant to this study (Braun and Clarke, 2006; Vaismoradi et al., 2013). The interview transcripts were first

coded via open coding with the extraction and isolation of verbatim quotes, to identify data that were subsumed under research questions as well as other potentially emerging themes. To ensure the reliability of the coding process, two coders conducted the coding independently and then compared the results. Iterated discussions were held to resolve disagreement until two coders arrived at an agreement on the themes that reflected the meanings and interpretations expressed by the participants, with an inter-coder reliability score of K = 0.92, which is considered substantial to excellent level of agreement between the two coders (McHugh, 2012).

Once the open coding process was completed, a thematic analysis of the qualitative data was conducted to subsequently organized into categories and themes via thematic coding. The themes, and relationships between themes were also reviewed by two authors whose research topics align and allow for investigator triangulation (Denzin, 2017). Overall, we managed to reach saturation of the themes and main factors. Furthermore, although data collection and analysis were conducted in Chinese to accurately capture participants' expressions, the results were translated into English by the authors with consultation from professional translators proficient in both languages. This ensured that the data were faithfully conveyed.

Results

Laypeople's creative information practice in AI painting
The process of laypeople's creative information practice in AI painting
The engagement process for laypeople in AI painting typically begins with the selection of content, models, or styles that best align with their skill level and creative objectives, but it can also involve aimless trials. They often experiment with different contents, models, styles, or tools to understand the effect of various inputs on the artwork produced. Additionally, they might search online for preferred contents or styles, learning how to articulate these styles in prompts. After choosing a specific model or style, users proceed to input initial parameters and prompts. These can range from straightforward thematic words to elaborate descriptive sentences. This could involve specifying artistic styles like *impressionism* or *surrealism*, or incorporating specific elements like *rainforest at dusk*. Following this, the AI painting tool processes these inputs, creating preliminary outcomes. Subsequently, users critically evaluate these outcomes, refining and iterating their prompts based on the AI's feedback, aiming for increasingly precise outcomes that more closely align with their expectations. For instance, a user may start with a prompt like *rainforest at dusk* and then refine it to a more detailed version such as '*Impressionist autumn rainforest at dusk, with vibrant colours, soft fading light, and a serene atmosphere, captured through a Nikon Z7 II lens for detailed textures*'. This iterative process typically involves fine-tuning adjustments, embodying a cycle of input, review, and adjustment. Finally, the completed artwork is typically saved and often shared on social media platforms.

Progression of laypeople' creative information practice in AI painting
Laypeople's engagement with AI painting exhibits significant variations. In the early stage, participants focus on building experience. This introductory learning phase involves learning to craft effective prompts through diverse means - instructional videos or articles (P1, P2, P5, P8, P10, P11) to understand the basics, generating different prompts to test their effects (P5, P7, P12), or replicating prompt templates found online (P1, P5, P7, P8, P12). P10 shares, '*I'm not particularly tech-savvy, but I learned a lot from BiliBili (a short video site), especially tutorials about downloading models to achieve specific effects*.' Early adopters demonstrate active participation in online communities, seeking tutorials and exhibiting a robust inclination towards communication and shared learning (65%, n = 11).

As they continued to engage over time, participants' focus shifted from basic learning to enhancing the precision of prompts, aiming to better align AI-generated art with their expectations (P1, P3, P6, P9, P12). This progression is paralleled by an increased

reliance on more sophisticated prompts and advanced AI generation tools (P2, P4, P11). Their engagement also evolves from mere replication to an analytical approach, dissecting and interpreting prompts based on artworks by others (P3, P6, P10, P13, P14).

For those with more extensive or long-term engagement, increased expertise leads to greater autonomy. They explore complex and detailed prompts, experimenting with a variety of artistic styles (P1, P6, P9, P12, P15, P16), often achieving outcomes closely aligned with their expectations. In online communities, they transitioned into roles answering questions and assisting others (P8, P12, P16). This progression of engagement styles highlights the adaptive and evolving in this creative information practice, influenced by their engagement duration and growing proficiency.

Motivations

There were essentially three categories of motivations to engage with AI painting identified through data analysis: (a) emotional motivations, (b) personal and utilitarian motivations, (c) social interaction. Table 2 presents the coding framework for users' motivations to engage with AI painting, along with their frequency.

Code	Definition	Count
	Emotional Motivations	
Entertainment	Pursuing fun, enjoyable experiences, hedonistic pleasure and passing time.	17
Aesthetics	Appreciating and creating beautiful and visually pleasing AI-generated paintings.	17
Surprise	Seeking unexpected outcomes and thrilling unpredictability in AI-generated paintings.	14
Curiosity	Exploring AI painting technology, resources, and novelty experiences.	13
Attachment	Developing emotional connections or personal attachment to AI-generated paintings.	2
	Personal and Utilitarian Motivations	
Self-expression	Utilizing AI to materialize imagination, thoughts, and visual ideas.	14
Customization	Producing specific, personalized creations such as characters, profile photos, and wallpapers.	13
Production need	Addressing work demands, part-time jobs, or enhancing workflow efficiency.	7
Personal hobby	An auxiliary tool for personal hobbies, such as game development or creating Garage Kits.	5
Income/job opportunity	Seeking monetization, job opportunities, or career advancements.	4
	Social Interaction	
Sharing	Posting AI-generated paintings on social media for records, updates, and sharing.	13
Communication	Engaging to exchange ideas, strengthen connections or communication with others.	12
Altruism	Helping others with their needs or generating paintings for them.	9
Collaboration	Collaborating with others to co-create AI-generated paintings.	7
Social identity	Displaying online for praise, recognition or increasing personal followers.	6
Imitation/follower ship	Imitating styles and techniques of others, or following current trends.	6

Table 2. Coding framework for laypeople's motivations to engage with AI painting

Emotional motivations

All participants engagement with AI painting was largely for entertainment. They sought to derive fun and enjoyable experiences, hedonistic pleasure, as well as passing time, and playing around. As one participant stated, '*For me, I just play around with it, it feels like a tool to pass time*' (P3).

Aesthetics was another key motivator for participants, who described AI-generated paintings as '*pretty*', '*awesome*', '*unique*', '*novel*', '*exclusive*', '*weird*', and '*creative*'. While many participants had an interest in drawing and art (73.3%, n = 11), they lacked formal systematic training. As a result, generating visually appealing images became a common goal, as

one participant explained: '*I want to see something stunning, like beautiful artwork or captivating images. Unfortunately, I don't have drawing skills, so I'm hoping that AI can create something for me*' (P6).

The novelty and unpredictability of AI-generated painting brought participants a sense of surprise (82.4%, n = 14) and was described as '*surprising*', '*amazing*', and '*unbelievable*'. The thrill of the unexpected outcomes motivates their engagement, e.g., '*I really like the randomness. It's like opening a blind box, you never know what you're going to get. Sometimes it pleasantly surprises me, and sometimes it leaves me feeling a bit disappointed*' (P10).

The next significant motivation appeared to be curiosity (76.5%, n = 11). Most participants mentioned their curiosity towards technology (P2), model resources (P13), and engagement experiences (P6), particularly in the beginning stages of their exposure. This curiosity also triggered further exploration, with participants continuing generating AI paintings or performing model training due to their enjoyment of the exploration and learning experience.

Personal and utilitarian motivations

Another significant category emerged from personal and utilitarian motivations, with self-expression being the most prominent, mentioned by 82.4% (n = 14) of respondents. Some participants consider it a valuable tool for self-expression, enabling them to bring their ideas, dreams, and interesting or whimsical thoughts to life. One respondent stated, '*Thanks to the use of AI, I no longer need to rely on another person. I can fully describe all my ideas. It's a super direct and personalized way of expressing myself, like a one-on-one conversation*' (P1).

Some individuals used AI as a customized tool, or as they say '*agent*', using AI to generate specific characters or images according to their preferences (76.5%, n = 13), such as their favourite anime characters or story personas, wallpapers for home decoration, and profile photos. Intriguingly, some even developed an emotional connection and attachment through the act of creating a virtual character with AI. This indicates the profound level of engagement and personal significance that AI painting can evoke in specific individuals.

> *I want to create a girl and her story, and let her replace me to go to the places I want to go, wear the clothes I want to wear, and do the things I want to do. Even if I am unable to experience different lives due to various reasons in real life, there can still be a hint of consolation* (P14).

Furthermore, this engagement experience also served as a means of supporting personal production needs. Several individuals utilized AI to assist in their creative endeavors, such as generating illustrations for a novel, a slide, or a blog (P6, P12, P17). Additionally, some participants utilized AI painting as a means to spark new ideas and inspiration, and to expand their creative thinking. For instance, P6 said:

> A *few days ago, I had to make a slide about plastic waste. There was one page where I needed an illustration, so I decided to use AI to generate a plastic monster. Although the result wasn't perfect, it was good enough to use in the presentation.*

Some participants explored using AI as an auxiliary tool for their hobbies, such as game development or creating Garage Kits (a type of figurine), adding extra enjoyment to their interests (P1, P5, P7, P9). Additionally, some individuals dedicated themselves intensively to training specific styles of AI painting models, becoming highly involved in the process. For others, AI painting became a newfound hobby in itself (P8, P10), fulfilling their personal production needs and desires.

Furthermore, some participants recognized opportunities for generating income or pursuing new career paths through AI painting (P1, P7, P9, P12). Some were concerned about job displacement and used it to improve competition, some still sought opportunities to generate income or new jobs to monetize their AI painting skills. Moreover, a few participants had already earned money through participating in competitions or other

commercial ventures, using AI painting as a lucrative side gig.

Social interaction

82.4% (n = 14) of respondents engaged with AI painting for social interaction, including sharing and communication, altruism, social recognition, followership or imitation, and collaboration. Participants interacted with various individuals, such as friends, family, co-workers, old acquaintances, and new friends. For instance, some participants were introduced to AI painting through friends' recommendations (P4, P6, P7), or simply through following others (P14).

Additionally, some participants posted their AI-generated artwork on social media for various reasons such as record-keeping and updating (P15), promoting related communities (P9), or increasing their online following (P4, P7). These participants derived a sense of social recognition and happiness from this sharing behaviour. As P7 expressed:

> I've noticed that a lot of people really enjoy my posts—they give them likes, and even save some pictures. That's made me even more interested and passionate about what I do. Knowing I have an audience is a huge motivation for me.

For some participants, AI-generated artwork serves as a communicative utility, providing them with topics to discuss with others (P11, P12). Additionally, they use it to help others generate the images they need (P5, P9, P12, P17). As P12 explained:

> I joined a group because of work, connecting with people from other industries. Later, I realized that AI painting could be useful for their work, so I told them about it. Now, this is much more convenient for them.

Some participants collaborate with others to create AI-generated artwork through online communication, chat room interactions, or sequential contributions (P4, P6, P9, P12, P15, P17). For example:

> I team up with my friend to brainstorm and come up with ideas. We create a channel on Midjourney, where we work together and share our ideas. We hook up the microphone, and once one of us generates an image, the other person remixes it (P6).

Challenges

Despite the allure of convenience and usability in AI painting, participants encountered several challenges and obstacles during their engagement. To provide a detailed overview, Table 3 presents these challenges along with accompanying example quotations and their frequency.

Challenge	Example Quotation	Count
Image Quality and Effects		
Structural flaws/errors	'The result of that painting they generated wasn't really great, like the fingers, the hands, you see in some of my earlier images they're all different sizes because I tried to depict this person, but they might end up with two heads, one on top and one on the bottom, and maybe even six fingers, six thumbs' (P12).	11
Superficiality/ rigidity of output	'AI tends to express things directly without capturing the nuanced details. For instance, when portraying a girl, the artist might focus on conveying a tender and affectionate expression through the eyes. However, AI would simply depict the emotion in a more rigid manner, like a forgery' (P1).	11
Homogeneity	'When you observe these images, you'll notice that they are all pretty much the same. These images might depict a similar action, pose, or scene, with only subtle variations, such as facial features or minor adjustments to other elements. Even though I may generate over 80 images, I ultimately have to select just one' (P13).	10

Challenge	Example Quotation	Count
Inaccurate/mismatched output	'I input a prompt for a Greek sculpture with a cyberpunk twist. However, the generated result portrayed a wooden sculpture entangled with wires. It was not what I had envisioned' (P6).	10
Difficulty in modification	'If you have to make a lot of changes to the image, it can be really painful, especially without layers' (P5).	9
Inconsistent/unstable output	'It would be great if AI could generate multiple images to depict a story. It should have a unified style, although the scenes might differ. However, at present, it is difficult to maintain consistency throughout a series of images' (P4).	8
Technological and System Obstacles		
System stability issues	'I press generate, and it's like, nothing. Sometimes, it won't even let me save what I need. One moment everything's peachy, and the next, the system's on the fritz. It's like trying to draw with a pen in one hand and a jackhammer in the other' (P5).	7
Inefficiency in image generation	'Sometimes, generating the image takes longer than writing the prompt, which feels a bit counterproductive. I feel that's a bit too long' (P17).	7
Language barriers	'The compatibility with the Chinese language is rather lacking. To find more precise terms, I often need to search them up. Having an option that is more user-friendly for Chinese users would be beneficial' (P7).	7
Complex configurations and operation	'I often come across difficulties when it comes to installing various unfamiliar software. It can be quite a task to make sure everything is properly configured on my computer, especially when I need to accommodate existing projects' (P5).	5
Payment costs	'They used to be free, but now they've all gone paid, and I only get 20 free tries a day, so I just mess around with it from time to time' (P4).	4
User-related Constraints		
Difficulty in articulating prompts	'I found the most challenging part was accurately describing what I wanted to paint, and then tweaking the parameters accordingly. It was really tough to describe my envisioned character in a way AI could understand and interpret correctly' (P16).	13
Limited computing resources	'I haven't had a chance to use the Control Net plugin yet because my computer's graphics card isn't up to par. Besides, I'm using a rented server online, which makes installing plugins quite inconvenient' (P9).	11
Hard to be tech-savvy	'AI painting is still quite complex, and if you want to have control over the painting's effects, you'll need to learn some things. This learning process can be quite challenging' (P12).	7
Lack of technological skills	'There's another platform called Novel AI. It seems to be more specialized, but I haven't delved into it. When I tried to use it, I found it to be quite complex and a bit difficult' (P4).	4
Inadequate aesthetic knowledge	'I have to pick up something new, like the painting style of different artists. For instance, one month ago, I only knew that if I typed *Monet*, it would generate something that looked pretty good. But what about other artists?' (P12)	4

Table 3. Challenges faced by laypeople when engaging with AI painting

Many participants reported encountering structural flaws or errors in AI-generated paintings (64.7%, n = 11). These issues were especially noticeable in facial features, limbs, and finer details. A similar percentage (64.7%, n = 11) noted a sense of superficiality or rigidity in the output. They described AI-generated art as lacking depth and artistic expression, often missing emotional resonance and cultural nuances, making it feel superficial and rigid. Homogeneity was another challenge for 58.9% (n = 10), marked by a noticeable lack of diversity in facial expressions, poses, materials, and styles. Inaccuracies and mismatches between prompts and outputs were reported by 58.8% (n = 10). Participants frequently encountered discrepancies between their input prompts and the AI-generated images, leading to frustration. Difficulties with modifying AI-generated art, experienced by 52.9% (n = 9), were often attributed to the lack of editable layers. While some users turned to plugins for better modification precision, the process remained challenging for many. Inconsistency and instability in outputs, problematic for 47% (n = 8), made expressing specific artistic concepts and maintaining visual continuity difficult.

Technological and system-related challenges were also significant. In terms of system stability, 41.2% of participants (n = 7) encountered issues such as system crashes or sluggish responses. Efficiency was another problem, with the same percentage of users (41.2%, n = 7) finding the image generation process time-consuming, especially when dealing with a large number of pictures. Language barriers, affecting 41.2% of participants (n = 7), were apparent in the system's English interface, the need for English expression in prompts, or inaccuracies in prompt translations. Complex configurations posed difficulties for 29.4% of users (n = 5), impacting their overall experience. Furthermore, high fees led to 23.5% of participants (n = 4) discontinuing the use of certain AI tools.

Most participants attributed these challenges to the immaturity of AI technology, with some also acknowledging their personal constraints. A majority (76.5%, n = 13) faced difficulties in articulating prompts, whether due to uncertainty about their needs or challenges in precisely expressing their ideas in AI painting prompts. Insufficient computing capabilities, affecting software installation and image processing, were problematic for 64.7% (n = 11). Additionally, achieving proficiency in AI painting proved challenging for some (41.2%, n = 7), due to both the complexity of the technology and their own learning curve. Insufficient technological skills or literacy, reported by 64.7% (n=11), hindered their ability to effectively use the software, wait for image generation, and modify images. A smaller group (23.5%, n = 4) recognized that their limited artistic and aesthetic knowledge also impacted their creative information practice.

Discussion and Implications
Major findings
This study investigated laypeople's creative information practices in AI painting, unveiling several key findings. Regarding research question 1, the study demonstrated that engagement with AI painting represents a practice-oriented information practice, characterized by distinct social and contextual features (Lloyd, 2010a; Savolainen, 2007, 2008). Creation emerged as the core of this information practice, as a practical, contextual, and potentially iterative process. In this new paradigm, the user initiates the process with a prompt, and the AI responds by generating an initial outcome. The user then continues to modify and refine this output by inputting additional prompts, with the AI providing rapid feedback, fostering a dynamic and interactive information practice (Qiao et al., 2022).

Additionally, participants were not isolated in these practices; from the outset of their information seeking, including sourcing prompt materials, exemplary creations of others, and tutorials, they were deeply connected to and influenced by the context and society. Participants' engagement with AI painting went beyond mere individual creation with the aid of AI; it extended into active collaboration and connection with others. Participants are actively involved in a dynamic information practice. They were not merely passive recipients of information but were actively

shaping their information environment. This creative practice fostered a dynamic relationship between humans and AI, with mutual influence and learning that enhances users' information literacy, aesthetic knowledge.

Regarding research question 2, laypeople engage with AI painting for multiple motivations, including emotional needs such as entertainment, aesthetics, surprise, and curiosity, as well as personal utilitarian needs such as self-expression and customization. Furthermore, participants highlighted their engagement in social interaction through sharing and communication, revealing the multifaceted nature of their motivations (Zhang et al., 2023). The study also addresses research question 3. In addition to the challenges arising from the system and technology itself, human characteristics and limitations, such as individual expressive capabilities and personal artistic literacy, were identified, reflecting users' self-attribution (Daniel et al., 1997).

Theoretical implications

This research contributes to the literature by providing valuable insights into laypeople's engagement with creative information practices. In this context, prompts are viewed as information, and the generated results are considered creative outputs. This perspective differs from traditional views where documents are seen as forms of information and documentation as types of creation (Buckland, 1997; Lund, 2004). Additionally, this research addresses the gap between research and practice, highlighting that empirical information behaviour research has had limited utility in practical applications (Zhao et al., 2021). Moreover, this form of creative information practice empowers laypeople to engage in creative activities that were previously out of their reach. Such a shift indicates a move beyond the traditional dichotomy between professional and leisure activities (McKenzie, 2020), opening new avenues for creative expression and information practice.

The motivations of laypeople engaging in AI painting align with the use and gratification theory, which posits that individuals use media to fulfil various needs, including entertainment, information, instrumental, and social purposes (Katz et al., 1973; Nambisan and Baron, 2007). Additionally, participants' enjoyment of the novelty and unpredictability of AI-generated art fostered engagement and even addiction, challenging prior concerns about non-deterministic AI outputs. This is consistent with previous studies on people's love for randomness and uncertainty in games (Yin and Xiao, 2022), gambling (van Horen and Millet, 2022), and love (Bonnaire et al., 2022). In this process, laypeople acquire gratification, which engenders enjoyment with a flow state (Katz et al., 1973; Sherry, 2004). This flow is derived from the gratification of exploration and aesthetics, which further raises users' engagement with AI painting.

In contrast to the algorithm aversion highlighted in previous research (Dietvorst et al., 2015; Velkova and Kaun, 2021), this study unveils a notable trend of algorithm appreciation (Logg et al., 2019), particularly in the context of generative AI used for creative tasks. Most participants, when faced with specialized tasks like painting, may have clear intentions but lack the necessary skills or knowledge to execute them effectively, leading to an intention-action gap (Kuo and Young, 2008). Seeking assistance from human experts can be costly and inconvenient, often due to factors like time constraints. In contrast, the greater accessibility and cost-effectiveness of algorithms likely contribute to users' appreciation of them in creative tasks, which differs from existing research on artists and experts (Biermann et al., 2022).

Practical implications

Our research reveals novel creative information practice between humans and AI, shedding light on existing challenges for both AI developers, users and stakeholders. Firstly, the rise of AI in creative domains necessitates the art industry to reconsider traditional roles. Art institutions and educators should facilitate discussions about the nature of creativity and the role of AI, potentially integrating AI into curricula to prepare artists for the evolving landscape.

Secondly, although AI painting provides users with a novel and enjoyable experience, there are still intense but inconclusive problems that need to be addressed, particularly in technological aspects (Arriagada, 2020; Hertzmann, 2020; Mazzone and Elgammal, 2019). These challenges include technological, ethical, and societal spheres, highlighting concerns such as copyright infringement, the potential for creating misleading content, and the effects on traditional art and artist communities. Therefore, it is necessary for AI developers and companies to adopt a more proactive approach in confronting these issues, especially from a design science perspective. Prioritizing transparency in AI processes and outcomes is crucial to sustain public trust and support.

Lastly, it's crucial to understand AI's potential and its limitations to prevent any detrimental effects it might have on the perception of art and creativity. Policymakers are thus urged to delineate clear regulations governing AI-generated content, addressing intellectual property, usage rights, and ethical guidelines in AI art production. A balance must be struck, fostering innovation while safeguarding the rights of human artists and cultural norms. Additionally, collaboration with artists and ethicists is vital to ensure that AI tools are augmenting rather than replacing human creativity.

Limitations and future work

One limitation of this study is the gender imbalance among the participants. While this imbalance might reflect real-world demographics currently prevalent in the field, it is essential for future research, as AI technology evolves, to aim for larger and more diverse samples. Including a broader range of participants, not just in terms of gender but also from various backgrounds, would enable a more comprehensive analysis and understanding of the impact and reception of AI in painting technology. Furthermore, a deeper exploration into the emotional dynamics of online environments related to AI art could yield significant insights, enriching our understanding of the broader social and psychological implications of AI in creative domains.

Conclusion

This study provides empirical insights into laypeople's engagement with AI painting as a creative information practice. Our findings reveal that AI painting provides an engaging and entertaining information practice for laypeople. They engage with AI painting driven by both intrinsic and extrinsic motivations, such as self-expression, seeking entertainment, and socializing. While there are challenges that warrant further exploration and resolution, the potential of generative AI in this context is evident. Overall, this study underscores the capacity of generative AI to democratize art creation and expand the scope of creative information practice, contributing to the existing body of information science research.

Acknowledgements

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