

Title	The role of conceptual metaphors in generative AI : a design approach for local communities in suburban Tokyo
Sub Title	
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Publisher	慶應義塾大学大学院メディアデザイン研究科
Publication year	2024
Jtitle	
JaLC DOI	
Abstract	
Notes	修士学位論文. 2024年度メディアデザイン学 第1135号
Genre	Thesis or Dissertation
URL	https://koara.lib.keio.ac.jp/xoonips/modules/xoonips/detail.php?koara_id=KO40001001-00002024-1135

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Master's Thesis
Academic Year 2024

The Role of Conceptual Metaphors in Generative
AI: A Design Approach for Local Communities in
Suburban Tokyo



Keio University
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A Master's Thesis
submitted to Keio University Graduate School of Media Design
in partial fulfillment of the requirements for the degree of
Master of Media Design

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Abstract of Master's Thesis of Academic Year 2024

The Role of Conceptual Metaphors in Generative AI: A Design Approach for Local Communities in Suburban Tokyo

Category: Design

Summary

This thesis explores the design challenge of enhancing the sense of emotional resonance and cultural relevance in AI-assisted image creation through the lens of conceptual metaphors for different stakeholders in suburban Tokyo. The research investigates how conceptual metaphors can be applied in prompt engineering to make AI-augmented designs more intuitive, relatable, and meaningful for the users. By creating prompts with metaphors that resonate with participants' experiences and cultural values, the study aims to inspire deeper engagement and emotional connection through the usage of metaphorical thinking and domain mapping, which are common concepts of cognitive linguistics, combined with Generative AI imagery.

This study adopts a user-centered approach, conducting participatory workshops and experience sessions to test metaphor-based prompt designs and workshop setups. Workshop flow is optimized through diary studies, collaborative sessions, and culturally familiar metaphors to enhance accessibility and enjoyment. Data is collected through observation, surveys, and interviews to evaluate the effectiveness of metaphorical prompts in fostering cultural relevance, and promoting emotional resonance. Finally, a series of icons representing the local regions and a generative AI guidebook are designed for the local Social Welfare Council as a final design outcome, further emphasizing the importance and practicality of the AI-assisted design.

The findings aim to provide insights into how metaphorical thinking can bridge the gap between traditional cultural practices and modern Generative AI technology, creating a harmonious blend of the familiar and the innovative. This thesis contributes to the growing field of design research by demonstrating the potential of conceptual metaphors to transform technologically mediated cultural symbols, laying the groundwork for future studies on sustaining social participation, evoking sense of community and representation, and enhancing emotional engagement through metaphor-driven design strategies.

Keywords:

service design, design thinking, metaphorical thinking, local community, generative AI

Keio University Graduate School of Media Design

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Acknowledgements

To begin with, I would like to express my heartfelt gratitude to my main supervisor, Professor Chihiro Sato, who guided and supported me throughout my journey at Keio Media Design and also throughout my CEMS exchange semester. I would also like to express my heartfelt gratitude to my sub-supervisors, Senior Assistant Professor Giulia Barbareschi and Professor Dunya Donna Chen, for their invaluable guidance and support throughout my journey. Your insights and encouragement have been instrumental in shaping my research and personal growth.

I am deeply thankful to all the elderly residents in Yonamoto Danchi, especially the members at Hokkori-kai for their warm support, namely Ms. Taeko Haishi, both in my research and life during this journey. Your kindness and participation have been a source of inspiration and strength.

My heartfelt thanks go to the Manager of the Regional Development Division Mr. Yoichi Arai, Managing Director Mrs. Wako Murata, and all the staff members at the Yachiyo Social Welfare Council for their assistance and unwavering support in facilitating my research. Your cooperation has been essential in making my idea a reality.

I would also like to express my appreciation to Ms. Keiko Kamijo, the teacher at the Etegami Fusen group at the Social, and all of the participants in the Etegami classroom for their guidance and generous help in my research and in my life. Your expertise and encouragement have added invaluable depth to my research.

Furthermore, I am immensely grateful to all the individuals who have supported me in various ways throughout this journey, especially the members of the ITOMA real project family. Your contributions, whether big or small, have made a lasting impact, and I will always cherish them.

Finally, I will express my deepest gratitude to my family, who supported me endlessly in various ways throughout my life.

Chapter 1

Introduction

1.1. Research Background

Conceptual metaphor theory, introduced by Lakoff and Johnson in their book *Metaphors We Live By* (1980), suggests that metaphors are not just merely linguistic expressions, but are fundamental to human thought and understanding. In this book, Lakoff and Johnson stated that by mapping abstract domains onto more concrete or familiar ones, conceptual metaphors allow individuals to comprehend complex or unfamiliar ideas through relatable experiences. This cognitive mechanism also explains the mechanism of how people make sense of the world, and its influence extends beyond the single concept of linguistics, to other domains like creativity, problem-solving, and even visual art and design.

In the context of an aging society, conceptual metaphors also hold great potential as a tool for stimulating self-reflection, creativity, and even social engagement, particularly when integrated with therapeutic methods like reminiscent therapy or share-and-talk sessions. In recent years, the development of AI image generation has also opened new possibilities for creative practices and therapeutic interventions, proposing new challenges for utilizing conceptual metaphors in the prompt engineering process. AI models such as DALL-E and MidJourney can generate images based on textual prompts, enabling users to visualize abstract concepts or even personal memories in an artistic way. While Generative AI is often seen as a complex and inaccessible tool for older adults, also partially proved by the statistics of Midjourney, which shows only 3.51% of Generative AI art users are above the age of 65¹, it has the possibility to change through the methods

1 Data extracted from Midjourney Statistics by OpenAI Journey in 2024. <https://openaijourney.com/midjourney-statistics/>Last Accessed 28 January 2025

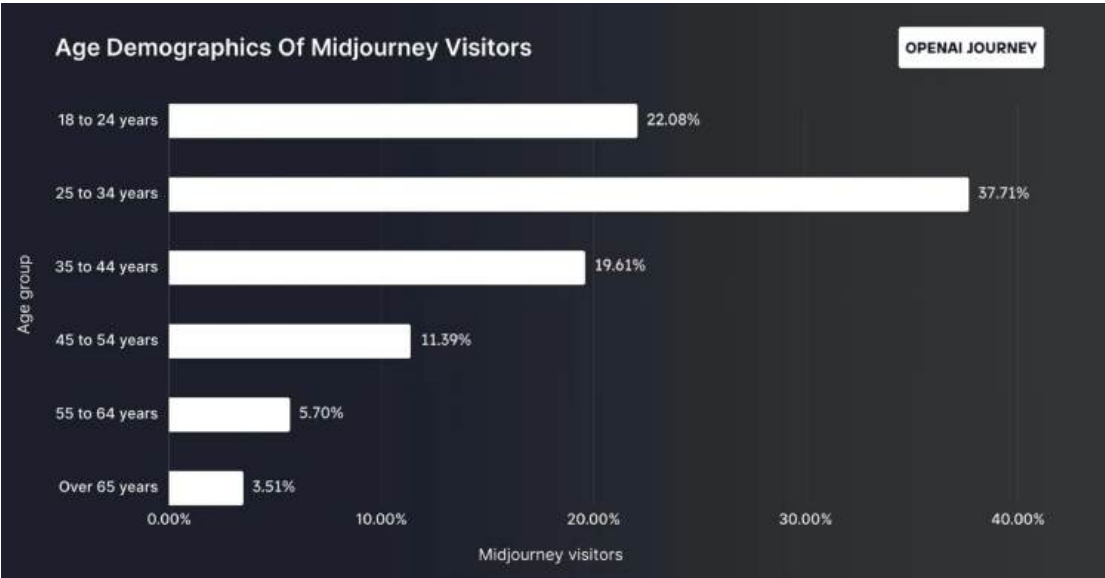


Figure 1.1 Age Demographics of Midjourney Users, 2024

of metaphorical thinking, transforming it into a creative medium that has more cultural relatedness and emotional engagement. Metaphors can act as cognitive bridges, making the interaction with AI tools more approachable and meaningful.

Focusing on the setting of the research, Japan’s aging problem shows the need and the possibilities for innovative approaches to enhance cognitive function, social connection, and emotional well-being among older adults. Traditional practices such as reminiscence therapy have demonstrated the therapeutic value of engaging older individuals in activities that evoke memories and foster reflection. Similarly, AI-generated images, utilizing conceptual metaphors, may further evoke deep reflection, facilitating meaning-making processes that contribute to psychological coherence and resilience. However, according to the data published by the Ministry of Internal Affairs and Communications of Japan², in 2024, only 9.1 percent of Japanese individuals had experience using AI tools. This was a large gap compared to China, the United States, the UK, and Germany. The most common reason for not using the service was ”I don’t know how to use it,” at

2 Source: Nihon Keizai Shimbun. <https://www.nikkei.com/article/DGXZQOUA036VW0T00C24A7000000/> Last Accessed 28 January 2025

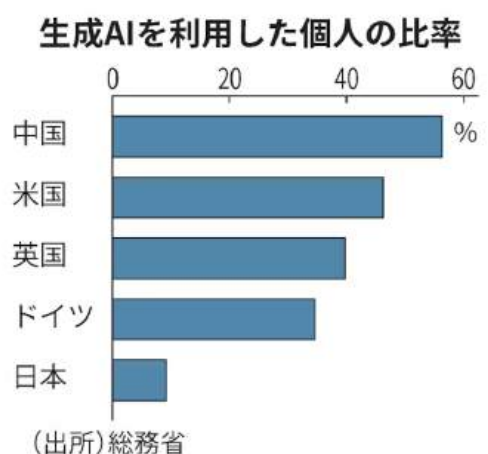


Figure 1.2 The ratio of Generative AI utilization, 2024

over 40%. "It's not necessary for my life," also accounted for nearly 40 percent, with Japan showing the highest rate of such reasons compared to other countries. Specifically, the emphasis on Japanese culture in the prompt-making process provides new challenges, since most of the Generative AI models are mainly based on the English language, and generally lack the understanding of Japanese cultural elements.

3

Building on these ideas, this research proposes integrating the basics of utilizing conceptual metaphors with the prompt engineering process of AI image generation to design culturally and personally related images for various stakeholders within the research field. The aim is to assess how metaphorical prompts can inspire engagement, foster creativity, and encourage meaningful reflection. The resulting images are expected to offer users new ways of articulating and sharing their narratives, fostering a sense of identity and connection with others.

3 Source: Nihon Keizai Shimbun. <https://www.nikkei.com/article/DGXZQ0UA036VW0T00C24A7000000/> Last Accessed 28 January 2025

1.2. Research Setting

1.2.1 Yonamoto Housing Complex

This study is mainly focused on the Yonamoto Danchi (Housing Complex), located in Yachiyo, a city in the northwest of Chiba Prefecture, Japan. It is a residential development established in the 1970s that consists of 160 buildings and around 3000 units, which is one of the biggest housing complex projects around the nation⁴.

1.2.2 Hokkori Yonamoto and its activities

Hokkori Yonamoto is a volunteer group, mainly organized by the local residents, to plan events and activities within the Yonamoto housing complex. It is under the management of Yachiyo Social Welfare Council⁵. It provides a place where residents can easily participate and seek advice in their local area. Through participation and interaction with a wide range of residents, including but not limited to children, parents, people with disabilities, the elderly, and those living in poverty, it identifies issues in local life and builds a system of mutual support in which residents take the lead in working to solve these issues. Specifically, the volunteer group has been organizing a community coffee shop named Hokkori Cafe since 2021, which is held weekly and provides a space for communication and interaction among the customers and the volunteers. Furthermore, they also organize a weekly health and fitness program called Nobi-Nobi Salon, providing a place for participants to exercise, communicate, and maintain their physical and mental well-being.

4 UR Housing Company Official Website. <https://www.ur-net.go.jp/aboutus/publication/web-urpress63/special2.html> Last Accessed 28 January 2025

5 Yachiyo Social Welfare Council Official Website. https://www.yachiyosyakyo.jp/05_shakyo.php Accessed 28 January 2025



Figure 1.3 Hokkori Cafe, opened in November 2021

1.2.3 Yachiyo Social Welfare Council and its activities

The Yachiyo Social Welfare Council is a social welfare organization that serves the entire city of Yachiyo. It primarily operates through subsidies and consignment fees from the city and carries out various projects. As part of Japan's social welfare system, the council aims to revitalize the local community by raising awareness of social welfare and providing opportunities and spaces that everyone can participate in. Every month, the council hosts the "Welfare Center Festival" on its premises, offering a variety of programs and activities.⁶

⁶ Source: Yachiyo Social Welfare Council official website, <https://www.yachiyosyakyo.jp/>
Last Accessed 31 January 2025



Figure 1.4 Homepage of Yachiyo Social Welfare Council

1.3. The recent development of Generative AI art

Recent research trends indicate that AI-generated imagery can facilitate new insights and ideas, it represents a new medium with distinct capabilities, serving as a complement to traditional visual art rather than a threat. This tool has gained significant acceptance among artists, who are increasingly leveraging Generative AI for a variety of creative purposes, enhancing their artistic processes and expanding the boundaries of what can be achieved in visual art. To facilitate this creation process, various Generative AI tools assist artists by enabling them to express vague defined artistic intentions and explore new creative possibilities. These tools support artists in iterating on their ideas easily and expressively, allowing for quick refinements and enhancements throughout the creative process. Research in this field provides guidelines for designing interactions that enhance user expression, suggesting innovative methods for users to leverage AI technologies in their creative work.

Building on previous research conducted by other researchers in the field of Visual Art and AI images, this research attempts to evaluate the effectiveness of introducing Conceptual Metaphors into AI-generated images for local stakeholders, by exploring how to make the generated content more relatable and emotionally engaging.

1.4. Research Objectives

To address these challenges, this research proposes a more structured, intuitive service framework for integrating AI-generated images into various stakeholders in the city of Yachiyo. By mapping the conceptual and target domains of the AI prompts and the generated images, it explores the possibility of creating AI-generated content with more relatedness and emotional resonance. Furthermore, this study aims to reduce the cultural and emotional barrier when creating AI content, making the usage of AI tools more relatable and accessible for Japanese people. Through iterative workshops and feedback collection, the project will continue refining the framework to ensure it promotes regular social interaction and emotional connection. Ultimately, the research seeks to explore how Generative AI content can support and enhance existing community practices, providing more insights and possibilities in the future.

1.5. Research Question

To start this research, the following research questions have been raised, aiming to explore the effectiveness of conceptual metaphors in AI image generation:

- How can the methods of metaphorical thinking be applied in the prompt engineering process of AI image generation, to enhance the viewer's emotional resonance and sense of relatedness in local communities?

1.6. Thesis Structure

The thesis is structured into five main chapters.

Chapter 1: Introduction - This chapter introduces the foundational concepts of conceptual metaphor theory and AI image generation, exploring their potential to enhance creative engagement and reflection among older adults. It provides a background overview of the challenges faced by Japan's aging population, such as social isolation and cognitive decline, and positions this research as an innovative response to these issues. By integrating metaphorical thinking with AI tools, the

study aims to design a framework that fosters creativity, meaning-making, and connection through culturally and cognitively accessible activities.

Chapter 2: Literature Review - The literature review examines the theoretical foundations of conceptual metaphor theory, highlighting its role in understanding abstract concepts through familiar experiences. It explores the current capabilities of AI image-generation tools and their applications in creative and reflective practices. Additionally, the chapter reviews existing therapeutic approaches, such as reminiscence therapy, and discusses the gaps in leveraging technology to promote meaningful engagement through AI image generation. This sets the stage for the study's contribution to bridging traditional and modern methods.

Chapter 3: Design - This chapter outlines the development of the metaphor-based prompts and workshop structure tailored for various stakeholders located in the research field. It describes the iterative process of creating culturally relevant, accessible, and engaging activities that integrate conceptual metaphors with AI-generated imagery. Key elements include designing intuitive workshops for participants, providing hands-on guidance with AI tools, and incorporating reflective discussions to deepen meaning-making. The design process is guided by feedback from the two pilot workshops and the testing sessions, ensuring user-centered and adaptive solutions.

Chapter 4: Evaluation - The evaluation chapter details the final design and the methods used to assess the effectiveness of the proposed framework. It focuses on the level of cultural relevance, and emotional resonance through observations and analysis of the impressions about the generated outputs. Findings from participant engagement and feedback from the subsequent interviews are analyzed through the phenomenal method to identify the strengths, weaknesses, and areas for improvement in the prompts design and workshop flow. This chapter also discusses the challenges encountered during implementation and their implications for future refinements.

Chapter 5: Conclusion - The concluding chapter synthesizes the study's findings, emphasizing the value of integrating conceptual metaphor and AI technology in creative engagements for older adults. It reflects on the contributions to both theoretical understanding and practical applications, highlighting the poten-

tial of this approach to address social and cognitive needs in aging populations. The chapter also concludes with several limitations that appeared throughout the research process and recommendations for future research, including long-term studies on well-being impacts and the broader applicability of metaphor-driven AI tools in other usage contexts.

Chapter 2

Related Works

2.1. Introduction

This chapter is intended to systematically sort out the theoretical basis and recent research related to conceptual metaphor and metaphorical thinking, with a focus on analyzing its multiple applications in the fields of visual arts, design practices, and generative AI. By exploring the relationships among these domains, this chapter offers a theoretical framework for subsequent studies and pinpoints potential research gaps and innovative points.

Firstly, this chapter highlighted the fundamentals of the conceptual metaphor theory, taking the classic work of Lakoff and Johnson as the core, and dissecting how conceptual metaphor functions as a cognitive tool to convert abstract concepts into concrete and comprehensible forms. This section not only examines the crucial role of metaphor in daily language and thought but also analyzes its crucial significance in enhancing cognitive structures and information dissemination. Afterward, this chapter shifts its focus to the specific application of metaphorical thinking in design practices, analyzing how it can be constructed as an effective means of creative generation and problem-solving through cross-domain correlations. This part particularly emphasizes metaphor as a bridge that integrates complex concepts or technologies with users' cognitive models, thereby enhancing the innovative-ness and functionality of the design. On this basis, the chapter delves deeply into the combination of metaphorical thinking and generative AI technology, clarifying its potential in AI prompt engineering, especially its significance in enhancing the human-computer interaction experience and the creativity of generated content.

Subsequently, the chapter proceeds to explore the application of metaphorical thinking and domain mapping in visual art creation, highlighting its dis-

tinctive value in stimulating reflection and evoking emotional resonance through metaphorical associations. Moreover, elaborates in detail on the definitions and related research of conceptual frameworks and domain mapping, discusses the wide applicability of domain mapping as a cognitive tool in interdisciplinary practices, and introduces how conceptual combination, as a form of cognitive process, assists in understanding the complex and abstract systemic significance. Through the review of relevant literature, this chapter not only combs through the theoretical and application achievements of existing research but also analyzes the deficiencies of current research in terms of scope and depth, such as the relative scarcity of empirical studies on the combination of metaphor and technology and the insufficient attention to user feedback in specific application scenarios.

Finally, this chapter delineates and highlights the potential contributions of the current research. Through the integration of metaphorical thinking, generative AI technology, and domain mapping method, this study aims to fill the gap between existing theories and applications, provide new methodological support for Generative AI and design thinking, and simultaneously propose a new perspective for understanding the emotional and cognitive experiences in the human-computer interaction process. The structured review in this chapter lays a solid foundation for the research design and methodology in the subsequent chapters and also establishes a theoretical framework for exploring innovative applications in the intersection of metaphor and technology.

2.2. Conceptual Metaphors

2.2.1 Definition

As George Lakoff and Mark Johnson stated in their book *Metaphors We Live By*, metaphor is a cognitive tool that enables people to comprehend more abstract concepts, such as work, time, emotions, and mental activities, through direct physical and social experiences [1]. Thus, metaphorical thinking usually explains a concept by means of analogy or symbolic association, relating it to another concept. Conceptual metaphors structure a huge amount of our mental lives, shape the way we think and experience the world, and can make abstract or

unfamiliar ideas more concrete and comprehensible [2].



Figure 2.1 Metaphors We Live By, by George Lakoff and Mark Johnson

2.2.2 The Role of Conceptual Metaphor in Visual Arts

Conceptual metaphors have always occupied an important position in traditional visual arts, especially in abstract art, where audiences often interact with the metaphorical structures of the work through their subconscious. Such metaphors are frequently utilized to convey meaning and evoke reflection, challenging traditional modes of perception. For example, in Hedblom’s 2017 study, the abstract painting ”Beneath the Paint” demonstrates how conflicting metaphors can create cognitive tension [3]. This approach forces audiences to confront their existing cognitive frameworks and interpret the artwork through subjective metaphorical understanding. These principles also apply to AI-generated art, where abstract or ambiguous outputs may prompt audiences to endow the work with meaning based on their metaphorical thinking. The artistic technique of ”violating conceptual metaphors” can guide audiences in abstract art to subconsciously choose the primary cognitive framework, thereby enhancing the expressive effect of the work.

2.2.3 The Cognitive, Social, and Individual Dimensions of Visual Metaphors

As Serig (2006) pointed out, the creation of visual metaphors is not only an artistic act but also involves the integration of cognitive, social, and individual domains [4]. This process generates conceptual structures that are in line with the cognitive perspective of metaphorical thinking. For instance, Poppi and Kravanja’s (2019) historical analysis reveals that the metaphor *life is a journey* has maintained a consistent expression across different art styles and historical periods [5]. This discovery indicates that some conceptual metaphors are universal and can adapt to different contexts. This framework is of great significance in understanding the role of metaphor in AI art creation, especially in preserving meaning and symbolic continuity while transforming metaphors into visual expressions through computational processes.

2.2.4 Computational Recognition of Visual Metaphors

The application of computational systems in recognizing and creating visual metaphors further illustrates the intersection of cognitive theory and artificial intelligence. According to a study conducted by Brigham Young University in 2012, computational algorithms (such as neural networks and image recognition models) can summarize visual features or styles into semantic relationships that humans can understand [6]. By associating specific visual elements with descriptive adjectives or symbolic concepts, these systems are capable of generating images that conform to human metaphorical structures. For example, a neural network may generate an image that visually represents the metaphor “time is money” by fusing elements such as a clock, banknotes, or currency marks (as shown in Figure 2.2). This computational perspective is closely related to this study, which aims to explore methods of prompt engineering through the utilization of visual metaphors. By employing metaphorical structures, the researcher can design prompts to guide AI models in generating visually coherent and emotionally engaging images. This approach not only enhances the artistic quality of generated images but also strengthens the interaction between human creativity and artificial intelligence.



Figure 2.2 The image "time is money" generated with Midjourney AI model

In the context of generative AI image creation, conceptual metaphors also play a crucial role. For example, the process of using large AI language models (e.g. Midjourney, Dall-E, etc.) to generate images from natural language input can be metaphorically perceived as "words as pens" or "language as paintbrushes". This metaphor reveals the fundamental role of natural language processing in shaping the output of AI images, where text prompts become a medium for artistic expression. Moreover, the design process of AI prompts itself involves metaphorical thinking, especially in multilingual environments. For example, when designing AI prompts for Japanese participants, researchers often need to translate Japanese into English while explaining certain terms and concepts that are difficult for AI models to understand. This translation and explanation process requires domain mapping, which maps one conceptual framework (such as the Japanese language structure or cultural concepts) to another framework (such as the operational logic of AI models and the structure of the prompts), highlighting the significance of metaphorical thinking in human-AI collaboration.

2.3. Metaphorical Thinking

2.3.1 Definition

Metaphorical thinking, as a cognitive process, ensures a better understanding and resolution of problems by comparing diverse ideas and concepts. It promotes comprehension and creative problem-solving by establishing connections between unfamiliar or abstract concepts and existing knowledge. As Navaneedhan and Kamalanabhan (2018) have indicated, metaphorical thinking enhances information processing and learning through the linkage of different domains of meaning [7]. It provides a framework for the development of cognitive structures, which are essential for organizing information and shaping thought patterns (Kamalanabhan, 2016) [8]. This capacity extends beyond verbal metaphors to encompass visual representation and embodied cognition. For instance, in literary experiences, metaphorical thinking enables readers to simulate and project themselves into the lives of characters, thereby deepening their immersive understanding of the narrative (Rasse & Gibbs, 2021) [9].

In the field of design, metaphorical thinking is regarded as a form of design thinking tool for enhancing creativity and innovation. It gives the designers the capability to generate creative solutions by transferring knowledge from one domain to another, particularly during the early stages of the design process (Casakin, 2007) [10]. For example, metaphorical thinking assists designers in restructuring existing methods and elements, envisioning creative solutions, and viewing design targets from alternative perspectives. Cross (2011) also emphasizes that design thinking frequently relies on metaphorical techniques to explore new possibilities and reevaluate established approaches [11]. This is closely associated with the core objective of problem-solving in creative design processes, which is to achieve innovation by redefining problems.

2.3.2 The Role of Metaphorical Thinking in Design

Visual thinking, as an extension of metaphorical thinking, offers designers an additional cognitive tool for stimulating creativity. McKim (1972) contends that visual approaches challenge stereotypical thinking and foster originality in engi-

neering and design disciplines [12]. Designers from various backgrounds often employ different kinds of metaphors to bridge conceptual gaps, such as using "an information superhighway" to represent the concept of the internet, or "tree" to structure hierarchical data systems. Halskov (1994) presents a guide to metaphorical design that outlines practical strategies for integrating metaphorical thinking into the design workflow [13]. For instance, designers may utilize metaphors to conceptualize new interfaces, design user experiences, or convey complex ideas in a visually intuitive manner.

Metaphorical thinking also acts as a bridge between disciplines, allowing designers to apply principles from unrelated fields to their work. This interdisciplinary approach is particularly evident in product design, where biological metaphors such as "form follows function" are employed to create bio-mimetic designs inspired by natural systems. Similarly, metaphors from architecture, such as "structure as skin," have informed the design of sustainable buildings. These examples illustrate the significant role of metaphorical thinking in generating innovative solutions by integrating diverse perspectives.

2.3.3 The Relevance to Generative AI and Prompt Engineering

In the context of generative AI, metaphorical thinking plays a crucial role in prompt engineering, which is a process that requires the transformation of abstract ideas into operational text inputs for AI models. The design of effective prompts often involves metaphorical reasoning to communicate concepts that AI models can interpret and generate. For example, when creating AI-generated images, metaphors can be utilized to construct prompts that bridge the gap between human creativity and machine interpretation. For example, a designer might formulate a prompt such as "an icon consists of a rocket and stars surrounding it, with minimalist design (as shown in figure 2.3)" to evoke an impression of futuristic and technological advancements.

More importantly, in multilingual and cross-cultural design contexts, metaphorical thinking helps convert culturally specific concepts into universal terms that AI models can process. This is closely related to the focus of this study, which

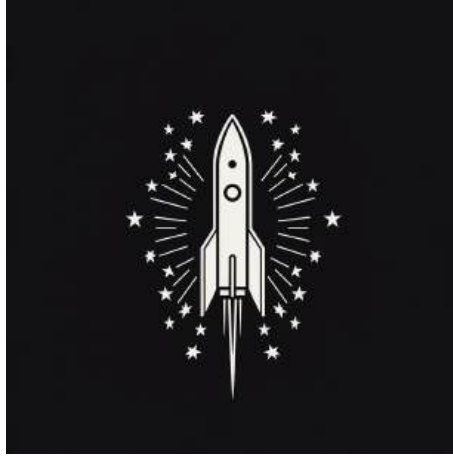


Figure 2.3 the icon generated with Midjourney AI model

is to explore the role of metaphorical thinking and domain mapping in enhancing the emotional resonance and cultural relevance of AI-generated images. By comprehending how the integration of metaphorical reasoning can evoke emotional engagement and interest in the generated images, this study aims to develop a method for integrating metaphorical thinking into the workflow of AI prompt engineering.

Focusing on the findings of recent research, Tian et al. (2024) also proposed the utilization of non-human metaphors and the concept of de-familiarization to enhance creativity in AI prompt design [14]. Non-human metaphors (such as depicting AI systems as ecosystems, weather patterns, or cosmic phenomena) encourage designers to think beyond traditional paradigms. The method of de-familiarization, derived from literary theory, prompts designers to re-examine existing assumptions by presenting familiar concepts in a novel manner. For instance, describing an AI image generator as a "lens" rather than a tool can inspire designers to construct prompts from a broader and more imaginative perspective. This approach is highly congruent with the objectives of this study, emphasizing the potential of metaphorical thinking in expanding the creative potential of AI prompt engineering.

Murray-Rust (2022) investigated how metaphors influence our understanding of AI systems and explored their role in shaping user cognition, expectations, and interactions [15]. For example, describing it as a "collaborative partner" implies

a dynamic and interactive relationship, while framing it as a "neutral tool" emphasizes passivity and objectivity. This study indicates that metaphors are not merely forms of language expression but also cognitive frameworks that impact how users conceptualize and utilize the technology. For this research, this perspective highlights the significance of selecting metaphors not only to facilitate user comprehension but also to encourage meaningful human-computer collaboration. Prystawski et al. (2022) demonstrated how the chain-of-thought prompts (inspired by cognitive psychology) can enhance the understanding of metaphors by large language models [16]. Chain-of-thought prompts guide the algorithm to reason step by step, improving their interpretation accuracy. For instance, when explaining the metaphor "time is money," the language model can be prompted to first identify the relationship between time and value and then generate a more in-depth response. This method accentuates the role of metaphorical thinking in optimizing performance and provides valuable insights into how structured prompts can enhance the interpretation and generation capabilities of AI systems.

Last but not least, Benjamin et al. (2023) adopted the Research-through-Design approach and utilized the metaphor of entoptic phenomena (such as floaters or light spots in the eye) to critically explore the impact of AI on image generation [17]. This metaphor challenges the traditional view of AI as an external and objective creator and positions it as an extension of human perception with its own biases and limitations. The study encourages designers to reflect on how computing systems intervene in the creative process and affect visual outcomes. This critical use of metaphors is consistent with the goals of this study, stimulating reflection through metaphors and deepening the understanding of the role of AI in creative practices.

Collectively, these studies demonstrate that the selection and application of metaphors are of great importance in AI development and human-computer interaction. Metaphors not only influence creativity and comprehension but also offer a perspective for critically examining the ethical and cultural implications of the technology. By integrating metaphorical thinking into the process of prompt design, researchers and practitioners can create systems that are not only functionally effective but also culturally relevant and reflective of human values.

2.4. Domain Mapping

2.4.1 Definition

Domain mapping refers to the cognitive process of establishing correspondences between a source domain, typically familiar or well-understood, and a target domain, often abstract, novel, or less familiar. It is a critical mechanism underlying metaphorical thinking, as it provides the structural framework for transferring meaning between the two domains.

- Source domain: the conceptual domain from which we draw metaphorical expressions (e.g., life is a *journey*).
- Target domain: the conceptual domain that we try to understand (e.g., *life* is a journey).

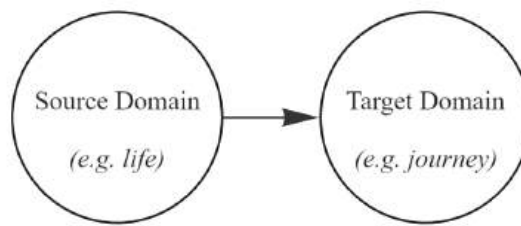


Figure 2.4 Example Diagram of Domain Mapping

As shown in Figure 2.4, the source domain tracks onto and describes aspects of the target domain. Mappings describe the mental organization of information in domains, the underlying phenomenon that drives metaphorical usage in language, and allows individuals to transfer knowledge, structure, and meaning from one domain to another, thereby facilitating comprehension, creativity, and problem-solving. First introduced in cognitive linguistics as part of conceptual metaphor theory (Lakoff & Johnson, 1980) [1], it is a foundational mechanism that underpins how humans use metaphors to conceptualize abstract ideas through tangible experiences. For example, the metaphor "Life is a journey" maps elements of travel—paths, destinations, obstacles—to the abstract concept of life, creating a framework for understanding life's progression and challenges.

In the thesis "Development of Metaphorical Thinking" by Casasanto in 2013 [18], it is claimed that language takes on multiple roles in the advancement of various conceptual domain mappings. Language appears to have a causal effect in the establishment of analogical metaphors (e.g. Lawyers are Sharks), which are processed only through active source-target mappings when they are novel. On the contrary, language might have no part to play in the initial formation of correlational metaphors (e.g. Time is Space), some of which have been identified in pre-linguistic infants and which remain as active source-target mappings in adults even though they are highly conventional and very frequent.

2.4.2 The Role of Domain Mapping in Visual Arts

In visual arts, domain mapping represents data or abstract concepts through familiar images, thereby enhancing the audience's engagement and personalized experience. Tkachev et al. (2022) noted that this approach can create captivating visual works by mapping information to relatable domains [19]. By linking abstract data with recognizable forms, domain mapping facilitates a deeper emotional and intellectual connection between the artworks and the audience.

Visual metaphors play a crucial role in the process of domain mapping and serve as an important means for conveying meaning in artworks. As Parsons (2010) pointed out, visual metaphors allow complex ideas to be presented in a more accessible manner for the audience [20]. Unlike linguistic metaphors, visual metaphors can operate bi-directionally and often coexist in a single image, providing multi-layered interpretive possibilities. These provide new insights for transforming abstract descriptions into visual elements, broadening the application scope of metaphor mapping in visual art.

Another advantage of domain mapping lies in its flexibility. As Tkachev et al. (2022) and Fishwick (2008) have stated the adaptability of metaphor mapping enables it to be customized for different application scenarios and audiences, making it a versatile tool for visual communication [19] [21]. Although this approach might compromise on certain degrees of precision compared to traditional visualization techniques, it offers a unique opportunity to create engaging, meaningful, and personalized representations of data and concepts. This suggests that in contexts where prioritizing engagement and relevance is crucial, domain mapping

holds significant value.

The principles of domain mapping are directly applicable to this study, which aims to employ AI-generated visual works to establish connections with specific audiences and enhance their engagement. By integrating domain mapping methods into the prompt engineering process, this study transforms abstract concepts and cultural elements into visually meaningful outputs that can evoke resonance among users. For instance, mapping visually and culturally symbolic elements into relatable and aesthetically pleasing representations is in line with the goal of promoting emotional engagement and cultural relevance.

Furthermore, the bi-directional nature of visual metaphors provides more opportunities to create multi-layered and interpretable images that can engage the audience in deeper interactions [20]. The flexibility of domain mapping supports the creation of culturally adaptive visual works, enabling this study to meet the needs of diverse audiences while maintaining a focus on personalization and engagement. By leveraging these technologies, this study offers new insights and contributions to how domain mapping can enhance the aesthetics and functionality of visual art in AI-driven applications.

2.5. Emotional Resonance

2.5.1 Definition

As McDonnell (2017) stated, the metaphor of resonance typically denotes the congruence between information and the worldview of the audience [22]. Resonance transpires when cultural objects, ideas, or expressions assist people in addressing practical challenges or constructing meaningful interpretations of their experiences. Within this broad metaphor, emotional resonance is defined as the process of establishing emotional connections with others via shared emotions, expressions, or behaviors. It also refers to the situation where certain experiences or objects hold particular significance or importance for an individual, capable of evoking profound emotional bonds.

Emotional resonance is a rather complex concept that plays a significant role in multiple domains such as social movements, cultural interpretation, and the

appreciation of visual arts. In art, emotional resonance often serves as the mechanism through which a work connects with the audience, accomplished by inviting the audience to reflect, engage emotionally, or even vent their emotions. Emotional resonance is not merely about evoking emotions; it also pertains to creating a sense of relevance and personal meaning, rendering the artistic experience more profound and memorable.

In the context of this research, emotional resonance constitutes a key framework for comprehending how AI-generated visual works can establish connections with users on both personal and cultural levels. By integrating metaphorical thinking and design elements of cultural background into the prompts, this research aims to enhance the emotional resonance of the generated images, making them not only visually attractive but also profoundly meaningful and influential to the target audience. This approach is in alignment with the overall objective of the study, which is to create outcomes that are culturally relevant and emotionally engaging by fusing traditional aesthetics with modern technology.

2.5.2 The Role of Emotional Resonance in Visual Arts

As Else (2015) has noted, emotional resonance can be elicited by visual art through multiple mechanisms [23]. Relevant research has concentrated on exploring how artworks trigger emotional responses and establish profound connections with the audience. Studies have indicated that artistic paintings can evoke more positive emotional responses compared to commercial stimuli, highlighting the unique capacity of visual art to foster emotional connections beyond mere aesthetic judgments.

Recent studies in Visual Arts, utilizing modern technologies have further extended these findings. For instance, Livia & Wolf (2018) have investigated how interactive visual installations synchronized with biometric data can enhance emotional engagement [24]¹. These installations respond dynamically to the physio-

¹ Source: Semantic Scholar, Emotional Resonance: An Interactive Installation Controlled by Biometric Data <https://www.semanticscholar.org/paper/Emotional-Resonance%3A-An-Interactive-Installation-by-Livia-Wolf/ca5a620d4a88561815a90938381440e504db67cc> Last Accessed 31 January 2025

logical state of the audience, creating a deeply immersive experience and enhancing the personal relevance of the work. Similarly, neuro-imaging studies (Cheung et al., 2019) reveal that visual art consistently elicits more positive emotional responses, irrespective of the viewer’s subjective aesthetic evaluation [25]. This suggests that artworks inherently possess the ability to evoke emotional resonance through their content and presentation.



Figure 2.5 Livia & Wolf’s installation, aiming to evoke emotional resonance with the viewers

Dynamic elements in visual arts further intensify emotional engagement. Liu et al. (2023) discovered that integrating motion or change into artworks can significantly enhance the viewer’s excitement and attention, particularly for those images that are already stimulating [26]. Results derived from self-report and physiological indicator measurements demonstrate that dynamic elements can capture and sustain the viewer’s attention, thereby augmenting the emotional impact of the work.

However, the perception and evaluation of visual art involve complex interactions between emotional and cognitive components. Yoshida et al. (1998) proposed a structural equation model to explore the interplay of these components, indicating that emotional resonance is not merely a spontaneous reaction but is also influenced by cognitive interpretation and context [27]. The multi-

dimensional nature of art appreciation provides a comprehensive framework for understanding how visual art interacts with the audience on both emotional and intellectual levels.

These discoveries are closely related to this research, which aims to explore the application of emotional resonance in AI-generated visual content. By integrating metaphorical thinking and domain mapping into prompt engineering, this research endeavors to create AI-generated artworks that can evoke similar levels of emotional engagement. Insights from visual art research, such as the significance of dynamic elements and personalized interactions, offer guidance for the design of these AI-generated visual works, ensuring that they can profoundly resonate with the audience.

Furthermore, understanding the interaction between cognitive and emotional responses provides a theoretical basis for assessing the impact of AI-generated visual works on users. By leveraging these principles, this study seeks to bridge the gap between traditional art appreciation and modern generative AI, creating works that are both emotionally appealing and culturally significant.

2.6. Cultural Relevance

2.6.1 Definition

Cultural relevance pertains to the extent to which a concept, message, product, or practice is in alignment with the cultural norms, values, beliefs, traditions, and experiences of a specific audience or group. It emphasizes the creation of connections that resonate with people’s cultural identities, enabling them to perceive their own experiences, heritage, or perspectives reflected in what is being communicated or represented. In the domain of visual art, cultural relevance refers to the significance and importance of art and expression within the context of a particular culture or community. It highlights how art can mirror, address, and resonate with the group. Understanding cultural relevance is of critical importance when deliberating on the impact and efficacy of visual art, as it shapes the manner in which audiences perceive and establish connections with these works.

2.6.2 The Role of Cultural Relevance in Visual Arts

Cultural relevance in visual art functions as an effective mechanism for nurturing connections, engagement, and comprehension between the artwork and its audience. By mirroring the cultural identities, values, and traditions of a specific community, culturally relevant artworks engender a sense of familiarity and belonging, enabling viewers to perceive their own experiences and heritage being represented. For instance, McCaughan (2007) has stated that the Chicano Art Movement in the United States exemplifies how culturally relevant symbols can fortify community identity and solidarity [28]. This resonance not only augments the emotional impact of the artwork itself but also deepens its cognitive engagement by linking abstract concepts with culturally significant symbols and narratives.

Further research accentuates the cognitive benefits of culturally relevant art. Zaidel (2018) highlights how engagement with art forms enhances cognitive capabilities, such as symbolic thinking and communication, which are pivotal for human culture [29]. Similarly, Lee et al. (2012) have demonstrated how exposure to visual art forms fosters cognitive flexibility and creative thinking, suggesting that culturally relevant art can expand an individual's capacity for innovation and adaptability [30]. Beyond cognition, visual art facilitates social cognitive skills, such as empathy and emotion recognition, which are essential for social cohesion. Moreover, culturally relevant art promotes inclusivity and cross-cultural understanding by validating diverse perspectives and encouraging discourse on shared and unique cultural experiences. It acts as a bridge between different cultural contexts, offering a platform for exploring histories and values while fostering mutual appreciation.

In contemporary practice, artists frequently reinterpret traditional elements through modern aesthetics, ensuring that cultural heritage remains dynamic and accessible. This intersection of cultural relevance and creativity preserves identity while inviting innovative expressions that resonate profoundly with audiences, bridging the past with the present. For fields such as education, media, and therapy, culturally relevant art becomes a tool for building empathy, facilitating learning, and enhancing social cohesion, as emphasized by the dynamic connections explored in "Beyond Beauty" (Bolwerk, 2014) [31]. Collectively, these stud-

ies underline the transformative potential of cultural relevance in visual art, both in personal engagement and broader societal impact.

2.7. Research Gaps

Despite the growing attention devoted to the application of conceptual metaphors, metaphorical thinking, domain mapping, emotional resonance, and cultural relevance in visual arts, several significant research gaps exist, regarding the combination of these cognitive tools with generative AI and prompt engineering. These gaps suggest that substantial efforts are required to further investigate how these approaches can enhance the creativity, emotional resonance, and cultural relevance of AI-generated content.

Firstly, although metaphorical thinking and domain mapping are crucial mechanisms for transforming abstract concepts into operational forms, and have been extensively studied in traditional art and design domains, which provides abundant literature support in cognitive science, their application within the generative AI workflow remains insufficiently explored. Current research mainly concentrates on its theoretical potential, with relatively less attention given to practical implementation. Specifically, there is a lack of systematic studies to validate how these cognitive tools can improve the user engagement of AI-generated content, as AI models often struggle to handle domain mappings, especially in cases involving cultural or contextual nuances. Furthermore, the issue of how to adapt these tools to the specific constraints of AI models, such as technical limitations and prompt design challenges, remains a significant problem.

Secondly, most studies on the research categories mentioned above have adopted a generalized perspective, considering them as universally applicable processes. However, significant variations exist in metaphor interpretation, visual symbols, and emotional triggering mechanisms across different cultural backgrounds, a matter seldom mentioned in research. This oversight limits the applicability of existing studies in multilingual and multicultural contexts, a problem that is urgently in need of resolution for the global application of generative AI, especially in Japan, which has one of the lowest rates of application of generative AI in developed countries around the world. How to design prompts that incorporate culture-specific

metaphors and translate these metaphors into a universal framework understandable by AI models constitutes an as-yet-unexplored challenge. This is also one of the key motives of the research since existing literature typically separates the research focus between traditional art and design contexts and the new field of generative AI. This separation results in the loss of opportunities to establish meaningful connections between the two fields. Currently, research on how to combine traditional principles with the specific requirements of AI remains scarce.

Additionally, emotional resonance and cultural relevance are key factors in captivating audiences in traditional visual arts, but their roles in generative AI have not been thoroughly examined. Currently, there is a lack of standardized metrics for evaluating how AI-generated content evokes emotional responses or establishes personal connections with users. Moreover, although emotional resonance is typically an important objective in traditional art, in the prompt engineering process, the design of prompts capable of stimulating emotional depth and cultural relevance remains an area awaiting exploration.

Last but not least, Although the theoretical framework regarding metaphorical thinking and domain mapping is relatively mature, their practical application in generative AI still presents notable challenges. Research frequently neglects the scalability and sustainability issues in interdisciplinary applications, such as how to implement these methods across different stakeholders or user groups. Discussions on how to train users who are less knowledgeable about these cognitive and technical tools and to effectively integrate these tools into real-life scenarios are scarce. Addressing these practical problems is essential for translating theoretical insights into practical impact.

2.8. Research Contributions

This research focuses on the research gap in integrating the cognitive tools of metaphorical thinking, and domain mapping methods into the workflow of generative AI, particularly in the aspects of culturally adaptive prompt design and creative practices, to evoke a sense of cultural relevance and emotional resonance. It also investigates how these tools can be applied in specific cultural and linguistic contexts to design prompts that resonate with diverse user groups, which

may also enhance the relevance and inclusiveness of generative AI systems on a multicultural scale.

By introducing an innovative strategy by integrating metaphorical thinking and domain mapping methods into prompt engineering, this research also may elevate the interpretive capabilities and creative potential of AI systems. The study proposes prompt design frameworks and evaluation metrics capable of stimulating emotional resonance and a sense of cultural relevance, expanding the metrics of evaluating AI-generated content from the single dimension of technical performance to user experience and cognitive quality.

This research might also contribute to the domain of cognitive health, particularly in exploring means to mitigate the risk of cognitive decline and related disorders (such as dementia). This paper designed and implemented AI-generated brain-training games tailored for elderly residents, which is relevant to recent research that emphasizes supporting the mental well-being of older adults through cognitive engagement and metaphor comprehension. For instance, Ichien et al. (2024) demonstrated that exposure to novel metaphors can enhance the cognitive flexibility and understanding capabilities of older adults, which are intimately associated with maintaining cognitive health [32]. Similarly, Healey et al. (2008) indicated that targeted cognitive activities, especially those that challenge the brain’s capacity to form and understand abstract associations (such as metaphorical thinking), can decelerate age-related cognitive deterioration, such as Alzheimer’s Disease [33]. Although this research does not focus on the benefits in the field of cognitive disease and medical implementation, the results from it may give new insights to researchers in this area.

In conclusion, this research aims to bridge these gaps by exploring the application of these cognitive tools in AI prompt engineering to enhance the emotional resonance and cultural relevance of AI-generated content. Additionally, by integrating insights from traditional art with prompt engineering methods, this research aspires to make theoretical and practical contributions to the construction of more efficient and inclusive generative AI systems.

Chapter 3

Design

3.1. Design Concept

Building upon the theoretical framework and research gaps stated in Chapter 2, The design concept of this research focuses on the thought process of meaningfully transforming the inputs into AI-generated visual content, through the utilization of metaphorical thinking and domain mapping approaches. In contrast to the traditional thought process, which merely involves direct AI image generation after combining keywords, the main distinction of this thought process lies in the organic incorporation of the steps of metaphorical thinking and domain mapping. The four steps of this process will be explained as follows.

The first step begins with the collection of cultural keywords and symbols, employing qualitative methods such as initial studies, questionnaires, and analyses to identify shared narratives, symbols, and concepts possessing emotional and cultural significance. These inputs, ranging from concrete objects or words to abstract themes like nostalgia or a sense of belonging, can serve as the fundamental materials for designing AI prompts that reflect the cultural characteristics and emotional resonances of the local community.

After the collection of cultural inputs, the second step is to convert these abstract concepts into visually significant expressions via metaphorical thinking.

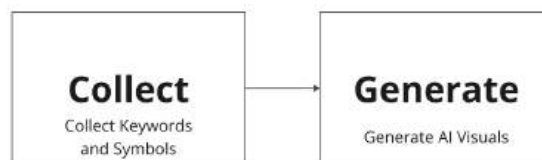


Figure 3.1 The usual thought process of AI image generation

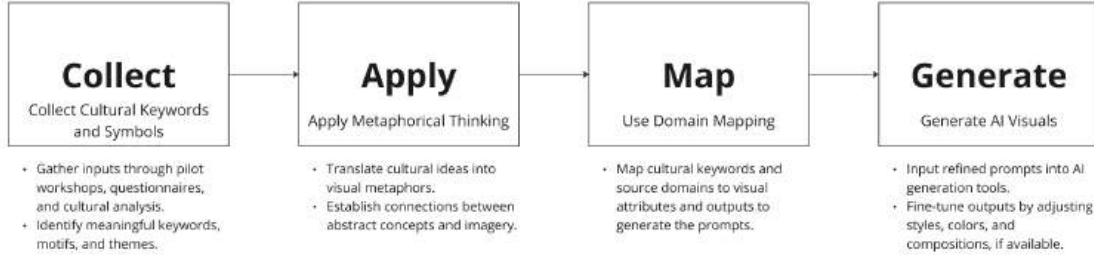


Figure 3.2 Four steps of the new thought process

Metaphor functions as a bridge between cultural meaning and visual output, facilitating the representation of complex emotions and concepts through images. For instance, the theme of “sense of community” can be metaphorically depicted as a tree surrounded by people; whereas, “nostalgia” can be manifested as a soft, faded watercolor landscape or sepia-toned photography. By establishing metaphorical relationships between concepts and images, this step ensures that the generated visual content is not only emotionally profound but also capable of embodying cultural relevance.

Upon the completion of the metaphorical transformation, the third step proceeds with domain mapping, to systematically map the source inputs (such as keywords, cultural icons, or themes) onto the target visual elements and styles. This step connects the initial concepts with visual expressions through a structured methodology. For example, the keyword “community” might be mapped to overlapping circular patterns symbolizing strength and unity, while “cherry blossoms” could be mapped to soft pastel tones. This guarantees that the output generated remains consistent with the anticipated cultural and emotional narrative.

Finally, as the last step, the refined prompts are input into an AI image generation platform (such as MidJourney or Stable Diffusion), generating the initial visual content. These prompts should integrate the results of metaphor and domain mapping, with parameters such as composition and visual style being adjusted to ensure that the output conforms to the intended meaning.

3.2. Design Methodology

3.2.1 Introduction

In order to create and structure the research plan and test the design concept correctly and clearly, the researcher utilized the Double Diamond Model, which is a design thinking model proposed by the UK Design Council in 2005. The model is a widely acknowledged framework for the design process, which offers a structured yet flexible means to address complex problems by alternating between divergence and convergence. Based on exploring extensive possibilities and convergence which is based on focusing on solutions. It is divided into two diamonds, respectively representing problem definition and solution development (as shown in Figure 3.3)¹.

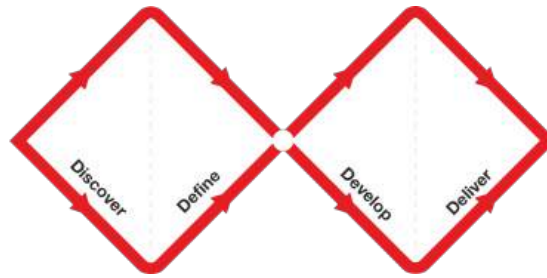


Figure 3.3 The Double Diamond Model

The first diamond is focused on Discovery and Definition. At the discovery stage, a comprehensive understanding of the problem space is achieved by gathering insights, exploring user needs, and identifying opportunities. Then the collected insights are synthesized, and the core design challenge or problem statement is clearly expounded in the Definition stage. The second diamond is focused on development and delivery. As designers generate, prototype, and test a variety of potential solutions as a development of the design, and deliver the most effective solution or finalize, validate, and implement the most important design outcomes. The model emphasizes a user-centered approach, guaranteeing that solutions are grounded in the needs and contexts of the real world.

¹ Source: Framework for Innovation - UK Design Council <https://www.designcouncil.org.uk/our-resources/framework-for-innovation/> Last Accessed 31 January 2025

3.2.2 Combination with the Research

The Double Diamond Model offers a structured framework that integrates with the research question and research objectives proposed in Chapter 1, which is to explore the possibility of utilizing metaphorical thinking in the prompt engineering process of AI image generation, to enhance the viewer’s emotional resonance and sense of cultural relevance. Each of the Phases will be explained in Figure 3.4.

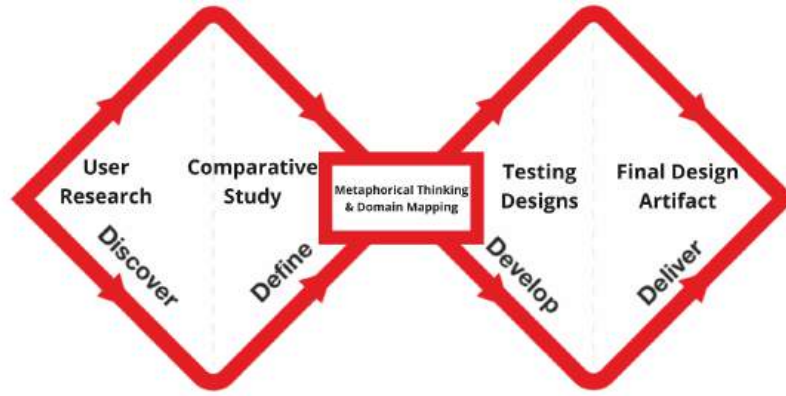


Figure 3.4 The Double Diamond Model, aligned to the research

In the Discovery Phase, insights from local residents will be gathered through user studies, with a focus on daily life moments, shared narratives, and emotional triggers that represent their identity. In the Definition Phase, a comparative study of these insights will be conducted to clarify the challenges faced in applying metaphorical thinking in prompt engineering. In the Development Phase, different kinds of activities will be designed using metaphorical thinking and domain mapping methods, and prototypes of AI-generated visual content that align with the community’s cultural and emotional context will be created. These designs will be tested, and feedback will be collected for iterative optimization. Finally, in the Delivery Phase, the design will be applied and evaluated in practical scenarios to ensure that the generated content can effectively facilitate emotional resonance and a sense of connection. By integrating the Double Diamond Model with the research focus, this approach aims to guarantee a user-centered iterative process.

3.3. Comparative Study: Pilot Workshops in June 2023 and June 2024

Understanding the significance of metaphorical thinking and domain mapping in enhancing cognitive processes and creative outputs, and its possible effects on the generation process of AI imagery, the researcher has designed a comparative study structured around two independent pilot workshops, as the Discovery and Define Phase of the Design Model. This comparative research is intended to systematically explore the potential significance of introducing domain mapping methods in the prompt engineering process of AI image generation. Specifically, it aims to evaluate the influence of domain mapping on the emotional resonance, feeling of cultural relevance, and level of creativity of the generated images. Moreover, the study also plans to analyze the participants' perceptions and attitudes towards the images generated using two distinct prompt engineering strategies – one that incorporates domain mapping and the other that adopts a more conventional approach, utilizing only a simple combination of keywords into text templates. Through the comparison of these aspects, researchers hope to profoundly investigate the potential advantages and limitations of domain mapping in AI creative applications, providing theoretical support for a better understanding of how to utilize cognitive tools to optimize AI tasks and create the foundation for further research.

3.3.1 Workshop Design

The main design elements of the Generative AI image pilot workshop will be introduced into three sections as below.

- The prompt keyword worksheet before the workshop
- The workflow chart of the workshop
- The prompt sentence used in the workshop

Prompt Keyword Worksheet inspired by Diary Study Method

In Contextual Design, diary research is a user research approach centered on longitudinal data collection, frequently employed to acquire in-depth information on user behavior and experience. For instance, as Carine indicated in her 2012 user experience study, the diary method can provide researchers with temporal and longitudinal information within a natural context of interaction [34]. Such information can offer significant support for the construction of users’ “day-in-the-life models”, as one of the typical mental models used in the method of Contextual Design. Compared to traditional methods such as questionnaires, usability tests, or interviews, although diary research requires a longer investment of time, its data outcomes are more valuable in terms of richness, accuracy, and diversity, particularly suitable for exploring users’ dynamic behavior patterns.

Furthermore, as Bolger, Davis, and Rafaeli proposed in 2003, diary research is typically classified into three categories based on the triggering protocols: interval-contingent, signal-contingent, and event-contingent [35]. This pilot study adopted the event-contingent protocols because the core goal was to deeply explore the specific details related to the research topic in the daily lives of participants and hopefully, to extract keywords based on these details, for the prompt design of the workshop. Through this approach, the personal experiences of participants can be more directly integrated with the research objectives, which enhances the sense of cultural relevance and emotional resonance between the generative AI technology and the participants.

Consequently, the researcher initiated the diary study on May 23, 2023, with the aim of measuring the daily life patterns of elderly participants residing in the Yonamoto housing complex. This study invited 10 members of the “Hokkori Cafe”, including both volunteers and regular customers. The researchers distributed a pre-designed “Mini diary” worksheet to the participants and elaborated on the filling requirements. Participants were advised to freely document relevant events in their daily lives based on the categories provided in the form during the one-week study period, and submit the recorded forms at the end of the study.

Prompt Keyword Worksheet Design and Objectives

The design of this prompt keyword worksheet is divided into four main categories to capture the key events and emotional experiences of participants in their daily lives (As shown in Figure 3.5):

- **I have learned something new:** Record the experiences of participants in learning and exploring new knowledge or skills.
- **I met my friends:** Record the social activities of participants, especially the interactions with other members of the community.
- **I did something new:** Record the behaviors of participants in attempting new activities or breaking away from daily routines in their daily lives.
- **I have something that I want to remember:** Record the life segments that participants deem meaningful or particularly worth remembering.

In conclusion, this worksheet aims to solely focus on the daily lives of participants, extracting keywords that can reflect their personal interests, emotional preferences, and life details, providing data support for prompt engineering in subsequent workshops. Simultaneously, this method hopes to enhance their sense of cultural relevance with and willingness to participate in the workshop session.

Data Analysis and Findings

The diary study concluded on May 29, 2023. The researcher conducted an initial statistical and contextual analysis of the retrieved form data and made the following main discoveries: Among the 10 participants, 6 had relatively fixed daily routines, with the “I did something new” category completely blank, indicating that their living habits were rather stable. 3 participants regularly engaged in community activities, demonstrating a certain demand for social interaction. 9 participants expressed a strong interest in learning and attempting new things, as indicated in the logged data in the “I have learned something new” section, providing potential for active participation in the pilot workshop.

In the subsequent interviews, the majority of participants expressed that they found this research method interesting, and at the same time, expressed their

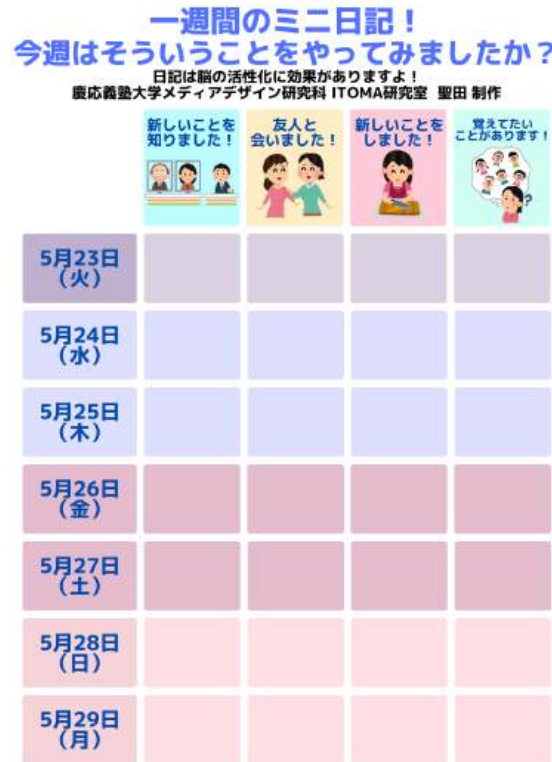


Figure 3.5 Mini diary sample used in the study

positive expectations for the pilot workshop. They hoped to see their daily life elements transformed into decorative postcards with different aesthetic styles through the use of generative AI technology, further validating the potential of the keyword extraction based on the diary study in enhancing the sense of participation and technology acceptance.

3.3.2 The First Pilot Workshop

Workshop Flow Design

The process of the pilot workshop is divided into three main phases: **Introduction**, **Generation**, and **Sharing**. The aim is to guide participants gradually in understanding the fundamental principles of generative AI images, experiencing the operational process of keyword extraction and prompt engineering, and establishing an emotional connection with the technology through real-time generated

images. The workflow diagram of the workshop is presented in Figure 3.6.

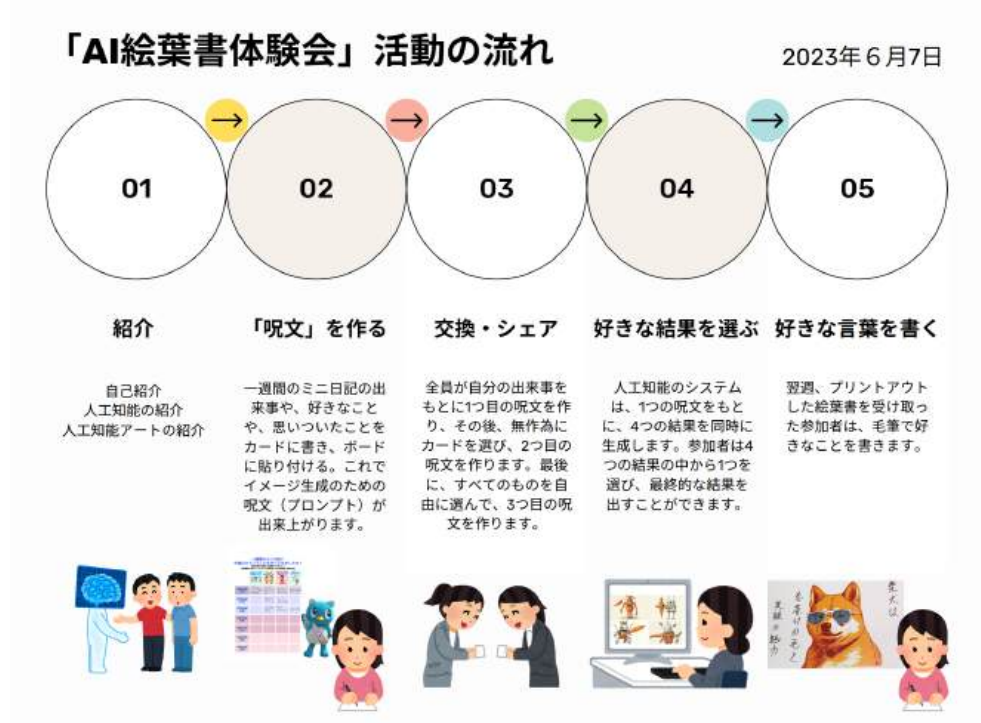


Figure 3.6 Workflow leaflet used in the first pilot workshop

Creation of Prompts Using the Domain Mapping Method

As elaborated in Chapter 2, the domain mapping method is an approach for conceptualization by mapping the conceptual characteristics of the source domain to the target domain. This method is closely intertwined with the semantic structure and aesthetic framework of image generation. In the context of generative AI images, users are responsible for constructing and inputting prompts, representing the cognitive model of the source domain, while the generated images reflect the features of the target domain conveyed by the prompts. Therefore, users' comprehension of artistic styles and certain aesthetics, cultural background knowledge, language expression ability, and the level of metaphorical thinking are directly mapped on the prompts, hence influencing the quality and style of the generated images.

When designing the Generation phase of the workshop, the researcher also thoroughly considered the demographic and cognitive capabilities of the participants. Given that the majority of participants were Japanese senior citizens over the age of 65, whose cultural background and aesthetic preferences might lean towards tradition, the researcher selected several basic aesthetic elements (such as water-color paintings and manga comics) as backup plans in cases where the art style was not explicitly specified in the keywords provided by the participants. This design tried to evoke the cultural relevance of the generated images but also aimed to reduce the cognitive threshold for participants in the prompt engineering process, thereby enhancing their sense of cultural relevance and emotional resonance.

The Entire Process of the First Workshop

On June 7, 2023, the first AI postcard workshop was held at the Hokkori Community Activity Room in the Yonamoto Danchi, with a total of 9 participants, including 7 Hokkori members, one staff member from the Yachiyo Social Welfare Council, and one staff member from the nearby Aso-Mutsumi Local Support Center. At the beginning of the event, the researcher delivered a brief welcoming speech to shorten the emotional distance between the participants and subsequently introduced the basic concepts of generative AI, the principles of AI image generation, and the role of prompt engineering through a straightforward and comprehensible demonstration. To ensure a better understanding of the participants, the researcher presented several examples of generated images during the presentation.

After the participants had grasped the basic knowledge of generative AI images, the researchers distributed a customized paper toolkit to them (as shown in Figure 3.7). The toolkit is separated into three main categories: motif, place, and style. Participants were encouraged to combine the day-in-the-life segments recorded in their diary research forms or through imagination at the moment to write down the keywords or phrases necessary for generating images (such as “chicken”, “photography”, “basketball game”, etc.) in the corresponding categories.

The researchers then collected and organized these keywords and expanded them into complete prompt sentence combinations with the domain mapping method. The application of domain mapping not only considered the keywords



Figure 3.7 Paper prompt toolkit of the first pilot workshop

provided by the participants but also incorporated the personal interests and possible aesthetic tendencies extracted from the diary research, ensuring that the prompt sentences were both individualized and mapped to the target domain. These prompt sentences were input in real-time into the Midjourney AI model to generate corresponding images, and the generation process was displayed in real-time, further enhancing the participants' experience and technological awareness.

Upon the completion of image generation, the researchers printed the generated results in postcard size and distributed them to the participants (example images are shown in Figure 3.8). Participants could not only observe the generated images on-site but also take the postcards home as souvenirs to further extend the influence of the workshop.

The keywords extracted from the diary study form by the participants and the sentence expanded with the keywords in the example image are as follows.

Keywords:

- Massage Chair, Cat, Sea, Retro



Figure 3.8 One example of the generated postcards

Sentence:

- A cute orange cat sitting on a vintage message chair by the sea, the image is in retro style

In contrast, if only the prompt keywords were directly input into the image generation model without any sentence arrangement through domain mapping, the majority of the generated results would be different from those with sentence arrangement. (As shown in Figure 3.9) Also, the message chair is generated in a modern style, and the visual element of the Cat is absent.

Through the first pilot workshop, the research team successfully explored the application potential of generative AI technology in community engagement activities, laying a practical foundation for subsequent research.

3.3.3 The Second Pilot Workshop

Background and Objectives

The second pilot workshop was conducted on June 13, 2024, almost exactly one year after the first pilot workshop. The main objective was to further investigate the roles of metaphorical thinking and domain mapping in the process of generating AI images and their influence on participants' experiences by adjusting the



Figure 3.9 Image for comparison: Massage Chair, Cat, Sea, Retro

methods of prompt engineering. In contrast to the first pilot workshop, the second one made significant adjustments in prompt extraction and prompt engineering approaches. This differentiated design not only offers comparative data for research but also creates conditions for a deeper comprehension of the effectiveness of domain mapping methods in prompt engineering.

The theme of this workshop is centered on “Past and Future”, aiming to guide participants to contemplate abstract and cross-temporal concepts, and to explore the performance of metaphorical thinking methods in low-correlation contexts and their impact on generation outcomes. Additionally, this workshop sought to observe the quality of generated images and the differences in participants’ emotional feedback in the absence of domain mapping by changing the prompt input process.

Workshop Process and Methods

To effectively assess the influence of metaphorical thinking and domain mapping methods on image generation, a different prompt template was employed in this workshop:

- an artistic postcard of an X 50 years ago and Y in the future, --ar 25:37

Unlike the prompt keyword extracted in the first workshop based on the diary study data of participants, the prompt design in the second pilot workshop adopted an abstract and pre-defined manner. The keyword combinations of “an object 50 years ago” and “an object in the future” in the template possess high ambiguity and cross-temporal dimensions, which are challenging to directly integrate into the AI model without domain mapping. This can also test the limitations of the AI model in handling abstract concepts in prompts in the absence of domain mapping and observe participants’ general acceptance of the generation results.

As a result, the second pilot workshop also did not utilize the diary research sheet and keyword worksheet. Instead, participants were provided with “word combination cards” designed by the researchers before the workshop as shown in Figure 3.10. Each participant was required to fill in a pair of words: One object representing familiar objects from the Showa era 50 years ago (e.g., “rice balls” or “black telephone”), to be generated in a retro style; and another object representing their imagination of the similar objects, but in the future (e.g., “flying car” or “intelligent robot”), to be generated in a futuristic style.

The researchers subsequently directly embedded the participants’ vocabulary combinations into the template and input them into the AI model for image generation. This approach completely skipped and ignored the adjustment steps of prompt sentences through metaphorical thinking and domain mapping methods in the first workshop, thereby forming a comparative experiment.

Reasoning Behind the Differences between the Two Workshops

The core purpose of the differentiated design lies in verifying the key roles of domain mapping and metaphorical thinking in prompt engineering and their specific effects on image generation quality and participants’ experiences.

In the first workshop, by expanding keywords and integrating metaphorical thinking methods, more semantic depth and contextual information were infused into the prompt sentences, thereby assisting the AI model in generating more relevant and artistic images. Oppositely, in the second workshop, templates were directly used without the intervention of domain mapping and metaphorical thinking, thereby providing a set of contrastive data. Secondly, in the first workshop, the prompt design was closely related to the daily lives of participants, enhanc-

五人一組になって、先週書いた紙で作った
「呪文」カードから好きなものを選んでください。
(前回と異なるもの、過去と未来 三個ずつ)



Figure 3.10 Word combination card used in the second pilot workshop

ing emotional resonance and engagement. The prompts in the second workshop, however, were more abstract and less related to daily life. The researcher could observe whether this low correlation would lower the participants' interest or satisfaction. By providing prompt sentences with ambiguity and abstraction (such as “artistic” and “in the future”), the study could evaluate the performance of the AI model in processing complex prompts in the absence of domain mapping and whether the generation results could meet participants' expectations in terms of feeling of cultural relevance and emotional resonance.

3.3.4 Feedback and Findings

Feedback from the First Pilot Workshop

After the end of the first workshop, participants generally expressed a strong interest in AI technology and were satisfied with the generated postcards, as shown in the results of the subsequent interviews and surveys. The majority of

participants believed that by participating in the workshop, they not only obtained a basic understanding of the principles of generative AI but also experienced the entire process from keywords to image generation. Especially when they witnessed their daily life elements transformed into concrete images, they felt a sense of enjoyment, engagement, and achievement. Some participants also mentioned the hope of simplifying the entire design process and applying it to more scenarios, such as brain training exercises.

Feedback from the Second Pilot Workshop

The feedback from the second workshop differed significantly from the first. Due to the relatively abstract nature of the prompt design, some participants indicated difficulty in fully comprehending the meaning of the prompts, and the generated images did not meet their expectations, in terms of the cultural relevance of the content and the aesthetic style of the images themselves, which significantly reduced participants' emotional resonance and sense of cultural relevance. Some participants also offered rather critical comments, such as "AI lacks the ability to understand", "I don't understand what role it played in our life", "This is too difficult to understand", etc.

3.3.5 Takeaways

This comparative study, consisting of two pilot workshops, successfully gathered data from the participants regarding factors such as emotional resonance and the sense of cultural relevance towards the results of image generation. Valuable feedback was also collected through subsequent survey questionnaires and interviews. The comparative study has laid the foundation for further research on the aesthetic styles of the images and crucial points that need attention in terms of domain mapping and prompt engineering. Furthermore, the significant differences in the feedback provided by the participants between the first and the second pilot workshops have also furnished valuable data for further discussion and validation, which will be covered in Chapter 4.

3.4. Refining the design through Etegami Classroom Participation

Based on the results of the comparative study in the two pilot workshops, the researcher decided to refine the prompts used in the generation process and finalize the style of the prompt that residents in the housing complex and in the city will generally show a positive attitude toward. Hence, the researcher took part in the etegami classroom named “Etegami Fusen” conducted within the Yachiyo Social Welfare Council in September 2024.

3.4.1 Etegami and Etegami Fusen

In Japanese culture, etegami is a unique form of hand-painted postcards, consisting of seasonal objects and hand-written messages. According to the information from the National Etegami Association of Japan ², the history of the creation and use of etegamis originated in the 1970s in Komae city in Tokyo and has a wide group of creators spreading across the country. These hand-painted postcards often align with themes coordinating with the creator’s daily lives and moments, such as seasonal foods, daily objects, or local events, helping both the creator and the recipient feel connected to nature and their community. Moreover, aside from the objects and elements in the composition of etegami, texts are also usually written in the blank space of the picture, creating a unique and bold art style. They serve both aesthetic and functional purposes, such as decorating living spaces or conveying personal messages to recipients.

Throughout various interest groups across the country, **Etegami Fusen** is a local group that includes over 20 members, creating hand-painted etegamis every third Saturday in the Yachiyo Social Welfare Council’s building. It is a part of the monthly event “Fukushi Matsuri” (Welfare Festival) organized by the Social Welfare Council and held on the third Saturday of every month. The classroom is managed by a group of volunteers, consisting of one teacher and several regular participants. Etegamis created by the students of the classroom will be displayed

2 Official website of the National Etegami Association of Japan, https://etegami.or.jp/about_etegami/ Last Accessed 28 January 2025

in the building, and the works will be replaced regularly every month. The theme of the etegami in the class is also being decided collectively both by the volunteers and the members, often consisting of seasonal themes and objects and motifs from daily life, such as flowers, snacks, or vegetables.

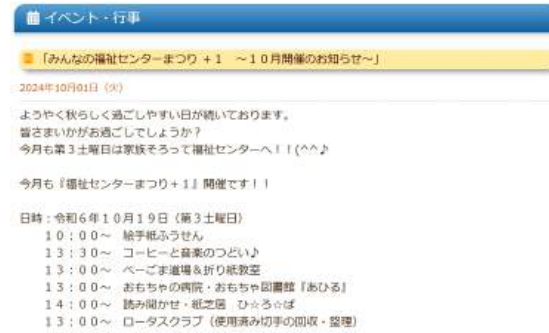


Figure 3.11 The monthly notification of Fukushi Matsuri by the Yachiyo Social Welfare Center

3.4.2 Refining prompts through traditional etegami

Throughout continuous participation in the classroom and communication with the teacher and classroom members, the researcher identified several details, techniques, and crucial visual elements that had the possibility to inspire the creation of an AI prompt combination that can imitate the style of traditional Japanese etegami:

- Focusing on bold style, which is a style similar to Japanese Sumi-e (ink wash painting).
- The techniques used during the color-filling mimics the ones used in water-color painting.
- The tools used during the classroom session were single-use chopsticks, which had a unique characteristic that consisted of simple and expressive brush-strokes.

- The teacher encouraged the students to draw without focusing too much on the detail, which led to simple and expressive brush strokes and expressive lines.
- The composition of the etegami is similar to the graphic design techniques with a minimalist composition, with plenty of white space.
- The subjects painted on the etegami were often off-centered, providing a spontaneous and natural look to the whole image.

These characteristics of etegami can be found in the sample work provided in Figure 3.12.



Figure 3.12 Snacks (Drawn by the participants in October 2024, photo used with permission)

3.4.3 Finalized Prompt Combination

Focusing on the details of the traditional etegami and the basics of prompt engineering, The researcher created a final prompt combination that mimics the aesthetic elements and characteristics of etegami as much as possible and has the potential to generate consistent styled results with different objects as the theme.

The prompt Combination is shown below.

- A traditional Japanese letter-style illustration with a focus on bold style. Japanese ink wash painting style, Sumi-e style, Watercolor style. Simple and expressive brushstrokes, and expressive lines. The outlines of the motifs are drawn with thick brushstrokes. The drawing has the charm of being sketched with the non-dominant hand. Soft, muted colors, Minimalist composition, Plenty of white space, Off-center subject. Wet-on-wet technique, Spontaneous and natural-looking --ar 25:37 --s 150 --style raw --no realistic, text, monochrome

This text combination consists of the characteristics and techniques learned in the etegami classroom, and several specific parameters used in the Midjourney AI model. For example: --ar 25:37 means the aspect ratio of the image should be 25:37, which is the same as the postcard paper used to paint the etegami. --style raw means the overall aesthetic style should be bold and raw, rather than detailed and sophisticated. --no realistic, text, monochrome identified the results that should not appear during the generation, such as realistic images, images with texts, or monochrome images.

In practical scenarios, the user generating the images should add the objects or the motifs, in the form of sentences optimized with the Domain Mapping method or metaphorical thinking method before pasting the text of style combination, then start the generation process. For example, type “a Pomeranian dog playing on the beach” and add the style text after this sentence, which will generate an image as shown in Figure 3.13.

3.4.4 Trial use in real-life scenarios

After successfully designing AI prompts that are suitable for the Japanese cultural context and generating works with the traditional etegami style, the researchers



Figure 3.13 Sample image: A Pomeranian dog playing on the beach

tested the prompts to evaluate their effectiveness and collect user feedback.

The first tryout event was held at the KMD Forum in October 2024. As a collaborative platform for showcasing innovative research and projects, the KMD Forum provides a great opportunity for the researcher to interact with the general public. During the event, the researcher set up a display area, showcased AI-generated etegamis created based on the designed prompts, and invited visitors to experience the prompt engineering and generate their own works. The generated etegamis were printed in real-time, allowing participants to immediately receive a tangible result.

During the event, a total of 25 unique works were created by the audiences. The overall feedback was very positive, with participants showing a strong interest in the seamless integration of AI technology and traditional Japanese aesthetics. This trial not only validated the technical feasibility of the prompts but also



Figure 3.14 The display area for experience at the 2024 KMD Forum

demonstrated their potential in terms of user engagement and cultural relevance.

Encouraged by the success of the KMD Forum, the researcher collaborated with the Yachiyo Social Welfare Council to hold a second trial session. The session incorporated a similar format to the first, allowing participants to generate etegamis using AI prompts and print them in real-time. Additionally, the researcher collaborated with another researcher to create customized pin badges based on the generated images, adding another layer of practical dimension to the works. The staff also had very positive feedback on the session and pointed out that the generated images had a variety of real-world application possibilities, such as creating promotional materials, online media content, and producing merchandise to raise the awareness of the Social Welfare Council and its related activities. This feedback highlighted the practical value of the prompts and their potential contribution to social and organizational goals.

3.4.5 Takeaways

The study at the etegami classroom and the two trial sessions practically validated the core research goal of integrating metaphorical thinking, domain mapping,



Figure 3.15 One participant experiencing the image generation process (photo used with permission)

and cultural relevance into AI prompt engineering. By successfully combining traditional Japanese aesthetic elements with generative AI prompts, the activities demonstrated effectiveness in attracting diverse audiences and meeting real-world needs.

Meanwhile, these trial sessions also provided valuable insights, showing that AI-generated content can be used in social and organizational settings in Japan, as the attempt to collaboratively create customized badges demonstrated how AI-generated images can transcend the realm of pure self-expression and become functional and meaningful outputs, which also highly aligns with the goal of this research.

3.5. Testing the design for Nobi-Nobi salon participants

Building upon the success of the trial sessions, the researcher further extended the practical application of AI-generated etegamis to the elderly residents of the Yonamoto Danchi housing complex in late October 2024. This stage aimed to explore how metaphorical thinking, domain mapping, and optimized prompts engineering could be incorporated into activities tailored for this group, with a focus on enhancing cognitive engagement, emotional resonance, and cultural relevance.



Figure 3.16 One of the pin badges made with the generated etegamis

The researcher intended to implement another activity in the regular weekly exercise program, named “Nobi-Nobi Salon” in the housing complex. The activity is themed on brain-training (Nou-tore in Japanese) games, which were inspired by traditional cognitive training and incorporated generative AI technology. It still adopted the style of etegami, integrating familiar cultural elements with the generated images. The first series of games focused on guessing the names of chain restaurants, a theme selected due to its close association with the local community. This theme was considered particularly suitable for the elderly community in Yonamoto Danchi, as it capitalized on the residents’ collective memories and possible new experiences to create an engaging and interactive challenge.

3.5.1 Leveraging Conceptual Metaphor Theory for prompt engineering

The researcher utilized metaphorical thinking methods to establish a connection between the visual style of etegami and the characteristics of the restaurants when creating the question for the guessing game. For instance, metaphorical elements might symbolically represent the restaurant’s name or the signature dishes. Domain mapping was also employed to transform abstract or modern concepts, such

as brand identity, into visual elements that were culturally relevant and easily recognizable by the elderly participants, thereby ensuring the accessibility and appeal of the images.

For instance, the mapping process for “Mister-Donut” (the name of a chain donut shop in Japan and the United States) was based on the name of the shop, which possesses no anthropomorphic characteristics. Nevertheless, the researchers mapped the understanding of the word “Mister” into the visual representation of masculine attire: a traditional top hat and a bow tie. Therefore, the prompt “a donut wearing a top hat and a bow tie” was entered into the Midjourney AI model, along with the style prompt combination used in the trial sessions in the style of etegami, and an image was generated. The researcher added additional texts as hints, edited the image, and created the quiz sheet (As shown in Figure 3.17).

3.5.2 Flow of the Guessing game

During the implementation phase of the brain training game, the researchers attended the Nobi-Nobi salon exercise program with the elderly residents every Wednesday morning and handed out Etegami-style guessing quiz sheets during the exercise session. Participants were encouraged to freely discuss and contemplate the answers, thereby stimulating cognitive activities and social exchanges during the interaction process. The quiz sheets will be collected in the next week’s exercise program, and the researcher will display and talk about the correct answer. Winners would be determined based on the correctness of their answers and would receive small snacks as rewards.

3.5.3 Takeaways

Through this approach, the AI etegami guessing game not only enhanced the residents’ sense of participation and enjoyment but also provided them with a relaxed social platform for joint discussion and memory sharing. Throughout the discussions and subsequent interviews, it was shown that the feedback from the participants is considered generally positive. Several participants even showed further interest in creating more guessing games in terms of different themes and

AI脳トレクイズ（1）制作：慶応義塾大学 李 聖田

名前：_____日付：____月__日

この人工知能で生成した絵手紙の内容から店名を考えましょう。



回答：_____

正解を当て、次回のびのびサロンでこの紙を持って、賞品と引き換えよう！

Figure 3.17 First quiz question: Mister Donut

difficulty levels. This also constructs the foundation for the final design and evaluation that will utilize the same method for prompt engineering and image generation, which will be further discussed in the next chapter.



Figure 3.18 Participants discussing the answers of the quiz in Nobi-Nobi salon (photo used with permission)

Chapter 4

Evaluation

Building upon the pilot workshops and real-life testing sessions elaborated in Chapter 3, in this chapter, the researcher will evaluate the “Collect-Apply-Map-Generate” design thinking process, which utilizes metaphorical thinking and domain mapping methods, collaborating with the Yachiyo Social Welfare Council. The design will be focused on the specific requirements of the council members, starting with a workshop to further clarify their specific requirements and demands, thereby transforming the relevant information into emotionally engaging visual content with local cultural characteristics. Eventually, the researcher will showcase the contents to the council members and evaluate their responses in two dimensions: Emotional resonance and Cultural relevance.

4.1. Methodology

4.1.1 Evaluating Emotional Resonance

In order to evaluate emotional resonance, it is crucial to closely observe the interactions, behaviors, and manifestations of participants with the design outcome, to see if it captures the emotional responses of individuals and groups. The observation data focuses on three main elements, which can provide in-depth insights into how the image evokes emotional resonance.

- **Non-verbal Cues:** Non-verbal cues (such as smiles, nods, or enthusiastic gestures) are a direct manifestation of emotional engagement, consistent with Ekman’s Basic Emotion Theory (1992), which emphasizes that universally recognized facial expressions and body language can reliably reflect internal emotional states [36]. Additionally, the Flow Theory by Csik-

szentmihalyi (1990) highlights the significance of interaction duration, where sustained visual interaction indicates that participants find the experience meaningful and establish emotional connections [37].

- **Peer Interactions:** Peer interactions, in terms of discussions among participants, shared reflections, and group interaction dynamics reveal the group-level aspect of emotional resonance. This is in line with the Social Constructivism theory by Vygotsky in 1978, which indicates that emotional understanding is typically co-constructed through social interactions [38]. For instance, spontaneous conversations or storytelling during workshops suggest that the visual content has successfully facilitated collective emotional engagement.
- **Reflective Behaviours:** Reflective behaviors, such as repeatedly viewing specific images, prolonged gazing, or linking the visual content to personal narratives indicate deeper cognitive and emotional engagement. This behavior is consistent with Dewey’s Reflective Thinking Framework (Dewey, 1933), which holds that when individuals encounter meaningful stimuli, emotional resonance often triggers deliberate responses [39].

To measure these elements, the research adopts the following indicators:

1. **Frequency and intensity of positive non-verbal cues:** The number of smiles, nods, or gestures is statistically analyzed to quantify emotional responses.
2. **Interaction duration:** The time participants spend interacting with the visual content is recorded as a measure of sustained interest.
3. **Peer interaction:** The frequency and depth of conversations triggered by the visual content are analyzed.
4. **Reflective behavior:** Whether participants repeatedly view, ponder, or link the visual content to personal experiences is observed.

4.1.2 Evaluating Cultural Relevance

To evaluate cultural relevance, the research methodology focuses on an in-depth analysis of how participants interact with and respond to the cultural elements in the design outcome. By observing behaviors, expressions, and social interactions, researchers can assess the alignment between the visual content and the cultural identities and values of the participants. This approach is grounded in multiple theoretical underpinnings that explain how individuals perceive and interpret cultural elements. Similar to the evaluation of emotional resonance, the observation data will also focus on three main elements.

- **Symbolic Recognition:** Schema Theory, by Bartlett (1932) emphasizes that individuals recognize and interpret familiar symbols through pre-existing mental frameworks, thereby making the recognition rate of cultural elements a crucial indicator [40]. When participants identify or verbally recognize cultural symbols, it reflects the congruence between the visual content and their cultural schema.
- **Observable Behaviours:** Observable behaviors such as prolonged attention to specific images or repeated viewing of certain visual content are in accordance with Symbolic Interactionism by Blumer (1969), which highlights that individuals ascribe meanings to symbols based on personal and social experiences [41]. These behavioral indicators reveal the personal significance of the visual content to the participants. Concurrently, group discussions regarding cultural elements, their meanings, and accuracy are also inspired by Vygotsky's Social Constructivism theory, which posits that meaning is jointly constructed through social interaction [38]. Evaluating the quality of these discussions can offer insights into the extent of collective cultural understanding of the visual content in diverse cultural contexts.
- **Emotional Responses:** Emotional responses such as expressing pride, nostalgia, or identification further substantiate the assessment of cultural relevance. These emotional indicators are based on the Cultural Identity Theory by Collier & Thomas, which indicates how authentically presented cultural elements can evoke a sense of belonging and identity among participants [42]. Conversely, confusion or disputes regarding cultural symbols

reveal potential disparities or ambiguities within the visual content. This is consistent with the Cultural Distance Theory by Hofstede, which explains how unfamiliar or misconstrued cultural elements can act as impediments in interactions [43].

Thus, similarly, the indicators of cultural relevance include:

1. **Recognition rate:** Track the frequency and accuracy with which participants recognize cultural symbols and associate them with their own experiences.
2. **Behavioral connectivity:** Behaviors such as repeatedly viewing specific visual content, pointing out familiar elements, or spending more time on images of significant cultural significance will be tracked.
3. **Emotional response:** The emotional responses of participants when identifying significant cultural elements, such as smiling, nodding, or providing verbal appreciation will be noted.
4. **Mismatch or ambiguity:** moments of confusion, disputes, or failure to recognize specific visual or cultural elements will also be highlighted, which can indicate areas requiring design improvements.

By integrating these indicators with the theoretical framework, this observational approach aims to provide a comprehensive and nuanced understanding of how emotional resonance and cultural relevance are perceived and verified during the final design session. The insights gained can not only assist in optimizing AI-generated visual content but also ensure that they authentically reflect and align with the targeted cultural context, both in terms of emotionally pleasing and culturally representing.

4.2. Implementation: The Metaphorical Thinking Design Workshop

Following the previous successful experience in the Nobi-Nobi salon in Yonamoto Danchi, the researcher decided to further put Generative AI into practical use for

the staff of the Yachiyo Social Welfare Council as the final stage of the research, guiding them to utilize the fundamentals of AI image generation and cultivate the ability of metaphorical thinking, and provide more scalability and sustainability to the service exchange cycle.

Through observations and discussions with the manager of the Regional Development Division, and staff members of the Social Welfare Council, it is evident that the need to incorporate AI image generation technology into the future activities of the council is significant. For example, the council intends to create a set of icons for visual identity and representation of the local regions in the city area, totaling 21 individual identities as a part of the regional development project. If Generative AI could be utilized for the creation process to rapidly produce icons for use or for generating design ideas and prototyping, it would provide substantial value in terms of enhancing efficiency and inspiring creativity.

4.2.1 Designing the Icon for the Social Welfare Council

On 29th November 2024, the researcher hosted a design workshop with the staff of the Social Welfare Council, aiming to stimulate creativity and effectively utilize it for designing AI-generated icons through metaphorical thinking methods. Participants initially began with a task to design an icon for the Volunteer Center of the council, where they were introduced to the goals of this workshop and the basics of metaphorical thinking, while also observing the examples of it in Midjourney models. Next, through a simple brainstorming session, participants thought of various metaphors that can link to the theme of “Yachiyo Volunteer Center”, associating related visual elements such as smiles, heart shapes, or roses.

On this basis, staff members started the prompt creation process, where they utilized the basic structure (metaphor + description + style) of prompt engineering to convert the selected visual elements deriving from metaphors into detailed AI prompts. All the keywords are extracted as a result of the discussion between the researcher and the staff members, choosing metaphorical symbols based on the metric of whether it is suitable and appropriate for icon design and prompt generation. In the next step, the participants input the prompts, and images were generated. Subsequently, discussions with the staff provided constructive suggestions for improvement in the designs, and the variation function of the Midjourney

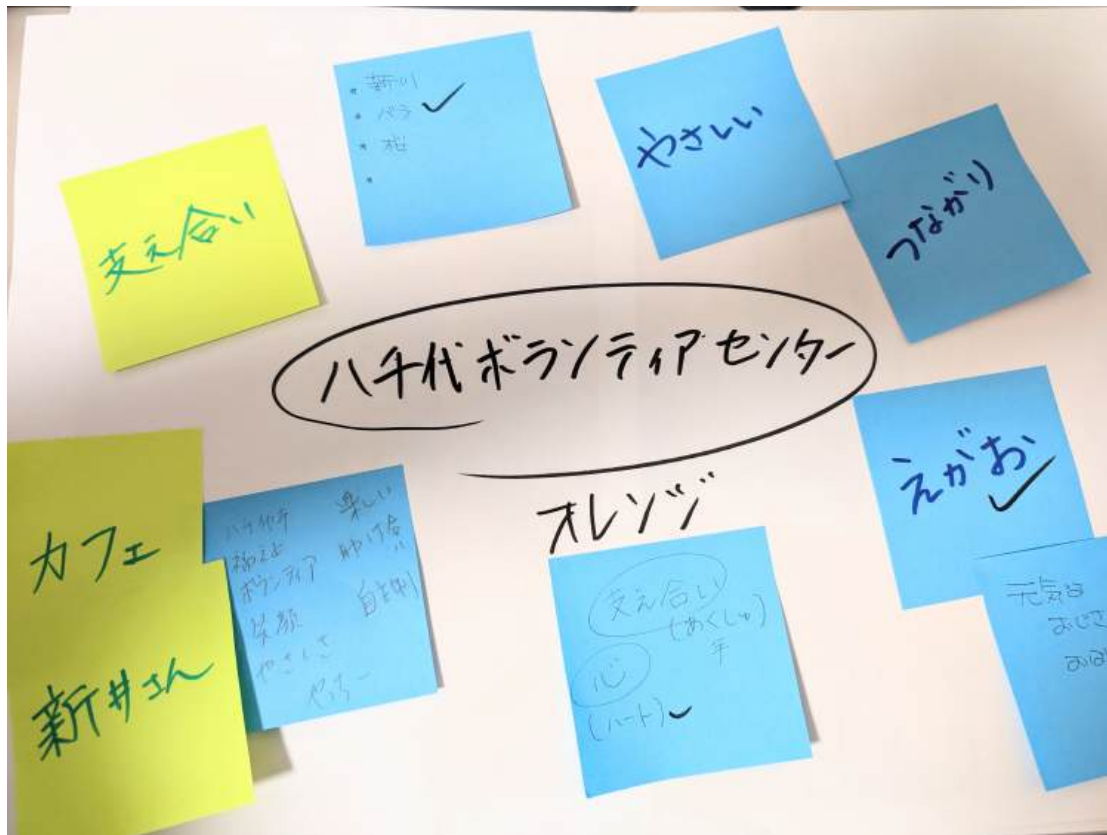


Figure 4.1 Elements extracted from the metaphors during the brainstorming session by the staff members

model is also demonstrated. Finally, in the presentation and summary phase, staff members shared and talked about the completed works, and reflected on the entire creative process. This workflow effectively showcased the potential of metaphorical thinking in generating meaningful and visually captivating AI icons.

4.3. Creating Icons for Each Region

After further discussion, the researcher decided to transform the local residents' emotions in their own community into visually attractive images by designing meaningful community icons with the help of the Council staff members. This final research stage aims to leverage the residents' sense of identity and belong-



Figure 4.2 Part of the icons generated from the prompts made by the staff members

ing to enhance community identity and participation. When designing the icons, the researchers employed metaphorical thinking to reinterpret the collected data into abstract and symbolic visual expressions. For instance, the importance of a local park and greenery mentioned by the residents might be transformed into a tree-shaped icon symbolizing growth and community unity. Domain mapping techniques were utilized to ensure that these metaphors were both comprehensible and resonant, effectively linking abstract concepts with concrete images. This approach made the designed icons not only aesthetically appealing but also profoundly reflective of the community’s collective identity.

4.3.1 Concept of Selection

The process from selecting keywords to generating prompts is based on the data of local residents’ comments and feedback in each region’s volunteer organization. In order to ensure that the resulting design conforms to the essence of the characteristics of the community. The selection of keywords is based on their contextual relevance, conciseness, potential for visual expression, emotional resonance, universality, and feasibility of composition while adhering to the principles of flat and minimalist design. The researcher utilized the method of frequency analysis for the consistency of the prompt and the generation result, by identifying recurrent

or strongly emphasized ideas, classifying them into broader themes, and assessing whether they can be clearly and intuitively transformed into recognizable symbols.

The selection of keywords gives priority to those core elements that can evoke positive emotions and resonate with the target audience, in order to ensure clarity and cultural inclusiveness. These keywords are subsequently integrated into a harmonious and balanced composition, ultimately generating a concise yet detailed prompt. This systematic approach enhances efficiency, reduces the trial-and-error process, and ensures that the final design can effectively convey the intended meaning and values.

4.3.2 Metrics for Keyword Selection

The process of generating prompts by selecting keywords highlights the analysis and extraction of the core themes of the input information to ensure that the final visual design conforms to the essence of the information or community. The following list contains several metrics and considerations that guide this process through the metaphorical thinking method.

- **Contextual Relevance:** The prompts should align with the main subject described. The selection of keywords is based on their frequency, significance, and representation of community values or distinctiveness. For example, the repeated mentions of "Lots of Greenery" and "Active Seniors" highlight a cozy environment and local vitality, making it the central theme of the prompt.
- **Emotional Resonance:** The icon should evoke positive and meaningful associations. Thus, the prompt should emphasize keywords that resonate emotionally with the target audience, thereby creating engaging and relatable icons. For example, "waving," "greeting," and "interacting" evoke warmth, connection, and joy.
- **Conciseness and Focus:** Clutter should be avoided while retaining key viewpoints. Only essential keywords are selected to prevent overly complex or cluttered designs. Icons that are simple and easily comprehensible yield the best results. For instance, "Active Seniors," and "Inter-generational

Connections,” are recurring concepts, and thus, other secondary details were omitted to maintain the simplicity of the design.

- **Visual Representation Potential:** The feasibility of visually representing keywords is also considered. Priority is given to keywords that can be readily transformed into visually clear and appropriate symbols. For example, although the word “garbage bins” appeared multiple times in the feedback from one region, it should be omitted and replaced by other keywords suitable for icon design.

Based on the refined data, conceptual framework, and design metrics, a total of 21 icons were designed for each of the volunteer organizations. These icons captured the essence of the residents’ pride and merged traditional aesthetics with modern simplicity. Once completed, the icons were submitted to the director-general of the Social Welfare Council for review. The feedback was highly positive, with the icons being highly praised for their cultural relevance and visual attractiveness.

4.3.3 Steps for Icon Creation

Hereby, the researcher will demonstrate the steps for icon creation using comments from one of the largest communities in the city: Yachiyo Midorigaoka. The comments from the local residents are shown in Figure 4.3.

Firstly, the researcher conducted an analysis of frequency and importance and identified the viewpoints that recurred or strongly emphasized in the input content. In this case, the keywords “Rose”, “Community”, and “Convenience” are the most frequently mentioned ones. The keywords were then categorized into broader themes, such as community development and infrastructure, greenery and beautification, child and family support, accessibility and convenience, disaster preparedness, and safety, as shown in Figure 4.4.

Next, the visual potential of the categorized keywords will be selected and assessed based on the frequency. The keywords that are prone to be effectively represented as elements of graphic design will be selected. In this case, “Community Development and Infrastructure”, “Greenery and Beautification”, and “Child

支所が近くなった	皮膚科が出来た
保育園が増えた	やちよ総合診療クリニックが出来た
市の出先が設置されて、便利になった	買物が楽になった
利便性が良くなった	買い物が便利
介護施設が多くなった	市民の集まるお祭りが復活して良かった
町医者が増えて、便利になった	自治会活動団体の花いっぱい運動で道
緑が丘西の地域人口が増加、若い世代も増えた	路沿いに花が植栽されキレイになった。
住民が増えて、街が活性化している	公園が増えた
緑が丘西地区の人口増と活況が喜ばしい	お花がきれいに咲いている(道路)
子供が増えた	買い物が便利
地域自治会が(緑が丘西自治会)発展した	お花がきれい
「緑が丘支所」が出来た。市役所関係の届出等が便利になった。	養護施設の方達が街路の花壇の手入れをしてくれて、ありがたい
緑が丘駅の近くに、緑が丘支所ができたこと	病院が増えた
支所が緑が丘駅前に来て便利になった	お花が多い
緑が丘支所が出来て、便利になった	緑が丘西地区は若い人が増えた
支所が出来た	夫婦間の子供の数が多く見かける
バラ街道に取り組んでいる	長寿会を通じて、色々なサークルに入ってお友達が増えた
バラの花いっぱいになった、きれい	防災パトロールが行われている
マンションが駅前に多く出来た	緑が丘駅前～バラ園までに、バラが植栽されバラの町八千代にふさわしくなった
マンションがいくつも出来た	若い世代が自治会にも増えている
保育園が増えた	不登校の保護者のカタリバ
子ども食堂が復活した	LPGコミュニティールーム
人出が増えたこと	新木戸小に学童の建物が出来た
子ども会に参加する親子が増えた	ローズフェスタなど、お祭り復活
子どもの居場所、駄菓子屋さんできた(ある)	スクールガード子どもの見守り、現役世代も
リモートワークの関係で、見守りに父親が参加してくれるようになった	わくわく堂
子どもの見守りに協力してくれる大人がいる	駄菓子屋
学童を行っていて、子供のおはようございますの声がとても良い	災害に対する意識が高まり、備蓄品も充実してきている
子どもが増えて、交流が出来てきた	避難所運営委員会が出来た。住民主体の
子ども放課後教室が出来た	バラの植栽で花が咲きキレイになった(活動の立ち上げのおかげだと思います)
長寿会が活発である	家の兼びは変わらずきれい(規制を守っているからだと思います)
八千代市の中心地です	やちよバラ街道
ローズフェスタが復活して、以前と同じように出来るようになった	以前に比べて大型商店が増えて、買物が楽になった

Figure 4.3 Comments from the residents in Yachiyo Midorigaoka

and Family Support”, which have 8, 7, and 7 mentions are selected, and transformed into the visual element using metaphorical thinking and domain mapping methods. This is to ensure the selected elements can be incorporated into a harmonious design. The researcher chose a pathway lined with blooming roses, and a stylized building with a group of abstract figures in the center, symbolizing the community’s beautification efforts using roses, convenience, inter-generational support, and growth of the neighborhood.

Finally, the researcher used the selected visual elements and the design idea will be input as a detailed yet concise prompt, to guide the Midjourney AI model in generating the desired output. The final prompt is as follows.

- A flat and minimalist icon featuring a stylized apartment building with a group of abstract figures in front. Beside it, a pathway lined with blooming

1. Community Development and Infrastructure	2. Greenery and Beautification	3. Child and Family Support
支所が近くになった	バラ街道に取り組んでいる	子どもが増えた
市の出先が設置されて、便利になった	バラの花いっぱいになった、きれい	子どもの居場所、駄菓子屋さんができる
緑が丘支所が出来て、便利になった (repeated multiple times)	道路沿いに花が植栽されキレイになった	リモートワークの関係で、見守りに父親が参加してくれるようになった
支所が緑が丘駅前に来て便利になった	養護施設の方達が街路の花壇の手入れをしてくれて、ありがたい	子ども放課後教室が出来た
緑が丘駅の近くに、緑が丘支所ができたこと	緑が丘駅前～バラ園までに、バラが植栽されバラの町八千代にふさわしくなった	学童を行なっていて、子供の おはようございますの聲がとても良い
マンションが駅前に多く出来た	お花が多い	保育園が増えた
緑が丘西地区の人口増と活況が喜ばしい	公園が増えた	子ども食堂が復活した
住民が増えて、街が活性化している		

4. Accessibility and Convenience	5. Disaster Preparedness and Safety
買物が楽になった	防災パトロールが行われている
買い物が便利	避難所運営委員会が出来た、住民主体の
病院が増えた	災害に対する意識が高まり、備蓄品も充実してきている
町医者が増えて、便利になった	
保育園が増えた	

Figure 4.4 Categorized comments

roses. The design uses clean lines and a harmonious color palette of green, pink, and orange to evoke growth, beauty, and community connection. — — ar 1:1

As a result, the icon representing Yachiyo Midorigaoka was generated as shown in Figure 4.5.



Figure 4.5 The icon for Yachiyo Midorigaoka

The rest of the icons are also generated using the same workflow and design method, and the researcher will evaluate their effectiveness on the dimensions of Emotional Resonance and Cultural Relevance.

4.4. Validation

In the validating phase, this research adopts a comprehensive approach, drawing on case study methods, including direct observation and subsequent interviews with the staff members of the Social Welfare Council. By integrating participant observation, interview results, and recorded interaction data from the session, this validation method aims to analyze the influence of AI-generated icons on the proposed evaluation indicators from a holistic perspective.

4.4.1 Data Collection

As a qualitative approach, ethnography is often utilized to explore the cultural and social dynamics in this research scenario. This method can deeply investigate participants' responses to AI-generated icons with a focus on the reasons and purposes behind their behaviors and interactions. The main focus lies on the relationships and interactions between the researcher and the staff members of the Social Welfare Council. Researchers recorded observational notes from an external perspective, documenting important comments, behaviors, and reflective behaviors, with a particular emphasis on participants' emotional and cultural responses to the AI-generated icons. Additionally, video recordings and voice transcripts are employed to capture details and subtle interactions that might be overlooked during real-time observations. These recorded materials offer important resources for post-event analysis, enabling researchers to examine the dynamics of the activities in greater depth and ensure a comprehensive understanding of participants' interactions with the visual content.

4.4.2 Data Analysis

On December 9th, 2024, the researcher printed out the icons, alongside the creation process, including the analysis of the keyword frequency coming from the data, the conversion of themes and visual elements from the keywords, and the prompt conversion workflow. The printed materials were displayed at the Yachiyo Social Welfare Council and a sharing session is held on the place.



Figure 4.6 Presenting the icons at the Yachiyo Social Welfare Council (photo used with permission)

Validating Emotional Resonance

Through a detailed analysis of video recordings of researchers and Social Welfare Council staff, the observation results were validated using emotional resonance assessment indicators, which are non-verbal cues, group interactions, and reflective behaviors.

Clearly captured from the videos were the participants' non-verbal cues throughout the whole session, such as smiles, nodding, or leaning forward while the researcher was presenting the icons, which consistently indicated positive emotional responses to the AI-generated visual content. For example, when participants saw the icons that represented their local region, they often expressed spontaneous surprise or joyful gestures, along with positive comments such as "This is very cute" or "Impressive".

Group interactions also further validated the existence of emotional resonance, as video recordings showed that participants shared common feedback or explanations related to the icons, demonstrating a sense of connection and enthusiasm. Reflective behaviors were also evident in the videos, such as participants' prolonged focus on certain icon, namely the one of Murakami-Chuo (No. 10 in Figure 4.8), which showed repeated viewing of the icon, or verbalizing emotional meaning of the icon such as "I like this one the best" and "I think this one is



Figure 4.7 21 Icons were created for each region in the city

the most wholesome”. These behaviors indicate that the visual content triggered deeper levels of influence, prompting participants to engage in personal reflection and collaborative dialogue. Furthermore, after the sharing session, the Social Welfare Council made social media posts on multiple platforms, giving highly positive comments and feedback towards the icons as a part of the regional development project, saying “The icons are unique to each region and are pop and friendly, and we’d like to introduce them to our district plans in the future!” representing high levels of positive emotional resonance. By combining the behaviors captured in the video recordings with field observation notes and direct feedback from the council members, the validation process ensured consistency of the observed emotional resonance across the design outcome, which are the icons, presented in the session.

1

1 Source: Yachiyo Social Welfare Council on X, <https://x.com/yachiyoshakyoVC/status/1866630433435423166> Last Accessed 31 January 2025



Figure 4.8 Positive response while presenting the icons at the Social Welfare Council (photo used with permission)

Validating Cultural Relevance

Furthermore, through the analysis of video recording, the observation results were verified using the assessment indicators of cultural relevance, which are symbolic recognition, observable behaviors, and emotional responses.

The video analysis revealed that participants frequently identified and recognized culturally significant symbols embedded in the AI-generated visual content, totaling 14 of the 21 icons. For instance, participants would point to familiar visual elements and verbally express their feelings, often associating them with local traditions or personal memories, validating the effectiveness of these visual contents in evoking cultural identity. Observable behaviors further attested to cultural relevance. For example, participants displayed prolonged concentration on the visual content of the icon for Ooshin-ue, (No.21 in Figure 4.8), stating the cultural significance of the Torii element, which represents the shrine and the traditional festival in the area.

This action also includes approaching to observe common details or repeatedly viewing specific icons during conversations, namely the four icons made for Yachiyodai (No. 14 to No. 17 in Figure 4.9) discussing the cultural symbols in each region, such as “Coffee, shopping and cozy atmosphere of Yachiyodai-Seihoku (No. 14)”, “Community bus and shops in Yachiyodai-Higashi” (No. 15),



Figure 4.9 The Social Media Post on X by Yachiyo Social Welfare Council



Figure 4.10 Icons that got recognized by culturally symbolic representations

“Boccia sports tournament and active seniors in Yachiyodai-minami(No. 16)” and “Citizen’s forest and family life in Yahiyodai-Hokuto (No. 17)”.

The group discussions captured in the videos also indicated that participants engaged in collective debates regarding the clarity and ambiguity of certain elements, suggesting their profound connection and critical engagement with these visual contents. On one hand, emotional responses were particularly conspicuous when participants encountered images that resonated with their cultural identities and local characteristics, such as visible manifestations of pride, nostalgia, or passionate affirmative expressions. On the other hand, the participants also showed certain concerns when encountering icons that had recolonization difficulties, which totaled 5 of the 21 icons (As shown in Figure 4.10), and engaged in constructive discussions and comments after hearing the explanation from the researcher.

These findings were further corroborated through cross-validation with feedback and observation notes, further confirming that this thought process can effectively conform to the cultural expectations and experiences of the participants, ensuring its relevance and influence in the community context.



Figure 4.11 Icons that did not get instantly recognized

4.5. Creating the AI content guidebook

Following the design workshop and the creation of the icons, to summarize the experiences and knowledge gained from the previous workshops, trial sessions, and real-life testing results of the “Collect-Apply-Map-Generate” design thinking process, the researcher made an AI-generated contents guidebook, as the knowledge and the experiences concluded from the previous study could be concluded and visualized in the form of a book. The guidebook was provided to the staff at the Social Welfare Council, which includes a digital version for ease of use.

The Guidebook is separated into eight chapters:

- Chapter 1: The Introduction of Generative AI Technology
- Chapter 2: The ways to generate AI images
- Chapter 3: The Basics of Prompt Engineering
- Chapter 4: The steps of generating images
- Chapter 5: Using Metaphorical Thinking to create prompts
- Chapter 6: Troubleshooting
- Chapter 7: Hints, tricks, and things to pay attention



Figure 4.12 The cover of the Yachiyo Social Welfare Council Generative AI Content Guidebook

- Chapter 8: Sample works and templates

The third, fourth, and fifth chapters of the guidebook are regarded as the most crucial contents, as they offer a basis for effectively comprehending and applying AI prompt engineering. These sections encompass general knowledge of prompt engineering, the fundamental language structures of prompts, and detailed explanations of how to combine metaphorical thinking and domain mapping methods. These approaches can assist in creating more meaningful and highly context-relevant AI-generated images. The last chapter of the guideline is equally highly practical, as the staff can rapidly access pre-designed samples and templates, thereby simplifying the prompt engineering and generation process.

The researchers hope that this guidebook will not only be a tool for image gen-

eration but also a starting point for stimulating further creativity and exploration potential within the Social Welfare Council. Beyond directly employing the templates, the researchers also anticipate that the staff can adapt and expand based on the guidelines to develop more creative applications. Moreover, the researchers hope that this guideline can assist the staff in attaining a deeper understanding of the creative potential of AI technology, encourage them to incorporate these tools into their daily work processes and explore innovative methods to enhance community engagement and support the organization's goals. In the next chapter, the researcher is going to discuss the limitations and future possibilities learned from the experiences of the design process.

Chapter 5

Discussion and Future Works

5.1. Conclusion

This study conducts a comprehensive exploration of how AI-generated visual content, particularly Etegami-style images, can facilitate reflective engagement and cultural resonance within elderly communities. The research analyzes how the integration of metaphorical thinking, domain mapping, and culturally relevant prompts contributes to meaningful interactions while enhancing participants' experiences at the cognitive, emotional, and social levels. Through a detailed analysis of creative activities and community interactions, this study reveals diverse reflective practices, including individual interpretations of cultural symbols, collaborative storytelling, and group discussions.

By applying the principles of cultural relevance, emotional resonance, and personalized design, AI-generated visual content emerges as a dynamic medium for self-expression and community engagement. This creative process empowers participants to visually present personal narratives and shared cultural elements, fostering individual reflection and collective dialogue. The activities devised in this study, such as a word puzzle game and personalized postcard workshops, showcase the diversity and potential of AI-generated content in enriching community interactions and stimulating emotional and cognitive engagement.

The research findings emphasize the potential of generative AI in bridging traditional art forms with modern technology, offering tools for the elderly to explore their cultural identities and foster meaningful connections. The adaptability of AI-generated visual content ensures its deep resonance with the personal and cultural contexts of the participants, thereby enhancing intrinsic motivation and reinforcing a sense of belonging. These activities not only encourage reflective practices but also strengthen community bonds, demonstrating how creative and culturally

rooted approaches can contribute to overall well-being and social cohesion.

In conclusion, this study expands our understanding of how AI-generated visual art can enhance reflective practices and community engagement among the elderly. In addressing the challenges of an aging population, integrating such creative and technology-driven initiatives into community projects can play a crucial role in promoting individual expression, cultural preservation, and collective identity. This study advocates for the integration of culturally adaptive generative AI into community activities, demonstrating its far-reaching potential to inspire, connect groups, and enrich lives.

5.2. Limitation of the Research

Despite achieving certain outcomes in exploring AI-generated visual content in relation to cultural relevance and reflective practices, this study still has several limitations that warrant further exploration. These limitations primarily center around the following aspects:

5.2.1 Lost in Translation during Prompt Generation

During the process of prompt generation, as Japanese prompts had to be translated into English before being input into the AI system, inevitable problems of meaning loss occurred in translation. Some cultural symbols, idiomatic expressions, or concepts have profound cultural connotations in Japanese but might not retain their original meanings completely upon translation into English. This language conversion restricts the cultural accuracy and emotional resonance of the AI-generated content. Future research could endeavor to develop multilingual prompt support tools or collaborate with generative AI platforms to enhance language models in order to mitigate the impact of translation on the outcomes.

5.2.2 Ambiguity of Cultural Symbols and Concepts

The use of cultural icons and concepts in this study unveiled the potential ambiguity among these elements for different audiences. Certain cultural symbols might have explicit meanings for some participants but could be enigmatic for

others. Such ambiguity limits the universality and consistency of interpretation of the generated images in diverse cultural settings. Moreover, the polysemy of cultural symbols could result in completely different interpretations of the same image by different participants, thereby adding complexity when evaluating the effects. Future research could conduct more in-depth community investigations to clarify the context and the common understanding of cultural symbols among the audience groups.

5.2.3 Time Span Between Two Pilot Workshops

The two pilot workshops in this study were conducted approximately one year apart, presenting a challenge to the consistency and comparability of the research data. During this period, changes in the participants' personal interests, memories, and cultural backgrounds might have influenced their reactions to the AI-generated content. Additionally, AI technology evolved rapidly within a year, potentially leading to inconsistencies in the tools and techniques utilized in the study. Future studies should consider shortening the experimental time interval or introducing continuity tests to minimize the variables introduced by the time span.

5.2.4 Insufficiency in the Number and Diversity of the Research Group

Another limitation of this study lies in the relatively small number and limited diversity of the participating group. This constraint might impact the level of generalization and wide application of the research findings. This study mainly focused on the elderly residents of a specific community or staff from a specific organization, which, although beneficial for an in-depth understanding of this group's cultural background and needs, restricted the further exploration of the research results to other cultural or age groups. Furthermore, the participants' backgrounds were relatively homogeneous, lacking individuals with different cultural backgrounds, educational levels, and degrees of technological acceptance, which might have constrained the diversity and comprehensiveness of the study.

These limitations indicated that when applying generative AI to cultural rel-

evance and community practices, greater attention needs to be paid to mitigate these issues. Despite these challenges, this study still offers significant insights into the integration of AI and culture, laying the groundwork for future improvements.

5.3. Future Research Possibilities

5.3.1 Further Collaboration with the Yachiyo Social Welfare Council

Future research endeavors will deepen the collaboration with the Yachiyo Social Welfare Council to broaden the application of AI-generated visual content in community activities. For instance, by developing more elaborate prompt templates and generation samples, the council can employ this technology for creating promotional materials, educational content, and even community interaction events in the form of collaborative experience workshops more conveniently. Moreover, exploration could be made on integrating AI-enhanced culturally relevant visual content into other community projects, such as educational courses for the elderly, art therapy activities, or inter-generational art activities. Through sustained collaboration, not only can the application of Generative AI in the community setting be optimized but also a profound understanding of community needs can be attained to develop more practical solutions.

5.3.2 Potential Influence on Mitigating the Risk of Cognitive Disorders

Generative AI demonstrates significant potential in designing cognitive stimulation activities. Future researchers could investigate its specific efficacy in reducing the risk of cognitive disorders among the elderly. For example, by incorporating AI-generated visual content into brain training games and cognitive exercises, its enhancement effects on memory, attention, and cognitive flexibility could be evaluated. To enhance the research to be more scientific and authoritative, consideration could be given to collaborating with professional organizations possessing a medical or occupational therapist background, such as neuroscience research



Figure 5.1 Yachiyo Rehabilitation Hospital, a local medical facility that is involved in occupational therapy methods

institutions or rehabilitation centers for the elderly. This interdisciplinary collaboration can not only provide medical support for the practical effects of the research but also make foundations for new paths for the application of generative AI in the domain of health promotion.

1

1 Source: Yachiyo Rehabilitation Hospital <https://www.kan-naro.jp/hospital/000300/summary> Last Accessed 31 January 2025

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Appendices

A. First pilot workshop

A.1 Posters and toolkit used in the first pilot workshop

A.2 Survey results of the first pilot workshop

A.3 Tables of keywords from the paper prompt toolkit

A.4 Postcards made by the participants

B. Second pilot workshop

B.1 Toolkit used in the second workshop

B.2 Tables of keywords from the paper prompt toolkit

B.3 Postcards made by the participants

C. Etegami guessing games made for Nobi-Nobi salon

D. Generative AI Guidebook

米本団地 ほっこり会
慶應義塾大学大学院 メディアデザイン研究科

AI絵葉書を作ろう！

人工知能の力で色々な面白い絵葉書を作ろう

「人工知能絵葉書体験会」の流れ

参加者が持参する内容：日常的な物・好きな小物 1つ

思いついたことを書く → 好きなものを自由を選ぶ → 絵葉書を一瞬に生成！ → 好きな言葉を書く

嬉しい！
楽しい！

何でも作れる、どんなスタイルでも作れる！

人参、ロボット、色鉛筆画 猫、自転車、浮世絵 桜、テレビ、色鉛筆画 キャベツ、鍋、マーカーペン

イベント情報

定員：5名-10名(予定)
対象者：誰でもできる！
日時：6月7日(水) 午後1:00-2:00
場所：米本団地 ほっこりカフェ

作ってみませんか？

Figure A.1 Poster of the first pilot workshop

Questions	P1	P2	P3	P4	P5	P6	P7	P8
1. How much do you know about AI?	あまり知らない	あまり知らない	あまり知らない	あまり知らない	全然知らない	全然知らない	どちらとも言えない	少し知っている
Where did you know it?	テレビ等	テレビ、新聞	テレビ 言葉は知っているが 詳しい内容は分からない				テレビ、新聞	
2. How do you like your postcards?	やや好き	どちらとも言えない	とても好き	どちらとも言えない	どちらとも言えない	どちらとも言えない	とても好き	やや好き
Why?		類似等したので風景に 変えてもらいました	誰かにプレゼントしても 喜ばれそうな作品になった から（笑）	類似のイメージ？	唐揚げの形が頭に なっているのので微 妙？		思いもよらない絵に なっていて面白かった	
3. Do you want to do it again in the future?	どちらとも言えない	どちらとも言えない	とても作りたい	少し作りたい	どちらとも言えない	どちらとも言えない	とても作りたい	少し作りたい
Why?		あまり分らないので	もう少しセンスの良くなる ように「プロレス」を兼ねて 作ってみた				面白そうなので皆さん にも作ってもらいたい	
4. Can you remember what you've created by looking at the postcards?	少し思い出せる	少し思い出せる	少し思い出せる	よく思い出せる	少し思い出せる	少し思い出せる	少し思い出せる	少し思い出せる
5. Any other feedbacks?		思った事と違っていました	最初は全然想像もできな かったけど実際に作品が ちゃんと出来ると、「人 に知ってもらうぞ」と 改めて思いました。	他の人たちは満足その でしようか？			人工知能ことが解ら なかったけど、こんな ことができるのかを 興味が増えました	ワードをいろいろ 入力してみたかった

Figure A.2 Survey results of the first pilot workshop

Combination	Name	Word1	Word2	Word3	Word4
1	P1	飲食（孫）おにぎり、 ウインナー、唐揚げ	キャベツ	北海道	蟹、イカ
2		演歌	テレサテン	カラオケ	写真
3		ビール	唐揚げ	船	写真

1	P2	仲間（友人）	旅行	宇宙	写真
2		料理	世界のカレー	食べる	水彩画
3		家族	世界旅行	飛行機	アニメーション

1	P3	猫の肉球の マシュマロ	コーヒー	ソファ	リラックス
2		バラ園	黄色	山	アーチ
3		ラベンダー	枕	北海道	色鉛筆

1	P4	ガン	新式	病院	早く元気になる
2		アスパラ	料理	教えてもらう	マヨネーズの初使用
3		旅行	生まれた所	台湾	写真

1	P5	マッサージチェア	猫	海	レトロ
2		ひまわり	アヒル	山	油彩画
3		ランドセル	飛行機	米本団地	色鉛筆

Combination	Name	Word1	Word2	Word3	Word4
1	P6	キャベツ	マングローブ	米本団地	昭和
2		千葉県の名産の由来	のびのびサロン	香取神宮	ピンクのTシャツ
3		そば	朝一番	バスケットボール の試合	新聞

1	P7	台風到来	盆踊り	原っぱ	スポーツ
2		玉子焼き	ベチュニア	お年寄り	コーヒータイム
3		千葉県	ロックミュージック	チャレンジ	モルック競技

1	P8	震度3の地震が ありました	娘と温泉	米本団地	時計
2		聖田さん	食事	中国	スーツ
3		学校	少子化	廃屋	日本剣道形

1	P9	民俗学セミナー	盆踊り	サークル	タケノコ取り
2		花の名前	ラーメン	自転車	散歩
3		ビール	コーヒー	野球	台風

Figure A.3 converted prompt keywords from the paper prompt toolkit

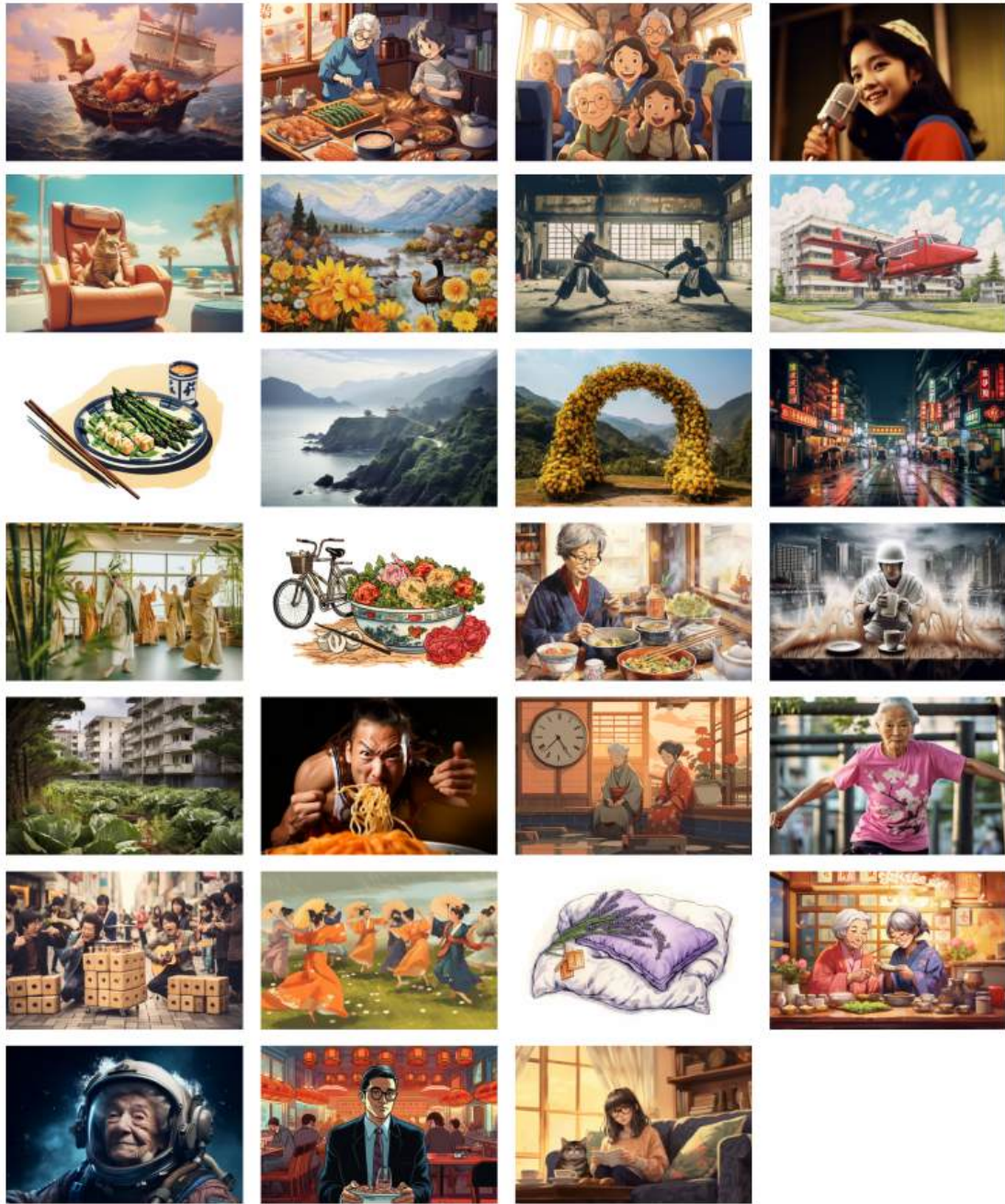


Figure A.4 Postcards made by the participants in the first pilot workshop

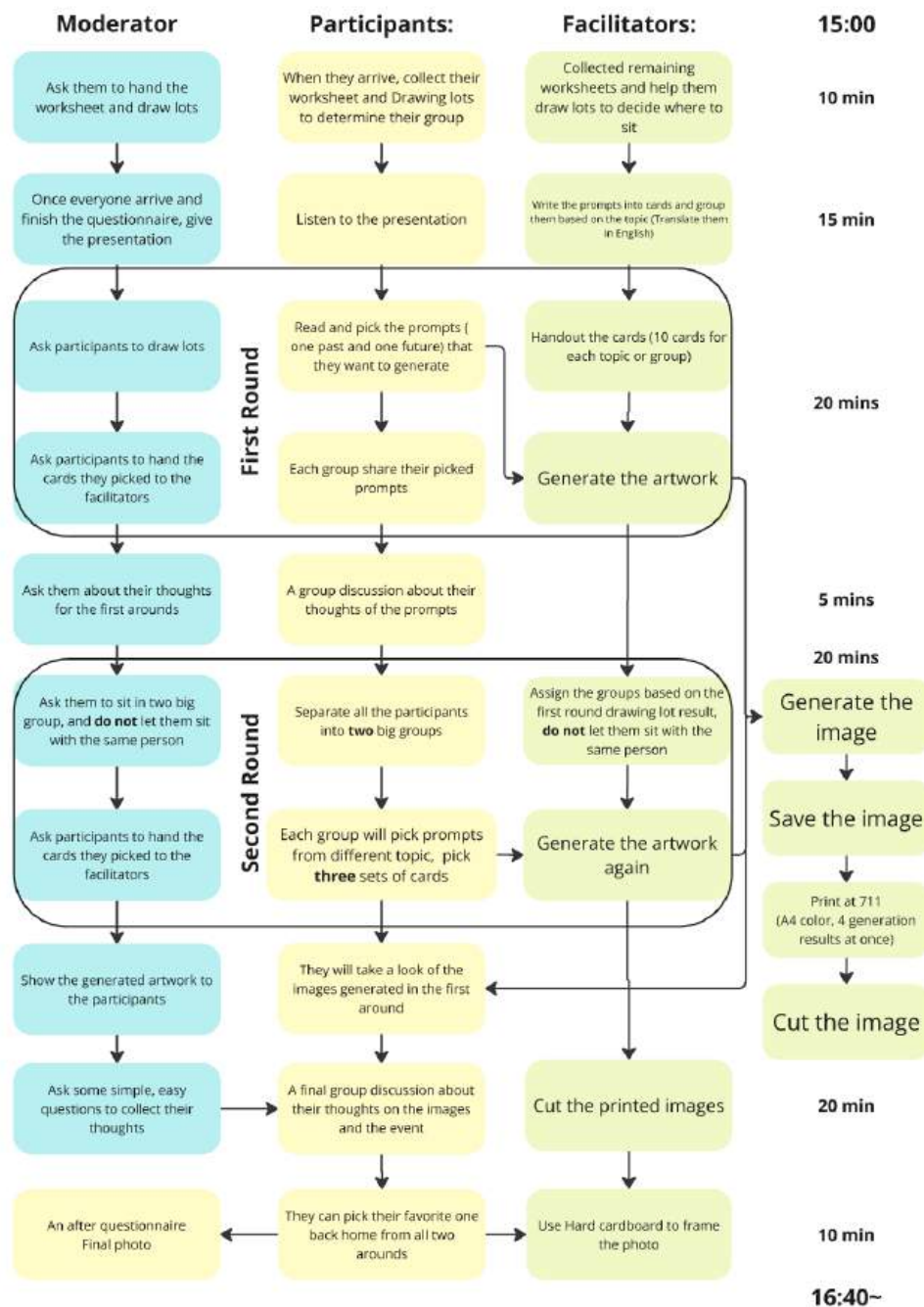


Figure B.1 Workflow leaflet used in the second pilot workshop

「人工知能絵葉書体験会・第二弾」アンケート

慶応義塾大学メディアデザイン研究科 ITOMA 研究室

よろしくお願いします！♡

名前:

①以前、人工知能についてどの程度知っていましたか？

全然知らない あまり知らない どちらとも言えない 少し知っている よく知っている

②一回目と二回目に描いた絵、どちらが好きですか？

1 回 目

2 回 目

③自分の絵はどうでしたか？（内容・画風・面白さなど）

全然好きじゃない あまり好きじゃない どちらとも言えない やや好き とても好き

理由について教えてください！

④自分の絵を見て、「呪文」に書いたことを思い出せますか？

全然思い出せない あまり思い出せない どちらとも言えない 少し思い出せ よく思い出せる

⑤他の人たちの絵を見て、「呪文」に書かれていたことを思い出せますか？

全然思い出せない あまり思い出せない どちらとも言えない 少し思い出せる よく思い出せる

Figure B.2 Survey questionnaire used in the second pilot workshop

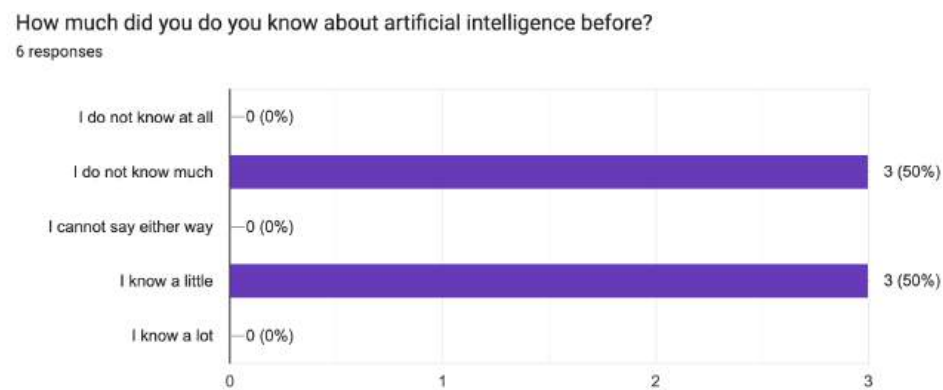


Figure B.3 Question 1

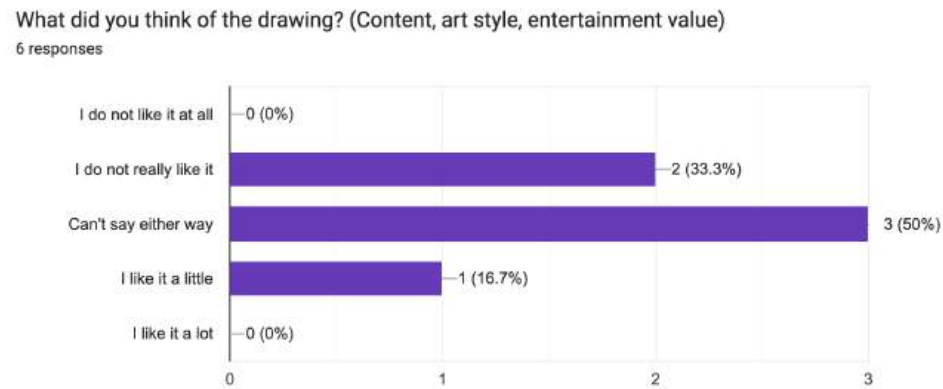


Figure B.4 Question 2

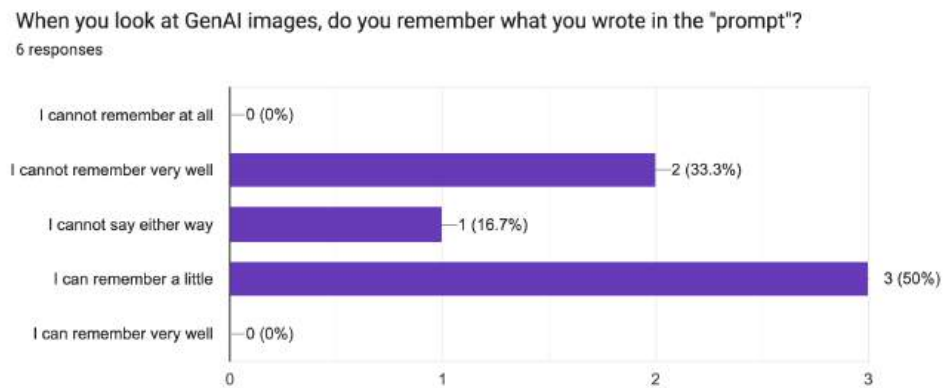


Figure B.5 Question 3

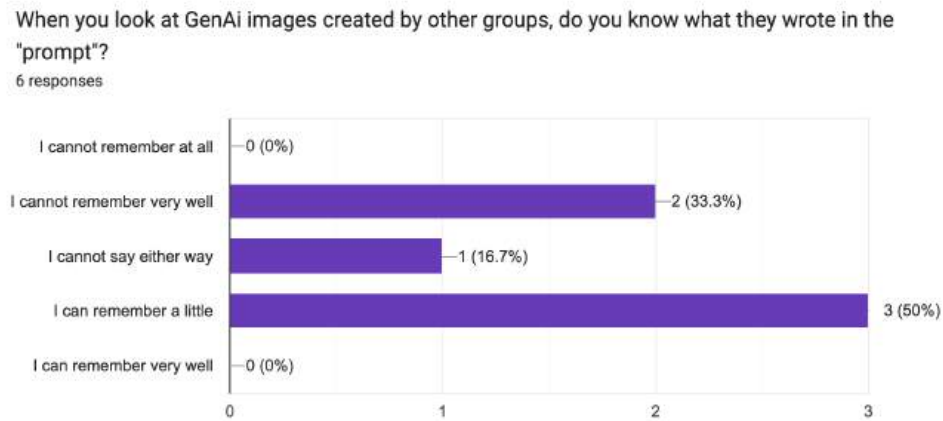


Figure B.6 Question 4

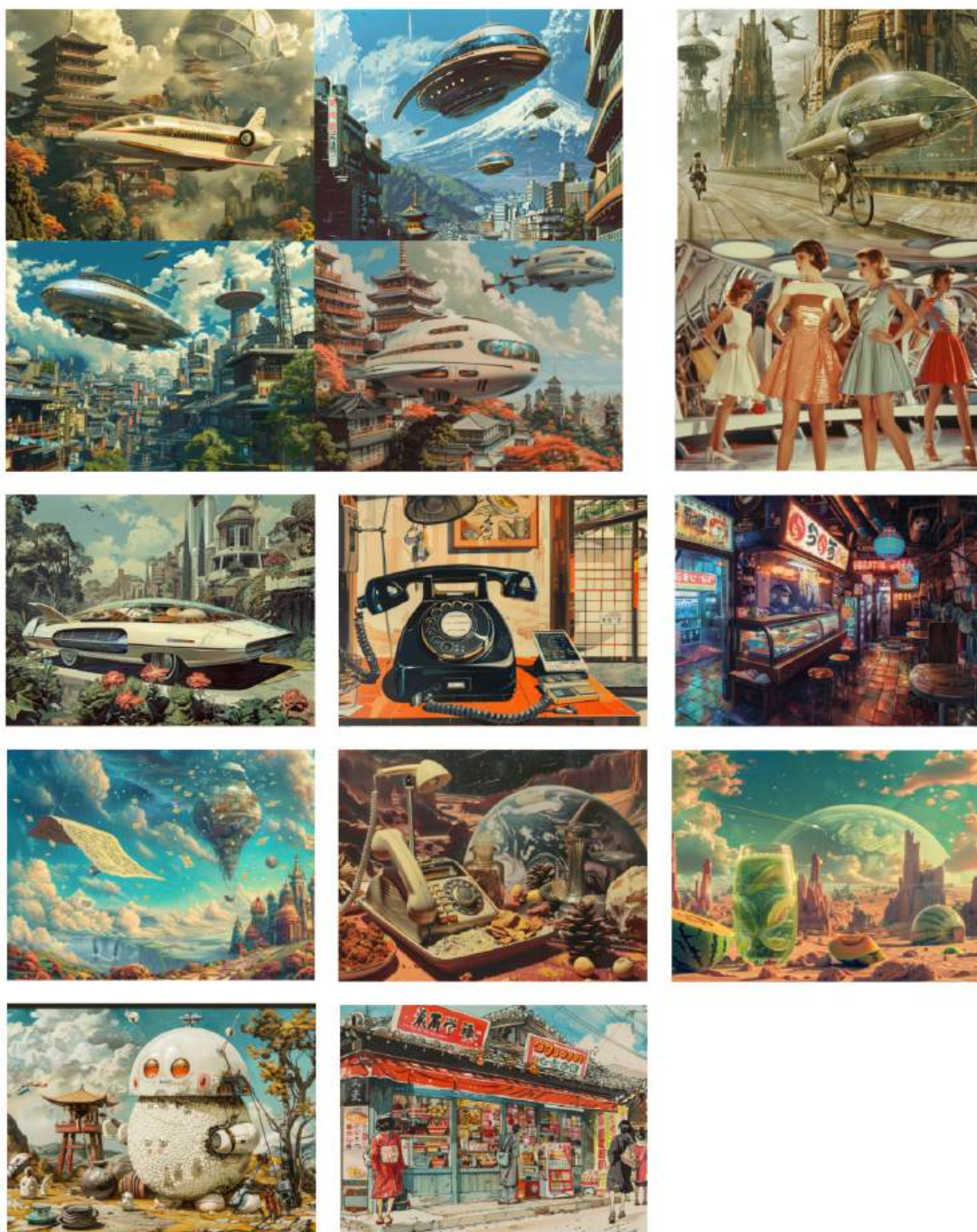


Figure B.7 Postcards made by the participants in the second pilot workshop

AI 脳トレクイズ (2) 制作：慶応義塾大学 李 聖田

名前：_____ 日付：____ 月 ____ 日

この人工知能で生成した絵手紙の内容から店名を考えましょう。



回答：_____

正解を当て、次回のびのびサロンでこの紙を持って、賞品と引き換えよう！

Figure C.1 A chicken wearing royal clothes and a crown

AI 脳トレクイズ (3) 制作：慶応義塾大学 李 聖田

名前：_____ 日付：____ 月 ____ 日

この人工知能で生成した絵手紙の内容から店名を考えましょう。



回答：_____

正解を当て、次回のびのびサロンでこの紙を持って、賞品と引き換えよう！

Figure C.2 A house under a pine tree



Figure C.3 A house under the sun

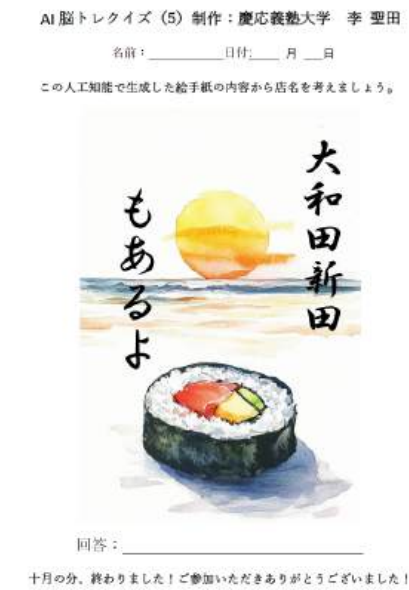


Figure C.4 A sushi on the beach



前書き

本ガイドブックをご覧ください、誠にありがとうございます。まず、この機会に、私の研究を支えてくださった八千代市の皆さまに深く感謝申し上げます。特に、米本団地の住民の皆さまや、八千代市社会福祉協議会の皆さまには、私が慶應義塾大学メディアデザイン研究科のITOMA研究室の大学院生として研究を進める中で、多大なるご協力をいただきました。皆さまの温かいサポートがなければ、私の研究成果は実現しなかったでしょう。

AI（人工知能）技術、とりわけ画像生成ソフトウェアは、これからの時代において大きな可能性を秘めています。その応用範囲はクリエイティブな活動だけに留まらず、私たちの日常生活をより面白く、有益なものに変える力を持っています。本ガイドブックを通じて、多くの方がAI技術を気軽に取り入れ、楽しみながら活用できるようになることを願っています。

これから紹介する内容が、AIの可能性を発見するきっかけとなり、皆さまの生活や活動がさらに充実したものとなることを心からお祈りしています。

2024年
李 聖田

Jishenglian



米本団地の住民たちが作った昭和レトロ風な私

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01

AI技術の紹介

「AI」とは？



AI（人工知能）とは、コンピューターが人間のように学習し、推論し、問題を解決する能力を持つ技術です。この技術は近年急速に進化しており、日常生活や仕事のあらゆる場面で活用されています。

例えば、スマートフォンの音声アシスタント（SiriやGoogleアシスタント）は、自然言語処理というAIの一分野を利用してユーザーの質問に答えたり、タスクを実行します。また、ECサイトでおすすめ商品を表示するレコメンドエンジンや、自動車の自動運転技術もAIの一例です。

さらに、画像生成AIでは、簡単な指示を入力するだけで芸術的な絵画やリアルな写真を生成できるようになり、クリエイティブな分野でも注目を集めています。このように、AIは私たちの生活を便利で豊かにする可能性を秘めており、その活用範囲は広がり続けています。



常用のAIモデル

現在、多くのAIモデルが私たちの生活に密接に関わっています。例えば、**ChatGPT**は、自然な会話を生成するために設計された言語モデルで、質問への回答や文章作成をサポートしています。また、**DALL·E**は、ユーザーの入力したテキスト（**プロンプト**）に基づいて画像を生成する革新的なツールで、アートやデザイン分野で広く使われています。さらに、**AlphaGo**は囲碁でプロ棋士を打ち負かしたことで注目され、ゲームAIの可能性を示しました。これらのAIモデルは、それぞれ特化した分野で能力を発揮し、私たちの日常生活や産業界に変革をもたらしています。

AIモデルの原理

AIモデルは、大量のデータと高度なアルゴリズムを活用して、人間のように学習や判断を行う仕組みです。その中心にあるのが「機械学習」と「深層学習」です。機械学習では、AIが与えられたデータからパターンを見つけ出し、それを基に未来の予測や分類を行います。一方、深層学習は機械学習の一種で、脳の神経回路網を模倣した「ニューラルネットワーク」を用いて、より複雑なデータの処理を可能にします。

AIモデルが動作する基本的な仕組みは次の通りです：

- **データの収集と準備：** モデルは膨大な量のデータを学習することで、特定のタスクに必要な知識を習得します。例えば、画像生成AIでは何百万もの画像が学習データとして使用されます。
- **学習プロセス：** AIは、このデータを元に、目標達成に必要なルールや関係性を自動的に抽出します。これは、アルゴリズムを通じて繰り返し行われ、モデルの精度が徐々に向上します。
- **推論プロセス：** 学習が完了したAIモデルは、新しいデータに基づいて予測や判断を下します。例えば、DALL・Eは、ユーザーが入力したプロンプトを解釈し、それに対応する画像を生成します。

このようなメカニズムにより、AIは高い精度と効率でタスクを遂行することができ、画像生成や音声認識、医療診断など、さまざまな分野での応用が可能になっています。

02

AI画像の作成方法

AI画像生成モデルの紹介

AI画像生成モデルとは、テキストの指示（**プロンプト**）をもとに、高品質な画像を自動生成する技術を備えたAIシステムです。これらのモデルは膨大な画像データと説明文を学習し、ユーザーの要求に応じてクリエイティブな画像を生成します。



代表的なAI画像生成モデルには以下のものがあります：

- **MidJourney**：芸術的で高品質な画像を生成するのが特徴。スタイルの幅広さや使いやすさで多くのユーザーに支持されています。
- **DALL・E**：OpenAIによる画像生成モデルで、リアルな写真からファンタジー風イラストまで幅広く対応。初心者にも使いやすい直感的な設計が魅力です。
- **Stable Diffusion**：オープンソースモデルで、カスタマイズ性が高いのが特徴。デベロッパーや上級者に人気です。

これらのモデルは、アート制作、広告デザイン、プレゼン資料作成など、さまざまな分野で利用されています。特に**MidJourney**は、独自の芸術的なスタイルを提供し、多くのユーザーにとって創作活動の新たなツールとして注目されています。

本ガイドブックでは、**MidJourney**を例に具体的な使い方を解説します。

MidJourneyの紹介

MidJourneyは、AIを活用した画像生成ツールで、特に芸術的で魅力的なビジュアルを生成する能力に優れています。テキストプロンプトを入力するだけで、プロフェッショナルなアートやデザインを簡単に作成できるため、クリエイティブな作業をサポートする強力なツールとして注目されています。

- **芸術的なスタイル**

MidJourneyは独自のスタイルで、リアルな写真から絵画風、アニメまで幅広いジャンルに対応しています。

- **操作の簡単さ**

Discordを介して利用できるため、アカウント作成後すぐに使い始めることができます。複雑な設定は不要で、初心者にも扱いやすいです。

- **高速な生成プロセス**

テキストを入力して数秒～数分で画像が完成。何度でもバリエーションを試すことが可能です。

- **柔軟なカスタマイズ**

アップスケール機能やバリエーション生成機能を使えば、さらに高解像度で細部までこだわった画像が作れます。

本ガイドでは、MidJourneyの基本的な使い方から応用まで、初心者向けにわかりやすく解説していきます。

MidJourneyの準備

MidJourneyのWebインターフェースでは、Googleアカウントを使用して簡単にログインできます。以下の手順に従い、アカウント作成から利用準備まで進めましょう。

手順

1. MidJourneyの公式サイトにアクセス

- パソコンで、[MidJourneyの公式サイト](https://www.midjourney.com) (<https://www.midjourney.com>)にアクセスします。
- ページの右下にある「Sign Up」をクリックします。



2. Googleアカウントでログイン

- ログイン画面で「Continue with Google」を選択します。
- Googleアカウントの選択画面が表示されるので、使用するアカウントを選択します。
- 必要に応じてGoogleアカウント情報を入力し、認証を完了させます。



3. MidJourneyへのアクセス許可

- 初回ログイン時には、MidJourneyがGoogleアカウント情報（メールアドレスなど）へのアクセスを求めます。「許可」をクリックして進みます。

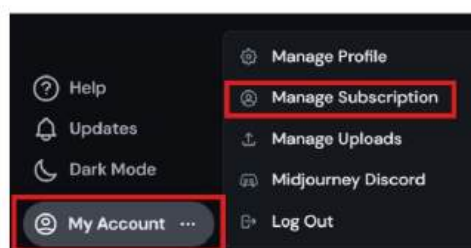


4. ログイン完了

- ログインが完了すると、MidJourneyのホームページが表示され、画像生成を始める準備が整います。

料金プランの選択

MidJourneyでは有料プランのみが提供されており、利用頻度や目的に応じて選択できます。ホームページの左下の「My Account」→「Manage Subscription」で、料金プランを選択できます。



以下の料金プランを選択可能です：

- Basicプラン（月額10ドル前後）：少量の画像生成を希望する個人ユーザー向け。
- Standardプラン（月額30ドル前後）：生成枚数が大幅に増え、高速モードも利用可能。
- Proプラン（月額60ドル前後）：プロフェッショナル用途や大量生成が必要なユーザー向け。

Basic Plan	Standard Plan	Pro Plan	Mega Plan
\$10 / month 30% off billed annually	\$30 / month 20% off billed annually	\$60 / month 30% off billed annually	\$120 / month 20% off billed annually
Subscribe	Subscribe	Subscribe	Subscribe
View monthly billing	View monthly billing	View monthly billing	View monthly billing

各プランの詳細は、「Manage Subscription」セクションで確認できます。まずはBasicプランで試し、必要に応じてプランをアップグレードするのが良いでしょう。

これらの手順を完了すれば、MidJourneyを使ってAI画像生成を始める準備が整います。次章では、具体的な操作方法について詳しく解説します。

03

MidJourneyで魅力的な画像を生成するためには、プロンプトの作成が非常に重要です。プロンプトはAIに与える指示文で、画像のテーマやスタイル、雰囲気の詳細に指定します。この章では、効果的なプロンプトの書き方と工夫のポイントを解説します。

プロンプトの基本

プロンプトの構造

プロンプトはシンプルで分かりやすく、以下の最も基本的な三つの要素を含めると効果的です。

1. 主題（テーマ）

- 生成したい対象、モチーフやシーンを明確にします。
 - 例: A snowy mountain / A futuristic city at night
(雪山・夜の未来都市)

2. 詳細な説明（特徴や要素）

- 色や形、素材などを指定すると、より具体的な画像が生成されます。
 - 例: with golden sunlight / surrounded by pine trees
(金色の陽光とともに・松の木に囲まれています)

3. スタイル、画風や雰囲気

- 芸術的なスタイルや画像のトーンを加えると、独自性が増します。
 - 例: in watercolor style, cinematic lighting, hyper-realistic
(水彩画風・映画のような照明・超現実的)



A snowy mountain,

雪山、 ← テーマ

With golden sunlight,

金色の陽光と共に、 ← 特徴や要素

Watercolor style

水彩画風 ← スタイル、画風や雰囲気

良いプロンプトの例文

- A magical forest with glowing mushrooms, fantasy atmosphere, in the style of Studio Ghibli
- 光るキノコのある魔法の森、幻想的な雰囲気、ジブリ動画風

(テーマの要素、説明とスタイル、全部含めています!)



- A futuristic skyscraper in a cyberpunk city, neon lights, foggy night, ultra-realistic
- サイバーパンク都市の未来的な高層ビル、ネオン、霧の夜、超リアル

(テーマの要素、説明とスタイル、全部含めています!)



- A cute robot holding a flower, surrounded by children, cartoon style, soft pastel colors
- 花を持ったかわいいロボット、子供たちに囲まれて、漫画風、ソフトなパステルカラー

(テーマの要素、説明とスタイル、全部含めています!)



注意点とヒント

- 具体的であること

曖昧なプロンプトではAIが適切な結果を生成しづらくなります。たとえば「mountain」ではなく、「A snowy mountain with a clear blue sky, anime style」を使うことで明確な結果が得られます。



mountain
(山)



A snowy mountain with a
clear blue sky, anime style
(澄んだ青空と雪山、アニメ風)



大谷翔平ではなくて
お姫様が生成した...

- 過度な情報を避ける

AIで確定できない人物・場所の情報を詰め込むと、画像が雑然とした仕上がりになる可能性があります。大切な要素を優先的に記載しましょう。

例: Ohtani Shohei dancing in Yachiyodai station
(八千代台駅で踊る大谷翔平) → AIが「八千代台」という場所と「大谷翔平」という人物が理解できない！

- スタイルの調整

試行錯誤を重ね、特定のスタイルや構図を見つけることで、生成結果を最適化できます。

- ネガティブプロンプト (Negative Prompt)

作成したくない要素を指定することも可能です。

例: Without text, no blur, exclude humans
(テキストなし、ぼかしなし、人間なし)

設定を調整する

プロンプトを入力した後、いくつかの設定を調整して結果を変更できます。

- **アスペクト比 (Aspect Ratio): --ar OO:OO**
 - いろいろなサイズのイメージが作れるように、プロンプト入力欄で、プロンプトを入力した後、以下のように指定します:
 - --ar 16:9 → 横長
 - --ar 4:5 → 縦長
 - --ar 1:1 → 正方形
 - --ar 25:37 → はがき (縦長)
 - --ar 105:148 → A4 (縦長)
 - --ar 89:127 → L判 (縦長)
- **スタイルやテーマ: --style OO**
 - --style オプションを使い、より特定のスタイルを適用します。
例: --style surreal (超現実的)、--style fantasy (ファンタジー風)
- **解像度の向上: High Resolution**
 - デフォルトの解像度で画像が生成されますが、高品質の画像が必要な場合は「High Resolution」オプションを選択できます。
- **ネガティブプロンプト: --no OO**
 - 望まない要素を除外する際に使用します。
 - 例: --no text (文字を除外)、--no people (人物を除外)

注意点

短ハイフン2つ

--ar 16:9

半角スペース1つ

半角コロン1つ



04

MidJourneyで画像を生成するには、プロンプトを入力し、必要に応じて設定を調整します。この章では、プロンプトの入力から設定の変更まで、画像生成の具体的な手順を詳しく説明します。

画像生成の手順

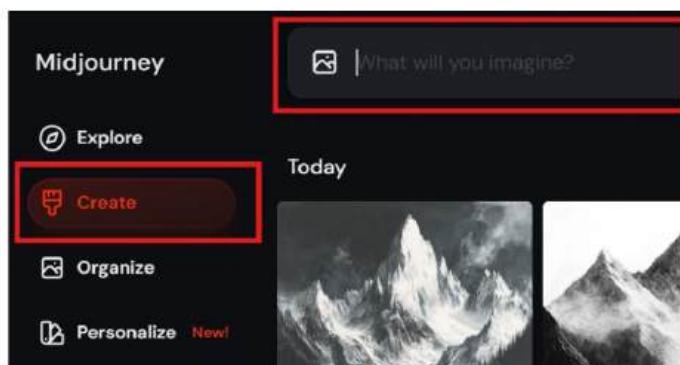
プロンプトを入力する

1. MidJourneyのWebサイトにアクセス

<https://www.midjourney.com> にアクセスし、アカウントにログインします。ログイン後、ダッシュボードが表示されます。

2. 新しいプロンプトを作成

「Create」ボタンをクリックして、プロンプト入力欄をクリックして、希望の内容をパソコンのキーボードで入力します。



日本語プロンプトを翻訳する

日本語での入力も可能ですが、英語に翻訳するだけで、AIがより適切に解釈し、高品質な画像を生成できる可能性が高まります。翻訳にはGoogle翻訳やDeepL翻訳を使用するのがおすすめです。

1. 翻訳サービスを開く

- お好みのオンライン翻訳サービスを開きます。Google翻訳とDeepL翻訳を使用するのがおすすめです。
 - Google翻訳 (<https://translate.google.com/>)
 - DeepL翻訳 (<https://www.deepl.com/ja/translator>)

2. 日本語プロンプトを入力する

- プロンプトのアイデアや単語を日本語で入力します。
- 例: 「満開の桜と澄んだ青空、アニメ風」

3. 翻訳結果を確認する

- 翻訳された英語プロンプトを確認し、必要に応じて調整します。
- 翻訳例: "Cherry blossoms in full bloom and clear blue sky, anime style"



4. 読点で長文を区切る

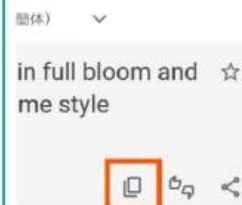
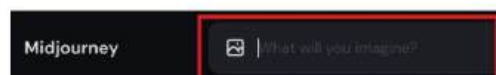
- 長い日本語プロンプトは、読点（、）を使って要素ごとに区切ると、英語でわかりやすい構文になります。

5. 複数の単語を使う

- 短い単語を複数並べるだけでも効果的です。
 - 例: 海、黄昏、鮮やか色合い、印象派 (Sea, twilight, vivid colors, impressionism)

2. 翻訳プロンプトをMidJourneyに入力する

翻訳された英語プロンプトをMidJourneyのプロンプト入力欄にコピーして貼り付けます。



このボタンをクリックするとコピーできますよ！

3. 生成開始

プロンプトを入力後、パソコンキーボードでのEnterキーを押して生成プロセスを開始します。四枚の画像が同時に生成します。

Full-bloom cherry blossoms with a clear blue sky, anime style



Full-bloom cherry blossoms with a clear blue sky, anime style

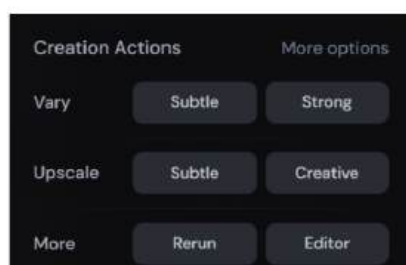
Today



この手順を通じて、一組の画像が生成することができます。
好きな分をご自由に選んでください！

結果に基づいたの操作

生成した画像をクリックして拡大表示し、右下のボタンでもっと細かい操作・仕上げができます。



- バリエーションの作成 (Vary)

「Subtle」(弱め)と「Strong」(強め) ボタンを使い、生成画像に基づいた新しい似たような画像を作成します。

- 高解像度化 (Upscale)

「Subtle」(穏やか)と「Creative」(激しい) ボタンをクリックして、画像を高解像度にします。

- 再生成 (Rerun)

プロンプトをそのまま再試行したい場合に使用します。



「Vary」→「Strong」をクリックすると、元画像に似たようなアニメ風的女子高校生の画像を四枚生成した。

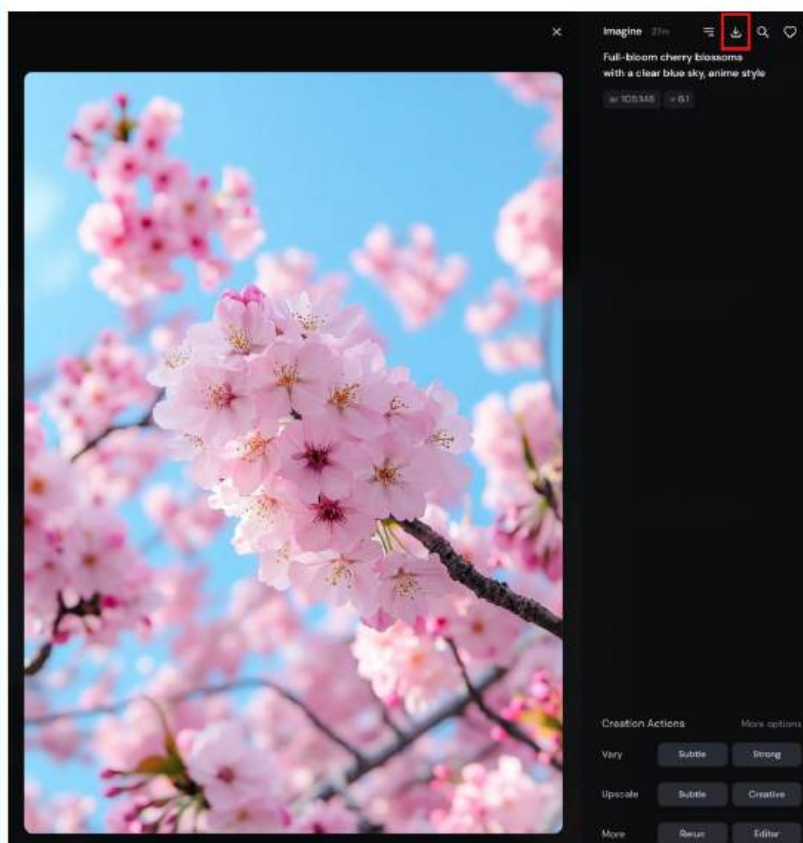
保存とダウンロード

生成プロセス

プロンプト送信後、数秒～数分で画像が生成されます。
生成結果はウェブサイト上で確認できます。

画像をダウンロード

画像をクリックして拡大表示し、右上の「↓」矢印ボタンをクリックして、パソコンに保存します。



04

メタファー（比喩的な）思考を取り入れることで、AI画像生成におけるプロンプト作成がより創造的かつ独自性の高いものになります。この章では、思考を用いて多用途（ロゴ、サイン、イラストなど）のプロンプトを効果的に作成する方法を解説します。

比喩思考を使ったプロンプト作成

メタファー思考とは？

メタファー思考とは、特定の概念やアイデアを別のものに例えて表現する方法です。これにより、**抽象的なアイデアや感情**を視覚的に具体化しやすくなります。AI画像生成では、メタファーを取り入れることで、単なる説明を超えたユニークな表現を実現できます。

メタファー思考を使ったプロンプトは、単にテーマを描写するだけでなく、**深い意味や感情を視覚的に伝える力**があります。ロゴやサイン、イラストなど、さまざまな用途に応用できるこの手法を活用して、AI画像生成の新たな可能性を探ってみてください。

例えば…

「思考」を表現するために、「光る電球」と比喩。

「平和」を表現するために、「白い鳩」をイメージ。

「環境保護」を表現するために、「緑色の芽と手」をイメージ。



メタファーを活用したプロンプト作成の手順

ステップ1: 表現したいテーマを明確にする

まず、生成したい画像の目的やテーマを考えます。

- ロゴ: ブランドや団体が伝えたい価値観。
- アイコン: シンプルで分かりやすく、メッセージ性のあるデザイン。
- ポスター、イラスト: 情緒的またはストーリーテリングの要素を含む表現。

例:

「動物保護」、「自然との共生」、「力強さ」、「支援」…

ステップ2: メタファーとなる要素を選ぶ

テーマを別の形で表現できるメタファーを考えます。

例:

- 自然: 山、川、雲、太陽、葉…
- 形状: 円（統一）、三角形（安定）、波（流動性）…
- 動物: フクロウ（知恵）、鳩（平和）…
- 色彩: 青（信頼感、穏やか）、緑（調和、エコー）、赤（情熱、消防）、ピンク（女性、母親）、オレンジ（楽観的、認知症防止）…

例:

テーマ「未来志向」→ メタファー「星空に向かうロケット」

ステップ3: メタファーを具体化する

選んだメタファーを視覚的に明確にするため、具体的な描写をプロンプトに含めます。

- 詳細を追加する
 - 例: 「星空に向かうロケット」 → 「星空を飛び回り、周りには星や星座が輝く流線形のロケット」
 - 英語に翻訳: "A streamlined rocket flying through the starry sky, surrounded by shining stars and constellations"
- スタイルを指定する
- 例: シンプルで洗練されたデザイン (simple and minimalist design, vector style)
- 強いコントラストと分かりやすい (bold and clear shapes, with high contrast)

メタファー思考を使用して、デザインを生成してみましょう。



Streamlined rocket flying through the starry sky, surrounded by shining stars and constellations, logo, simple and minimalistic design

(星空を飛び回り、周りには星や星座が輝く流線形のロケット、ロゴ、シンプルでミニマリストデザイン)



Green bud protected by two hands, icon, white background, simple and minimalist design

(緑色の両手で保護した芽、アイコン、白色背景、シンプルでミニマリストデザイン)

メタファー思考を深めるコツ

- 比喩を複数試す

1つのテーマに対して、複数のメタファーを試してみましょう。意外な組み合わせが新しいアイデアを生むことがあります。

- 感情を込める

比喩に感情的な意味を込めると、より印象的な画像が生成されます。例えば、「優しさ」を表現するために「風が揺らす柔らかな木」を使用するなど。

- 具体例を観察する

実際のサイン、ロゴ、アートや自然現象、デザインからインスピレーションを得て、比喩を形にするヒントを探しましょう。

ブレインストーミングでアイデアを広げる

メタファー思考をさらに効果的に活用するためには、**ブレインストーミング**を取り入れるのがおすすめです。複数の視点やアイデアを一度に引き出すことで、創造性を広げ、ユニークなプロンプトを作成する助けとなります。



付箋を使って、テーマに関連する言葉やイメージをできるだけ、自由に多く書き出す。

06

MidJourneyを使う際、うまくいかない場合や思い通りの結果が得られないことがあります。この章では、よくある問題とその解決方法を紹介します。

トラブルシューティング

希望通りの画像が生成されない場合の対処法

1. プロンプトの結果が期待と違う場合

原因：プロンプトが曖昧または詳細が不足している

- 例: "A beautiful sunset" (美しい夕日) だけでは、どのような雰囲気や場所なのかが不明瞭です。

解決策:

1. 詳細を追加する

- 具体的な要素を盛り込みます。
- 例: "A beautiful sunset over the ocean, with orange and pink hues, in a watercolor style" (海に沈む美しい夕日、オレンジとピンクの色合い、水彩画風)



水彩画風の海上夕日のポスターが欲しいのに、森の写真のような画像が出た…



これがいいね。

2. 否定的要素を指定 (Negative Prompt)

- 不要な要素を除外することで精度が向上します。
- 例: --no people (人物を除外)、--no text (文字を除外)

2. 日本語プロンプトが正しく解釈されない場合

原因：翻訳の曖昧さやAIの解釈の誤り

- 日本語のまま入力すると、意図が変わる可能性があります。

原因：AIは具体的な人物・場所の情報が理解できない

- 大切な要素を優先的に記載しましょう。

解決策：

1. 英語に翻訳して入力

- 日本語で作成したプロンプトをDeepLやGoogle翻訳で英語に変換します。
- 日本語例：「満開の桜と夕日の背景」
- 英語例："Full-bloom cherry blossoms with a sunset background".

2. AIが理解できない概念や曖昧な概念を細かく分解する

例：「大谷翔平」→「体格の良い日本人の野球選手が、青い野球帽と白い野球シャツを着て、スタジアムで野球をしている」

3. AIが生成した画像が雑然としている場合

原因：プロンプトのテーマに情報が多すぎる

- 例："A beach, mountains, flowers, sunset, castle, dolphins, all in watercolor style" (砂浜、山、花、夕日、城、イルカ、全部水彩画風)

解決策：

要素を絞る

- 主題を明確にし、重要な要素だけを記載します。
- 例："A castle on a hill during sunset, surrounded by flowers, watercolor style" (夕暮れ時の丘の上の城、花に囲まれて、水彩画風)



AIが「大谷翔平」という人物が理解できない



大谷さんに似合う野球選手の写真が生成した



07

MidJourneyでの画像生成をさらに楽しみ、効果的に活用するために、いくつかのヒントやコツ、注意すべきポイントをまとめました。これらを参考に、理想の画像生成を目指しましょう。

ヒント、コツと注意事項

ヒント

1. 具体的なプロンプトを作る

- プロンプトは具体的であるほど、AIは正確な結果を生成します。
- 例： "A serene lake surrounded by snow-covered mountains at sunrise, in oil painting style" → 希望の場面が詳細に伝わります。

2. インスピレーションを得る

- 他のユーザーが作成したプロンプトや作品を参考にし、新しいアイデアを生み出しましょう。
- MidJourney公式ギャラリーやコミュニティフォーラムが役立ちます。

3. スタイルやテーマを試す

- AIは幅広いスタイルに対応しています。リアルな写真風からファンタジーアート、アニメ風まで、いろいろ試してみましょう。

4. 繰り返し調整

- 初めから完璧な画像を得るのは難しいことがあります。プロンプトを少しずつ変更しながら、理想の結果に近づけていきましょう。

5. ネガティブプロンプトを活用

- 除外したい要素を指定することで、画像の精度を向上させることができます。
- 例： --no text（文字を除外）、--no people（人物を除外）。

他の注意事項

- 著作権と商用利用

生成した画像の使用条件は、プランによって異なります。商用利用を考えている場合は、有料プランを選び、ライセンス規約を確認してください。

- 期待値の管理

AIは強力なツールですが、完全に思い通りの結果を得られるとは限りません。試行錯誤を楽しむ心構えが大切です。

- 倫理的なプロンプトの作成

公序良俗に反する内容や、他人の権利を侵害する可能性のあるプロンプトは避けてください。AI生成物の使用には責任が伴います。

- スタイルやキャラクター模倣の注意

特定のアーティストのスタイルを、その許可なく模倣しようとしたり（例外として、ゴッホやモネのように著作権が存在しない場合を除く）、**著作権で保護されているキャラクター**を生成しようとする場合、倫理的な問題や法的トラブルが発生する可能性があります。このような行為は、公衆にAI技術やAIイメージへの否定的な印象を与えることもあるため注意が必要です。

AI画像の倫理的な使用と透明性の確保を心がけ、AI技術が健全に活用される社会づくりに貢献しましょう。



オンラインイラストサイトやSNS上で、アーティストたちが組織したAIイメージに抗議する傾向もあります。だからこそ、倫理的な問題に注意する必要があります。

オリジナル #AI生成

商業利用の場合は、生成された画像を**AI生成**として明示的にラベル付けすることが推奨されます。

08

実用例・作品展示

AIで作った
「塗り絵」



Chestnuts, sweet potatoes and maple leaves on a plate, a traditional monochrome black and white Japanese letter style illustration with a focus on bold style. Japanese ink wash painting style, Sumi-e style, Simple and expressive brushstrokes, expressive lines. The outlines of the motifs are drawn with thick brushstrokes. The drawing has the charm of being sketched with the non-dominant hand. Soft, muted colors, Minimalist composition, Plenty of white space, Off-center subject. Wet-on-wet technique, Spontaneous and natural-looking --ar 25:37 --s 150 --style raw --no realistic, text, color

(皿に盛られた栗、サツマイモ、紅葉。大胆なスタイルに重点を置いた、伝統的なモノクロームの塗り絵スタイルのイラストです。日本の水墨画スタイル、墨絵スタイル、シンプルで表現力豊かな筆使い、表現力豊かな線。モチーフの輪郭は太い筆使いで描かれています。この絵は、利き手ではない手で描かれているという魅力があります。柔らかく落ち着いた色、ミニマルな構成、十分な余白、中心から外れた被写体。ウェットオンウェット技法、自発的で自然な外観 --ar 25:37 --s 150 --スタイル 生 --写実的ではない、テキスト、色)

AIで作った「絵日記」



A traditional Japanese hand-drawn postcard including a dish of asparagus and bacon, a cup of tea and chopsticks

(日本の伝統的な手描きの絵葉書、アスパラガスとベーコンの料理、お茶と箸)



AIで作った
「絵手紙」

A retro style black telephone, a traditional Japanese letter style illustration with a focus on bold style. Japanese ink wash painting style, Sumi-e style, Watercolor style. Simple and expressive brushstrokes, expressive lines. The outlines of the motifs are drawn with thick brushstrokes. The drawing has the charm of being sketched with the non-dominant hand. Soft, muted colors, Minimalist composition, Plenty of white space, Off-center subject. Wet-on-wet technique, Spontaneous and natural-looking --ar 25:37 --s 150 --style raw --no realistic, text, monochrome

(レトロなスタイルの黒電話、大胆な伝統的な日本の絵手紙スタイルのイラスト。日本の水墨画スタイル、墨絵スタイル、水彩スタイル。シンプルで表現力豊かな筆使い、表現力豊かな線。モチーフの輪郭は太い筆使いで描かれています。この絵は、利き手ではない手でスケッチされているという魅力があります。柔らかく落ち着いた色、ミニマリストな構成、十分な余白、中心から外れた被写体。ウェットオンウェット技法、自発的で自然な外観 --ar 25:37 --s 150 --スタイル 生 --no 写实的、テキスト、モノクロ)

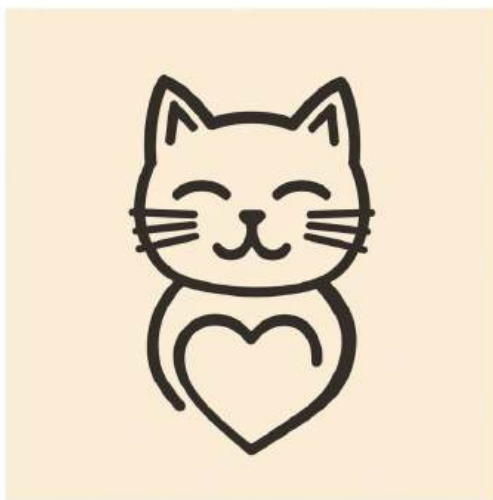


AIで作った 「謎解き絵」

A traditional Japanese letter style illustration with a focus on bold featuring a donut with a top hat and a bow tie. Japanese ink wash painting style, Sumi-e style, Watercolor style. Simple and expressive brushstrokes, expressive lines. The outlines of the motifs are drawn with thick brushstrokes. The drawing has the charm of being sketched with the non-dominant hand. Soft, muted colors, Minimalist composition, Plenty of white space, Off-center subject. Wet-on-wet technique, Spontaneous and natural-looking --ar 25:37 --s 150 --style raw --no realistic, text, monochrome

(ドーナツとシルクハット、蝶ネクタイを描いた、太字に重点を置いた伝統的な日本の絵葉書スタイルのイラスト。日本の水墨画スタイル、墨絵スタイル、水彩スタイル。シンプルで表現力豊かな筆使い、表現力豊かな線。モチーフの輪郭は太い筆使いで描かれています。利き手ではない手で描いたような魅力のある絵です。柔らかく落ち着いた色、ミニマルな構成、十分な余白、中心から外れた被写体。ウェットオンウェット技法、自発的で自然な外観 --ar 25:37 --s 150 --style raw --no 写實的、テキスト、モノクロ)

AIで作った「アイコンデザイン」



Generate a minimalist icon representing animal protection. Use simple line art, a clean cat motif combined with a heart element, and a monochromatic or duotone color scheme. The design should be clean, modern, and suitable for use as an app icon or web design

(動物保護を表すミニマルなアイコンを生成します。シンプルな線画、ハートの要素と組み合わせたきれいな猫のモチーフ、単色または二重トーンの配色を使用します。デザインはクリーンでモダンで、アプリのアイコンやウェブデザインとしての使用に適している必要があります)

AIで作った「ロゴデザイン」



A minimalist logo representing a basketball team. Use simple design, a clean basketball motif combined with a shield element, and a colorful color scheme. White background. The design should be clean, modern, and suitable for use as a logo for a brand or a team

(バスケットボールチームを表すミニマルなロゴ。シンプルなデザイン、クリーンなバスケットボールのモチーフとシールド要素の組み合わせ、カラフルな配色を使用しています。白い背景。デザインはクリーンでモダンで、ブランドやチームのロゴとして使用するのに適している必要があります。)

