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A Study on Character Design Using [Midjourney] Application

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Abstract

In recent years, the emergence of a number of AI image generation software represented by [Midjourney] has brought great impetus to the development of the field of AI-assisted art creation. Compared with the traditional hand-painted digital painting with the aid of electronic equipment, broke the traditional sense of animation character creation logic.This paper analyzes the application of AI technology in the field of animation character design through the practice of two-dimensional animation character . This is having a significant impact on the productivity and innovation of animation design and character modeling. The key results of the analysis indicate that AI technology, particularly through the utilization of "Midjourney,"enables the automation of certain design tasks, provides innovative approaches, and generates visually appealing and realistic characters. In conclusion, the integration of AI technology, specifically the application of "Midjourney," brings a new dimension to animation character design. The utilization of AI image generation software facilitates streamlined workflows, sparks creativity, and improves the overall quality of animated characters. As the animation industry continues to evolve, AI-assisted tools like "Midjourney" hold great potential for further advancement and innovation.

Keywords: Animation Character Design, Artificial intelligence, Rrobot training, Role conception, Aesthetic level，Drawing basics, Human-computer interaction，Niji rot，Midjourney rot，

1. Introduction

The Midjourney is an AI painting tool launched in March 2022, founded by David Holz. The software is currently set up on the Discord channel, and the final operation needs to be logged in through the Discord before the image generation operation. Midjourney's development team focuses on developing and providing AI-based image generation, character generation, animation production and other services. Midjourney Technology can quickly generate realistic characters, scenes and animations, and can be customized according

to user needs. These technologies have a wide range of applications, including movies, games, virtual reality, and more. Midjourney are committed to applying artificial intelligence technology to the creative field, and providing more efficient, convenient and personalized services for creators and enterprises.

1.1 Registration and Use

Midjourney is an AI mapping tool, as long as the keyword, you can generate the corresponding pictures through the AI algorithm, in less than a minute.You can choose different styles of art, such as Andy Ho, Eda leonardo, Dali and Picasso, and identify specific lenses or photographic terms.The graphics engine is mainly V4, which is widely used because of its stability. Up to now, the drawing engine has been updated to the V5.1 test version, which can generate more realistic images and meet users' needs for high-quality and realistically restored images.The *e / settings* setting instruction can set the generated style. You can not only select the generated realistic style pictures through the drawing engine, but also draw the picture effect of the animation style through the setting of the NIJI engine. As shown in the figure, use the visual interface to communicate with AI, describe abstract keywords through /imagine prompt input, and convert them into concrete graphics.
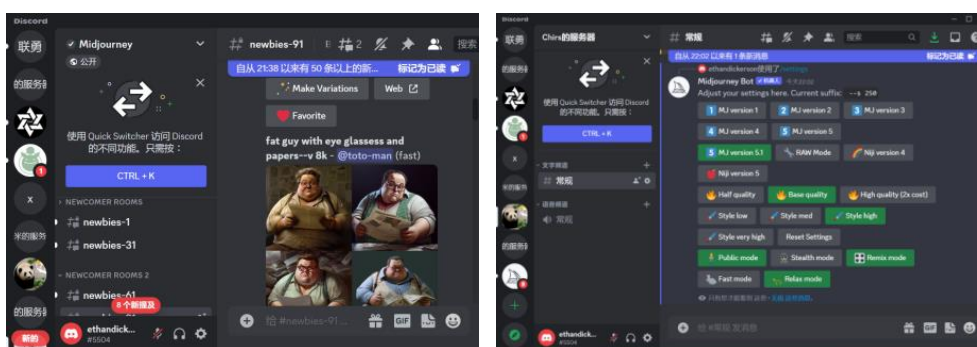

Figure 1.   The Basic Operation Interface and Setting Interface of Midjourney

For example, enter /imagine prompt "Animation Toy Story Mr. Potato Mr. Mango Mr. Picasso" "Mr. Mango children's illustration with big eyes more details illustration style Picasso style and rich colors" Upload reference The original text is based on the movie pictures, mango pictures and pictures of Mr. Potato in "Toy Story" The screenshot is for reference, and the graphics training will generate four different pictures for selection.

Figure 2.   Use Mango and Animated Character Mr. Potato as A Reference Picture

Through a total of eight sets of images generated by two training sessions, we can see that based on the

provided concept keywords, a basic cartoon image including Picasso's personal image, Picasso's painting style, and Disney animation character style was generated. The results show that the [midjourney] drawing tool basically realizes the understanding of the description and generates characters that basically match the author's concept.The process of graphics training can be seen as a process of communicating and understanding with AI. By constantly adjusting keywords and proportions, drawing tools can understand the author's creative intentions.

Figure 3.   Character Renderings Generated by Midjourney

The emergence of Midjourney provides new possibilities for artificial intelligence mapping, because the convenient operation is popular for players.There are some production plug-in program team will make "brush figure plug-in" namely let the program according to the keywords set in advance, form all possible key entries, and the key entry type */ imagine* to let midjourney rot for the corresponding graphic generation, according to statistics, with the current plugin and image generation efficiency, seven hours, can generate four hundred to one thousand images containing key entry combination.

1.2 Main Application Areas

AI character generation technology has a wide range of applications, including game development, film and animation production, virtual reality and augmented reality. Through artificial intelligence role generation technology, realistic 3D role models can be quickly generated, reducing the workload of manual drawing and modeling, and improving the efficiency and quality of role generation. In addition, ai role generation technology can also be customized according to user needs, meet the needs of different fields, and provide users with more efficient, convenient and personalized services.For users without basic drawing and design skills, a convenient image and scene generation service is provided to visually transform ideas and scripts. For professional designers and illustrators, this software can provide more inspiration and creativity.

2. Midjournay Role Generation

It can generate high-quality 2D and 3D character designs. The model is trained with deep learning algorithms and large datasets, and the resulting character designs can be continuously optimized through user feedback. In Japanese, "niji" or "ニじ" can mean "rainbow" or "2D". April 2023 updated "niji" engine, Updated niji

painting engine Compared to the previous version, the generated models have been fine-tuned to produce richer anime and illustration styles

Figure 4.   Generate Characters with A Typical Two-dimensional Style

2.1 Character Generation

Traditional cartoon character generation is usually done by hand design by artists or designers. This process usually takes a lot of time and effort and requires an artist or designer with certain painting and design skills to create realistic and attractive character images on a paper or computer screen.
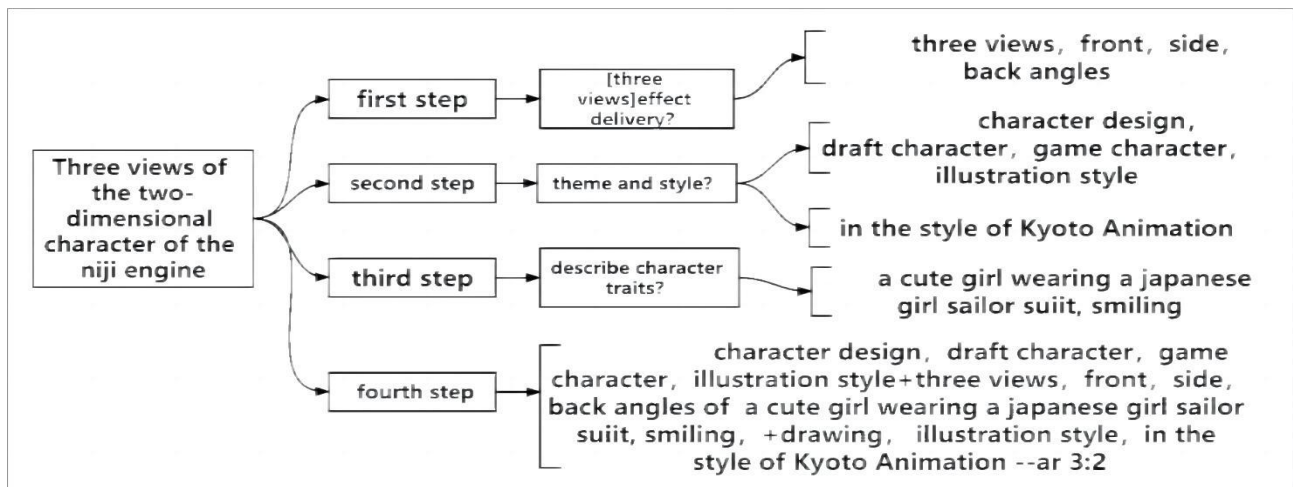

Figure 5. 2D Character Generation Logic Diagram

In contrast, AI cartoon character generation logic uses artificial intelligence technology to generate characters without the need for manual painting or design. AI algorithms can generate a large number of cartoon characters in a short range of appearance features, facial expressions and movements. This greatly improves the speed and efficiency of character generation, and reduces the workload of artists or designers. For example: Want to create a teenage girl comic book character in a sailor suit, Only need to describe the image and combine the description logic **[/ imagine prompt]** Character design, draft character, game character draft + three views, Front, side, back angles of a cute woman wearing a Japanese girl sailor suit, smile, smiling, drawing, illustation style, in the style of Kyoto animation."Enter a keyword description of three views, midjourney uses the niji engine to generate Japanese anime style task images.

3. Midjourney Effect on Traditional Role Generation

Midjourney Compared with the traditional character generation, the generation quality has been greatly improved . Traditional role generation mainly relies on manual drawing, which requires manual design of every detail and feature, which not only requires a lot of time and manpower, but also prone to subjectivity and limitations of designers, resulting to the lack of diversity and innovation.

The Midjourney, on the other hand, can more quickly and accurately, and can also fine-tune according to the guidance of the designer to achieve more refined adjustment and optimization. In addition, Midjourney can generate more realistic, three-dimensional and vibrant characters, automatically generating details and features that are difficult to achieve with traditional hand painting.

3.1 Development Stage and Status

By comparing the traditional character generation method with the generation method based on AI technology, the differences and advantages in the generation quality, creativity and efficiency are analyzed.Generated quality, the current midourney theoretically support 1080p and 8k quality graphic instruction output, meet the general animation, cartoon and other film and television works with figure demand, but there are many deficiencies in detail processing, such as generating characters, such as fingers, eyes, need accurate detail parts, the current figure results will appear some errors. This is also the next part of the software to upgrade.

3.2 Impact on the Role of Character Designers

As far as creativity is concerned, first of all, the designer needs to have a perfect conception of his own character creativity, experience accumulation of personal thinking, cognition of character painting style and color, and understanding of character background culture, which requires a lot of practical experience to support. The requirements for the designer's own professionalism are very high. Usually, the determination of an animated character requires the cooperation of a team. Under the framework of a complete story, the positioning of the duel is finally determined after repeated deliberation. In the future, with AI functions such as picture generation tools, it is only necessary to accumulate certain description keywords. For artificial intelligence programs, through the calculation and analysis of big data, rich character images can be generated. Designers and stylists only need to The results are screened and modified to generate a character that fits the persona.

3.3 Improvement of Character Production Rate

In terms of efficiency, the production of an animated feature film takes months or even years, consuming a lot of manpower and material resources. Among them, the plot, scene and characters of the story occupy a huge proportion. Hand-painting work is heavy and complicated. In contrast, AI image generation software such as midjourney can generate scenes with rich details through simple keyword descriptions. In terms of software generation speed, it takes about one minute to generate four related scenes for the same key description item if the fast mode is selected. It greatly reduces the workload of scene or character painters. Through the modification and training of keywords, Get a character that is close to the author's idea, and then use other software or means to modify and perfect the character later.

4. Inadequacies and Possible Development Directions

Although the generation of AI cartoon characters can greatly improve the speed and efficiency of character generation, there may also be some shortcomings, such as defects in some details. In addition, characters generated by AI algorithms may also lack human subjectivity and emotional expression. Accurate expression of generated images requires certain aesthetic and design abilities. Therefore, in practice, designers can combine traditional hand-drawing and design techniques with AI generation technology to design and generate characters, thereby improving the quality and expressiveness of characters. Based on the analysis of existing technologies and methods, we explore how to further optimize the application of AI technology in character generation, and improve the quality and creativity of the generated results.

5. Conclusion

The study focused on character design using the [Midjourney] application, aiming to explore its potential in the field of character design. The "Midjourney" application, powered by AI technology and extensive datasets, provides designers with a fast and effective method for character design. By analyzing existing character design works and generating new design suggestions, the application offers diverse creative ideas and customization options. Designers can interact with the application, saving valuable time and effort in the design process. The "Midjourney" application enables a faster, more flexible, and more creative design process compared to traditional methods. It offers designers a vast range of design possibilities and stimulates their creativity. The integration of AI technology in character design opens up new avenues for innovation and inspiration in the animation, gaming, and film industries.However, it is important to acknowledge the limitations of the "Midjourney" application. The reliance on existing designs may impose creative constraints, and further improvements are needed to enhance the quality and diversity of the generated design suggestions. Additionally, the application's algorithms and datasets require continuous refinement to meet the evolving needs of designers.In conclusion, the "Midjourney" application demonstrates significant potential in character design, providing designers with a valuable resource for creative ideas and inspiration. Future research should focus on enhancing the application's capabilities, expanding its range of applications, and elevating the level of design support it offers to designers.

References

[1] HUANG zhili, "A Theoretical Reflection on the "Intrusion" of Artificial Intelligence (AI) into Aesthetics", Shanghai Culture,   pp. 5-13, Oct 2020.

[2] Chen Xi，"Reflections on Application of VR Technology in Field of News Media", The Journal of the Institute of Internet, Broadcasting and Communication(JIIBC),Vol.15 No.2, pp.196-201 May,2023.
DOI:http://dx.doi.org/10.7236/IJIBC.2023.15.2.196

[3] XIAO Yuhan, JIANG Aiwen ，WANG Mingwen,JIE Anquan,"Chinese Image Captioning Based on Middle-Level Visual-Semantic Composite Attributes ," Journal of Chinese Information Processing, Vol 35，No 4，pp. 129-138, Apr, 2021.

[4] "Brain Pod AI Releases AI Image Generator That Can Create Images In Seconds Using Artificial Intelligence", By Get News Published November 15, 2022.*http://www.digitaljournal.com/.*

[5] Emir Alışık, "All Compressed and Rendered with a Pathetic Delicacy That Astounds the Eye": Midjourney Renders Ambergris as Constantinople" .01 January 2023.
DOI:http://doi.org/10.1002/cyo2.30.

[6] ZHANG fuli,"Interactions Between New Technology and Aesthetics:Reasons of AI Art Feasibility ,"Journal of Nanjing University of Science and Technology(Social Sciences), Vol 35，No 1，pp. 46-60, Feb, 2022