Midjourney와 Stable Diffusion을 이용한 AI 생성 이미지의 차이 비교

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Comparison of the Differences in AI-Generated Images Using Midjourney and Stable Diffusion

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● 요 약 ●

Midjourney and Stable Diffusion are two popular AI-generated image programs nowadays. With AI's outstanding image-generation capabilities, everyone can create artistic paintings in just a few minutes. Therefore, "Comparison of differences between AI-generated images using Midjourney and Stable Diffusion" will help see each program's advantages and assist the users in identifying the tool suitable for their needs.

키워드: Artificial Intelligence, AI-generated images, Midjourney, Stable Diffusion, text-to-image

I. Introduction

AI-generated art is a new field, and they are widespread today [1]. The most popular AI image creation programs nowadays are Stable Diffusion, DALL-E, and Midjourney.

Midjourney is published by Midjourney, Inc., on July 12, 2022. It is a painting software that uses AI to convert text into images based on text prompts to create stunning and unique paintings [2]. Midjourney AI uses simple commands, requires no coding experience, but can still create impressive images.

Like MidJourney, Stable Diffusion is an AI engine that converts text to images from "prompt" natural language descriptions. It was developed by Stability AI and was released to the public on August 22, 2022. Stable Diffusion has an open-source interface, allowing users to use it without paying fees.

II. Comparison of the Differences in AI-Generated Images Using Midjourney and Stable Diffusion

The difference between the two programs will be compared by using on a PC with an Nvidia GeForce RTX 3080 Ti graphics card (10240 NVIDIA CUDA Cores, 1.67GHz Boost Clock, 12 GB GDDR6X Standard Memory Config) [3]. Overall, this is a PC with high performance. Through using, both programs takes 1-2 minutes to create an image according to the required prompt.

With a simple prompt like "A photo of a white cat wearing a crown," Midjourney produces images that match the required promts more than Stable Diffusion.
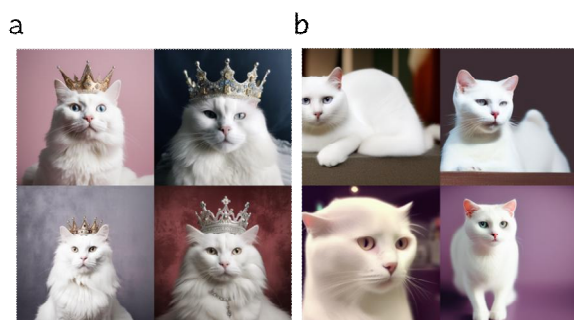
a   b

Fig. 1. image a is an image created by Midjourney and image
b is an image created by Stable Diffusion

A more complex prompt with parameters and negative prompts, such as "professional portrait photograph of a gorgeous Asian girl in winter clothing with long wavy brown hair, blue eyes, freckles, beautiful symmetrical face, cute natural makeup, standing outside in snowy city street, stunning modern urban upscale environment, ultra-realistic, concept art, elegant, highly detailed, intricate, sharp focus, depth of field, f/1. 8, 85mm, medium shot, (centered image composition), (professionally color graded), (((bright soft diffused light)), volumetric fog, hdr 4k, ¬no blone hair, dark skin tone, animation", the generated images will be more detailed in terms of characters, layout, and background.

a   b

Fig. 2. image a is an image created by Midjourney and image
b is an image created by Stable Diffusion

III. Conclusions

Midjourney and Stable Diffusion often ignore parts of the user prompt, like in the prompt to draw an Asian girl; only two images were created by Midjourney where the girl has blue eyes, as required. Stable Diffusion missed "crown" in the simple prompt about a cat.

For Stable Diffusion, users are not limited to the number of words in the prompt. At the same time, it also provides users with many custom functions to regenerate images. However, the unnatural human face can be considered a limitation of it. Through testing, although regenerated many times, Stable

Diffusion still could not produce a picture with a natural human face like Midjourney. In general, Midjourney does better. It has proven its superiority in producing photorealistic images. Midjourney's strengths are its outstanding detail and aesthetic abilities, which is unrivaled in the industry. In general, its outstanding performance in many areas demonstrates this technology's enormous potential.

ACKNOWLEDGEMENT

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