

ARTIFICIAL INTELLIGENCE 2 AND ITS APPLICATION IN IMAGE GENERATION

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Abstract: This paper aims to explore artificial intelligence (AI) tools and their impact on image creation in 7 visual arts. It provides an overview of AI tools, their core capabilities for image generation, and 8 their application in the creative process. The analysis focuses on three of the most popular AI 9 tools currently available, examining their advantages and disadvantages in fulfilling fundamental 10 creative tasks.

Key words: AI, image generation, Craiyon, Microsoft Copilot, Midjourney

1. INTRODUCTION

Artificial Intelligence (AI) represents a field of information (computer) technology aimed at performing tasks that require human intelligence. It utilizes systems resembling neural networks (deep learning) for data processing. The concept of neural networks itself is a modeling system inspired by the human brain. These networks are used for data processing and learning and can be employed for analysis, pattern recognition, and content generation, such as images, music, and text. [1]

AI technology opens new doors for creativity and experimentation, allowing artists to explore new ideas and forms, as well as providing novel inspiration and experiences in art. One of the main advantages of AI is its ability to continually learn from user experiences, becoming personalized for the user it interacts with. Moreover, AI can be trained for specific fields (tasks). Its most common applications currently include creating content for social media and providing personal assistance to users. [2]

2. THE USE OF AI IN IMAGE CREATION

The use of artificial intelligence tools in visual arts has opened the door to diverse and innovative methods of digital image creation. AI tools enable visual creators/authors to generate ideas, inspiration, or even specific elements of their works based on text input.

These tools can also produce sketches (Figure 1.left), colors (Figure 1.middle), or textures (Figure 1.right), which the author can later incorporate into the creation of their artwork. [2]

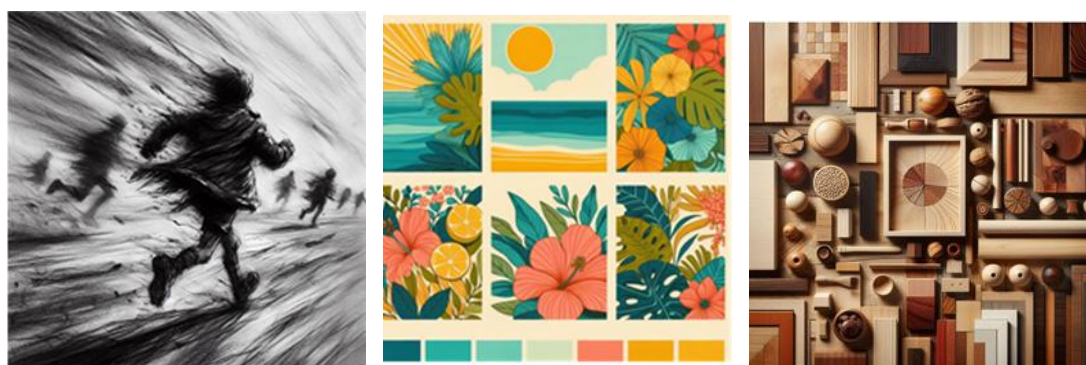


Figure 1.left: Illustration of a sketch of a girl in motion (Pencil sketch of a child in motion, black and white charcoal drawing), middle: Illustration of a summer color palette (Color palette for summer), right: Sample of different wood textures, Perovic S.

The author/artist can use AI tools for correcting and enhancing their existing works, such as retouching photographs or fixing errors in digital illustrations (Fig. 2). [3]



Figure 2: example of using an AI tool for image restoration

Additionally, AI tools can be used to render an existing original work in the style of a specific artist or art movement (Fig. 3).



Figure 3: Vase with roses in Picasso style with abstract shapes, bold colors, and a touch of cubism, Perovic S.

2.1. Tools for Creating AI Art Subsection

With the rapid development of AI applications, there are now numerous tools available that allow users to create images, photographs, text, music, and even videos based on input text (prompt).

This analysis includes experiments with the following AI applications:

- Craiyon
- Microsoft Copilot
- Midjourney

Although all three tools use text to generate images, the results differ, as do the possibilities for further refinement of the work. The accuracy of the generated image depends on the precision of the text input by the user. AI tools generally operate on a two-part principle: the first part scans databases in search of the specified text, and the second part checks whether the generated form has already been used with the given text. Each of the three applications provides the user with several solutions that can be modified and improved further.

Additionally, each generator requires users to create an account, meaning all creations are stored in the user's profile. Each creation is assigned a unique code that facilitates identification, allowing the original owner to be easily identified in cases of unauthorized use. [4]

2.1.1. Craiyon

The application, created in 2022, is built on the foundations of the DALL-E Mini application but with a more modern approach to image generation. It is free to use, allowing users unlimited access.

However, after generating nine images, the speed of image creation decreases, encouraging users to pay for faster processing.

Like most free applications on the internet, it is flooded with advertisements, which serve as the company's primary revenue source, enabling the app to remain free for users. The application does not offer additional customization options, so image creation relies solely on the description provided by the user (Fig. 6).[5]

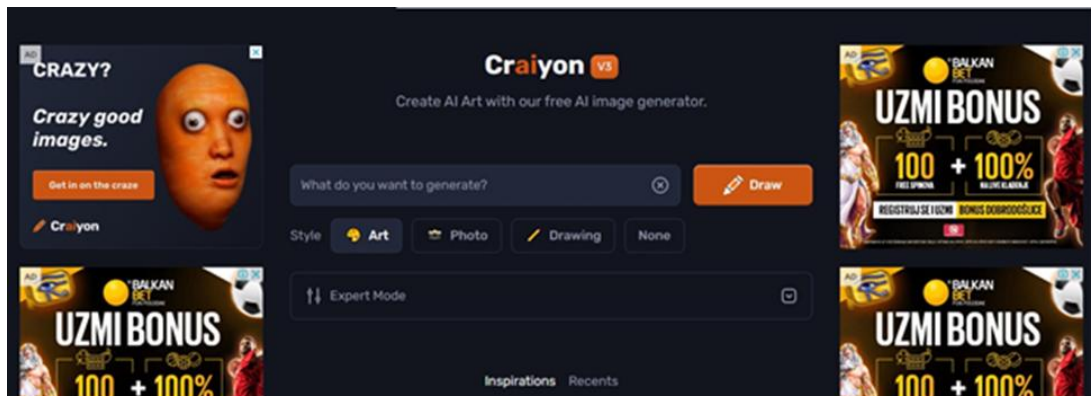


Figure 6: Interface of the Craiyon application

2.1.2. Microsoft Copilot

The application Copilot (Fig.7), designed by Microsoft, has been an integral part of the Bing search engine since 2024. It is free to use, but each session allows the user only five rotations. After that, a new topic must be started. This system poses a challenge because if the desired result is not achieved within the first five rotations, starting a new topic means the user has to begin a new conversation with the AI from scratch. Users can, however, purchase faster generation options if needed. [6]

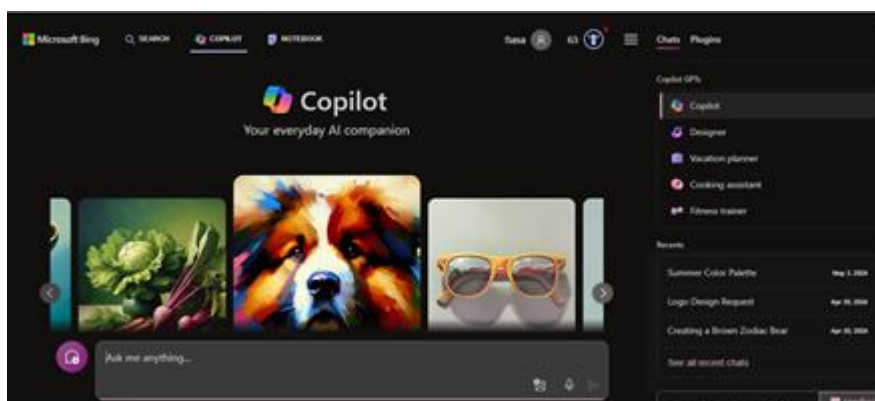


Figure 7: Interface of the Copilot application

2.1.3. Midjourney

One of the most popular applications for creating AI-generated images is Midjourney (Fig.8 left). Unlike the previous two, Midjourney is exclusively a generator that requires users to subscribe to a paid plan.

The generator operates uniquely, as images are created on a Discord server (Fig.8 right). Alongside private rooms where users interact solely with the bot, group rooms are available, allowing users to view the creations of others.

Midjourney provides significant control over the design, enabling users to easily modify every detail of an image. While using Midjourney, users can not only develop their own ideas but also

follow the creative process of others. This adds a layer of social interaction and offers quick feedback on how others perceive a work during its creation. [7]

The application allows an unlimited number of iterations per idea, and continuing a conversation with the AI bot is seamless, eliminating the need to close one session to begin another. [8]

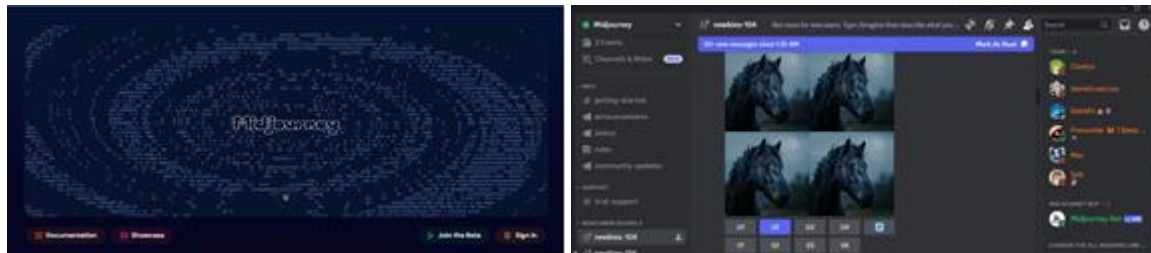


Figure 8 : Interface of the Midjourney application on a web browser (left) and within the Discord server (right)

3. COMPARATIVE TEST

To highlight the differences between these three tools, a comparative test was conducted. The same text (prompt) was entered into each generator without additional enhancements. The results generated by Craiyon (Fig.9), Microsoft Copilot (Fig. 10), and Midjourney (Fig.11) are as follows:

Text (prompt): *abstract portrait of a woman kissed by sunlight with vibrant colors on a summer day.*

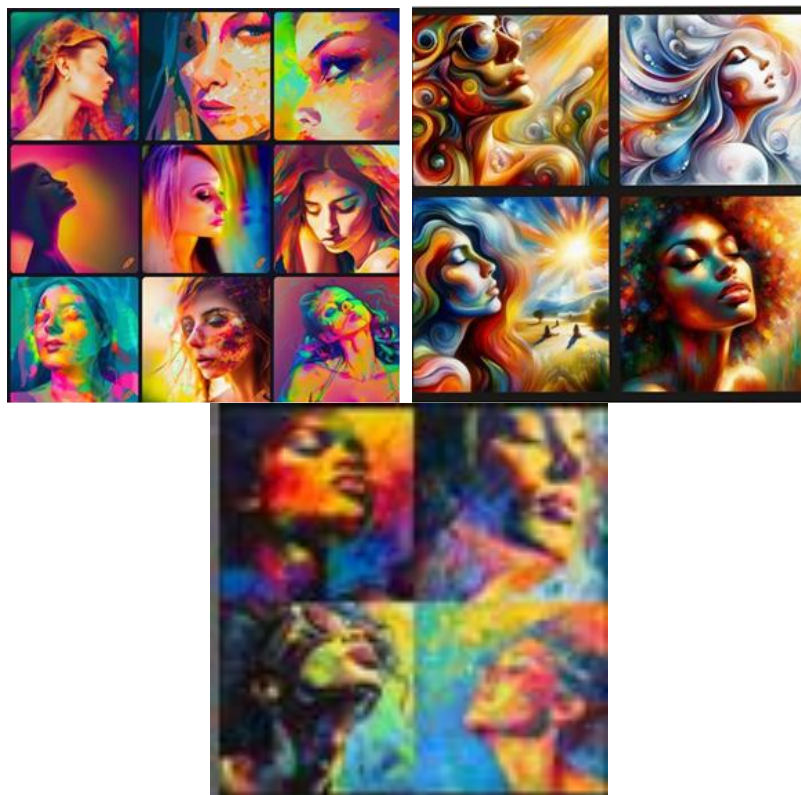


Figure 9.Craiyon

Figure 10. Microsoft Copilot

Figure 11. Midjourney

It is evident that the generators responded to the same task in distinct ways. The complexity and final visual output depend on the database from which they draw data and the information they have learned from users over time. A clear difference in style and image selection is noticeable.

The series of images offered by Crayon (Fig. 9) and Microsoft Copilot (Fig. 10) appear somewhat disjointed, whereas Midjourney (Fig. 11) demonstrates stylistic consistency, harmonious use of visual elements, artistic handling of light with warm and cool colors, and an aesthetic expression developed through experience and refinement.

This leads to the conclusion that the tools most frequently used offer a greater number of learned options and combinations, which are more aesthetically pleasing and aligned with artistic standards.

4. CONCLUSION

Although the use of artificial intelligence is a novelty in the technological world, it has sparked a debate about whether works created with the help of AI generators can be considered art. While some dismiss the very idea of such works being displayed in museums and galleries, others support the concept.

Some argue that it is simply shameful to use AI-generated images, claiming that anyone can produce a picture with just a few clicks and call it an artwork. On the other hand, others contend that the emotion a piece evokes in the viewer is more important than the method or technique used to create it.

The emergence of artificial intelligence in the realm of visual arts will continue to be a topic of discussion and spark numerous debates and conflicting opinions for a long time. Considering the incredible pace of digital technology's development, it is inevitable that changes in digital communication will impact visual arts and the perception of images in general.

Authors believe that AI tools for image generation should be embraced and utilized as innovative aids, providing established artists with technical support in realizing their ideas. They can only serve as a benefit when working in a digital environment, particularly in a field where the sale of ideas has long been paramount.

Since words form the foundation for creating images, a solid understanding of art theory will likely be necessary to use them meaningfully as a basis for instructing AI—something amateurs may struggle to control effectively. Moreover, building a personal and distinctive style will likely remain the domain of trained artists, while amateur works may become fleeting, uniform, and easily replicable by anyone with basic digital literacy.

However, a significant challenge lies ahead, and we cannot predict the full implications of "collectively acquired intelligence." One thing is certain: classical visual arts will always retain their charm, rooted in the tactile nature and material experience crafted by the artist's hand.

5. REFERENCES

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