

How does Text-to-image AI Affect Indie Game Designers and Artists?

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Abstract: This study delves into the impact of text-to-image artificial intelligence on independent game designers and artists. It underscores the paradigm shift in game design, exploring how AI tools facilitate the rapid production of unique game content and artwork, a particular advantage for indie creators. Employing qualitative methods such as interviews and case studies, the research gathers insights into the creative and practical applications of AI in game design. The findings emphasize the evolving role of game designers in an AI-integrated future, balancing artistic creativity with technical proficiency, while also acknowledging the ethical complexities introduced by AI. This research aims to provide an in-depth understanding of how indie game designers can leverage AI to foster innovation while navigating its challenges.

Keywords: Artificial Intelligence; Indie Game Design; Creative Technology; Ethical Implications; Artistic Integrity.

1. Introduction

The combination of artificial intelligence (AI) and game design has completely changed the pace of the game industry, with many well-known game companies working on their own AI tools to help game production, which can reduce expenses for game developments, but the most benefits are for indie game designers and artists, and this is what Mr Ding, who was interviewed, thought "With AI. There are so many advantages for indie game makers." Independent game designers and artists have long been the driving force behind creative innovation and experimentation in the games industry. With the advent of text-to-image AI, it gives these designers and artists a new tool that allows them to produce unique artwork and game material in a short amount of time [1].

This research paper seeks to analyse the impact of text-to-image AI on indie game designers and artists, examining the use of AI in indie game design and the artistic quality of AI-generated artwork. By analysing specific case studies and conducting experiments, we hoped to explore how independent game designers and artists can take control of image generation AI techniques in practice. In addition, we will examine the industrialisation of AI in indie game projects and discuss existing methods of royalties and their impact on indie game designers. Through this research, we hope to provide independent game designers and artists with some ideas for future career development.

2. Theoretical Review

AI is a new technological revolution, it just like how camera has done to traditional artists, it is a re-grinding of the relationship between humans and new technologies.

McLuhan says that the ability of artists to evade the bullying blows of new technologies of any age and to invoke such violence with full awareness has been around for a long time. By analysing the nature of AI as it affects designers, we can identify the patterns of these changes and predict their impact on human society and culture [2]. Kenneth Galbraith believes that new technologies are emerging and that artists should focus on the forms and structures created by

technology and take on the role of shaping, analysing and understanding the technology.

How can designers take control of AI? Through Dimitrije Grba's framework for critical exploration of art we can get the component of AI art, which determines the ownership of the artwork. Game will eventually Publish, can designers be responsible for AI artwork?

The future of independent game designers is another thing, will new designers in the future have the opportunity to join the industry, this is a harsher reality, as Mr. Ding Ye said in his interview that the opportunities for interns may disappear. The Second Mechanical Age states that as robotics and automation advance, more and more jobs may be replaced by robots and computers, leading to mass unemployment and lower wages. At the same time, robots and automation may also increase inequality, as technologically advanced companies and individuals are more likely to benefit from these technological advances than those who are less skilled. The unique capabilities of humans can be find by cases where humans and machines work together to outperform machines alone, making humans the only variable. Putting these cases together reveals the commons, as the answer we are looking for [3].

3. Case Studies

Artificial intelligence has recently been used to create truly unique gaming experiences that could redefine the way video games are experienced. latitude team's text adventure game AI DUNGEON, releasing on steam in 2022, is an AI-powered text adventure game that is like an open-world Zork, and that only scratches the surface with its deep technology based on GPT's automatic story generation and Stable Diffusion image generation AI-powered natural language neural networks. Back in 2019, developer Nick Walton released the first version of AI Dungeon, and three years of development have made AI DUNGEON one of the few mature AI-backed games [4]. In it, players can create environments entirely from scratch. Players are free to create anything, stories based on fantasy, science fiction, westerns, or anything imaginable, and interpret them by using picture-generating AI.

3.1. What's New

We can think of AI DUNGEON as a descendant of The Interactive Gamebook. In his first interaction with GPT-2 developer Nick Walton was inspired to use OpenAI to simulate the old-fashioned text adventures of the Zork variant, also inspired by the tabletop game Dungeons & Dragons (D&D). If we want to talk about how The Interactive Gamebook with AI is different from The Interactive Gamebook of the past we have to look back at the history of The Interactive Gamebook.

In the 1980s, what we traditionally call The Interactive Gamebooks began to be published, such as Tracker Books. These books were often a series of adventures with different themes, with each page of the text having an illustration to give a more visual experience. Illustrations are a form of visual information that can improve memory and reading comprehension [5].

They provide colour and shape and convey mood and atmosphere. Illustrations can also convey visual information for illustrations can also give the reader more insight into a concept, especially in a fantasy adventure where many things do not exist in reality.

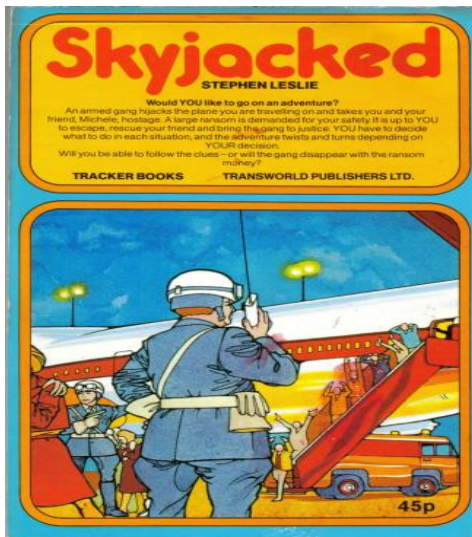


Fig 1. Image form Leslie, Stephen, Hutchinson, John (1976) Skyjacked page 45, Tracker Books- no. 6.

During the 1990s, the production of new Western gamebooks declined sharply as choice-based storytelling shifted away from print-based media, while the format may be making a comeback on mobile and e-book platforms. Such digital gamebooks are considered to be interactive novels or visual novels. Large-scale RPGs also often resemble many nested or continuous branching path stories [6]. In the modern digital age, illustrations have also become more diverse and multimedia. This is when media such as video, audio and animation become part of the illustration. These new forms of media make the text more vivid and interesting, and more capable of capturing the reader's attention and interest. Illustration is a form of documentation that helps people to imagine and understand, enhances the visualization of texts, improves people's memory and reading comprehension. In the PC era of text adventure games, although creators tried hard to give players maximum freedom, they were still adventures with limited choices, written by humans. Consequently such games required more art resources, while the game's art designers still had control what was shown to

the player [7].

While AI Dungeon built an infinite storytelling output system, they also developed image generation AI, just as their predecessors had done. There were some changes with the function of illustrations, and it was as if game designers had suddenly given up on using visual information to conveyance their ideas, Possible reasons is because no artist had yet explored how to controlling image generation AI output [8]. In fact the pioneers of these games using image generation AI techniques were all technicians, without even an art designer on the team. In order to give players maximum freedom, AI Dungeon is also letting them generate any visuals they want. Players were free to produce visuals to aid their fantasy, and while you can certainly argue whether they were actually creating 'art', these were unique, original, compelling and helped them to express themselves personally. Regardless, players now have control over when images are displayed in their stories and what those images depict. This control means that images are more meaningful to the stories that players create [9]. But the increase in the number of illustrations means that it is difficult to oversee and the designer is moving away from being the controller.

3.2. The Process of Generating Images for the Player in AI Dungeon.

You can start each story by choosing one of four established settings: fantasy, mystery, apocalyptic and zombie.

Its main functionality is provided by two main features: story generation and image generation. Once the adventure begins, each text input by the player allows for a choice of four main types of interaction:

Do: must be followed by a verb that allows the player to perform an action.

Say: must be followed by a dialogue sentence, allowing the player to communicate with other characters.

Story: can be followed by a sentence describing something that progresses in the story, or something that the player wants the AI to know about future events.

See: must be followed by a description that allows the player to perceive an event, object or character.

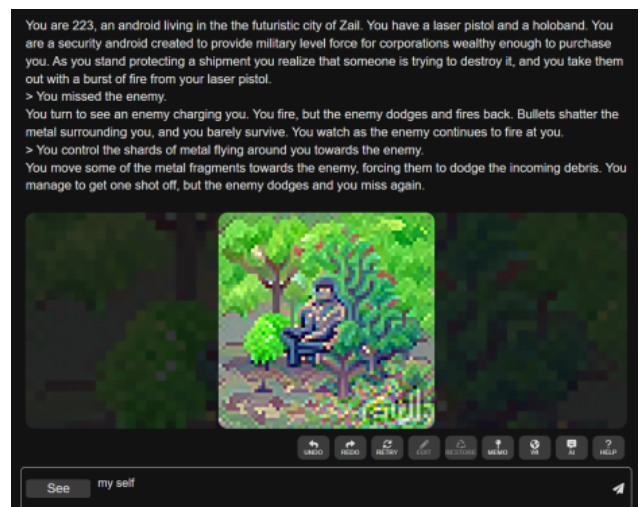


Fig 2. Image from AI Dungeon (2023)

As can be seen, the first three functions are all based on the GPT model provided by Open AI for story generation. "See" on the other hand, illustrates each segment of the player's story. The model not only understands the relationships

between words, but also how these words interact with the images.

Game currently offers two image generation AI models, Pixel Art Image Cache and Stable Diffusion. It's providing an official guide to the use of the Stable Diffusion model, which allows the player to edit personalised illustrations rather than the pixel module. Like other image generation AI, the player owns all the rights to the images. The role has been shifting, player is no longer just the experienter but also the creator, creator can't only responsible for themselves, which will involve a serious issue that will be mentioned later [10].

There is limitation too, the pictures are rather cluttered in style, no different to using Stable Diffusion alone, the player

experience would have been better if the game designers had interfered with the process to provide a more polished picture for the player, rather than being completely hands-off. In the video by Glibatree, a YouTuber, there are many different styles of drawing for a single story, this rather shatters the players' illusion. Pixel Art Image Cache on the other hand comes with more consistent images style and does not break the player's fantasy. Kenneth Galbraith believes that new technologies are emerging and that artists should focus on the forms and structures created by electronic technology and take on the role of shaping, analysing and understanding this technology. With AI producing unlimited 'art', designers have a tougher task more than ever [11].



Fig 3. Glibatree. (2022). AI Dungeon 2D just got better! | Visualizing AI Dungeon [Video]. YouTube.



Fig 4. Glibatree. (2022). AI Dungeon 2D just got better! | Visualizing AI Dungeon [Video]. YouTube.

3.3. Changes and Issues Arising

AI Dungeon could be a good role models for video games with unlimited world. But it also experiences in advance some of the problems that will occur with all future AI involvement in games [12].

The biggest change is that players can have unlimited choice to experience and can create their own experiences. In a blog post on Medium about the long-term vision, the developers mentioned that their ultimate goal is "to have AI powering a vast, vivid game world where your actions leave a lasting impact" and to have a game where "every NPC is unique and interacts authentically with what you do and lives its own life. Artificial intelligence can be used in game explain player choices that the developers may not have thought of. Make content adaptable to the player in real time [13].

though, Infinity is still limited. AI clings to a particular plot and does its best to force player into it. AI Dungeon sometimes feels like AI versus player rather than AI working with the player to tell a compelling story. When Players are generating images or text situation are more like "No, I don't want this, I want this."

The role reversal also affects creative protection, with many players writing their own stories in the game. Player ArionVII says Latitude's privacy policy cannot be trusted as the company has been known to view users' private game records without their consent and provide this information to third parties. Players have also become producers, and it is up to the game creators to protect their privacy and data [14].

High freedom allows players to not only venture into fantasy worlds, but also to do things beyond game. For

example, creating pornographic content. This is not only drawbacks to AI games, but also potential threats to future high-freedom open-world games. Numerous players, including ArionVII, reacted to the presence of data sources for child abuse, rape and hate in AI Dungeon. In response to this reaction, AI Dungeon officials stated: "We are a small company committed to building a creative and thriving community. Allowing such content to promote harm to minors is inconsistent with our company's values and could impact our ability to deliver AI Dungeon in the future [15]." This is exactly what is worrying. With technology evolving beyond even the publishers of the technology itself, games can produce results that go beyond the control of the creator and deviate from the purpose of building the project in the beginning, abuse and control will be the theme of the next era.

4. Experiment: How Artists and Designers Control the Direction of AI Output

New painting style is usually influenced by the previous painting. Take example for Greg Rutkowski, one of the most mentioned artists since image generation AI got popular, his painting style incorporates many different artistic elements and styles, including traditional oil painting, modernism and fantasy art [16]. The effects of light and shadow common in traditional oil painting and the expressive techniques of portraiture can be seen in his work too. For example, in some of his portraits, one can see the fine manipulation of light and shade and the accurate representation of details, which are all expressive techniques of the traditional oil painting. Also, his frequent use of romanticised light and shadow effects and

rhythmic compositions.

This attempt is to create a style in Stable Diffusion, use one of my own paintings as a reference to see if the style could be restored through Stable Diffusion. Then put resulting text into

AI DUNGEON to generate a story and see if the painting style is stable [17].

My own painting:



Fig 5. Painting of a Taoist boy holding a precious pearl by Qinyue Guan

In Stable Diffusion:



Fig 6. From Stable Diffusion

After many attempts, the light is not rendered onto the figure, the limitations of the Chinese painting style seem to make the AI think the figure must be a flat line drawing. More than aiding creation, the AI fights the creator, representing what is inherent and not accepting innovation. Designer must put in the painting to make it break down, but it is only reorganising the picture, the AI itself does not know what

style of painting is represented, it just breaks up and combines the paintings marked by humans as this style into the things people depict [18].

Put into AI DUNGEON to generate the story:

Image Style: *Deep red background with fog surround, base light. Chinese Paintings, Ghibli studio, Ibuki Satsuki, high quality, 4k, HD*

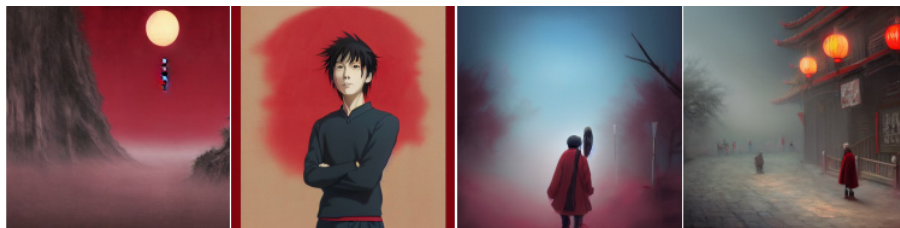


Fig 7. From AI DUNGEON

Overall style is relatively stable and the important elements are present, but the AI does not separate the painting style from the content of the picture, incorporating the Chinese painting style into the content of the picture, where specific Chinese buildings appear. Artists can use the Stable Diffusion algorithm to achieve some specific artistic styles, but it can be difficult to fully control the output of the algorithm. Stable diffusion algorithms are based on a physical model of fluid dynamics and their output is influenced by parameters in the algorithm, including diffusion coefficients, time steps, etc. These parameters have a significant impact on the data of smoothing and denoising of the output image. The artist can

adjust these parameters to achieve a number of specific artistic styles. The formation of a painting style is influenced by a variety of factors, including personal experience, cultural background, artistic education, aesthetic perception, psychological state, and the context of the times. A bold conjecture of the author is that theoretically if AI could understand the above factors, we could create new painting styles and even simulate non-existent historical painters [19].

5. Possible Futures

In conclusion, the function of a game designer is changing as the style of game production continues to change and

technology continues to innovate. The combination of research-based talent and aesthetically placed talent will become the new trend in game development. The independent game designer becomes the bridge between art and technology, making game development more efficient, higher quality and creating more human works. However, while using AI technology, we must be wary of the moral and ethical issues that its unpredictability may bring and always follow the bottom line. Only with this in mind will game designers be able to create even better game titles that meet the needs of players and drive the continued development of the gaming industry.

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