DITTO: A 2D Animated Short Film on How the New World of Text-to-image Artificial Intelligence Art Generation Affects Artists

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Abstract
Computational art is a creative field that refers to a futuristic idea of artificial intelligence. Contrary to popular assumption that machines cannot produce art, technological innovations made the emergence of a new genre of art. Artistic genres, such as poetry, music, visual art, design, and architecture, can now be generated by artificial intelligence programs. The development of text-to-image technologies have been created by researchers at OpenAI, Google, and other firms; these tools have not yet been made available to the public but there are similar models can be found online in the open-source community and at smaller businesses like DALL-E. These technologies mark a significant cultural shift since they remove the technical labor process in the creation of images. Instead, they choose based on curatorial sense, language skill, and creative ideation. The consequences are difficult to foresee, but these algorithms signal a new, democratic form of expression that will begin an increase in the quantity of human-produced pictures, much like the invention of the camera and the digital camera after it. However, this also carries problems that have not fully addressed, just like other automated systems trained on historical data and internet photos. The creation of my 2D animation film will inform the audience the effects of AI art on artists and help reassure artists that Artificial Intelligence (AI) will not take over their jobs or role, but instead, liberate artists to expand their creative boundaries.

Keywords: Computational Art, Text-to-image, DALL-E 2, Microsoft, Midjourney, Stable Diffusion, Artificial Intelligence

Introduction

Art and technology have always had a significantly complex history of influencing each other and have been evolving alongside each other that leads to their current state in the world; in a digital age where they overlap and portray new ideas. However, this does not only apply to the production but also the way we view, consume, and sell art is constantly changing. Technology has made art more accessible, just as it becomes incorporated into other aspects of our modern life. Due to the internet, art can be consumed directly, which then brings the industry to a wider and diverse audience. Artists can utilize these tools to help with promoting and selling their works. In many cases, there is no challenge in holding a physical exhibition. The relationship between art and technology led to many innovative new pieces and techniques from the past decades that includes Artificial Intelligence art (Christie's Education, 2019).

Artificial Intelligence (AI) is used in various fields of the industry and more artists have innovated techniques such as neural networks and deep learning to explore the potential of AI in art. Hence, the emergence of a new genre called artificial intelligence art. A creative activity that connects artists, technical experts, intelligent robots, and audiences by using AI as a core medium to create and express thoughts and emotions (Chen et al., 2020). AI art has vastly evolved since then and become openly available to the public. Text-to-image or AI art generators allow anyone to input any text or prompt they desire then the computer will try to match the description by analyzing thousands of images to comprehend a

particular piece such as aesthetic or a specific style. And the results are surprisingly convincing. Additionally, the images it generates in a range of styles from oil paintings, CGI renders to photographs. Examples of popular text-to-image generators are DALL-E 2, MidJourney and Stable Diffusion.

DALL-E 2 is a successor to OpenAI's DALL-E released in January 2021. DALL-E 2 uses GPT-3 to interpret the user's requests and can generate high-quality imagery with a wide range of styles, including paintings, photorealistic and emoji. It is also capable of manipulating existing images to add elements on. DALL-E 2 allows artists to express their creativity and understand how Advanced AI see and understand our world, which is critical to our mission of creating AI that will benefit humanity (Hetherington, 2022).

Recently, **Microsoft** has been enhancing the image generation capabilities of AI- powered Bing Chat by introducing OpenAI's latest Dall-E 3 model to all Bing Chat and Bing Image Creator users. This rollout started with Bing Enterprise users and has now become accessible to everyone. Bing users are gaining access to DALL-E 3 ahead of OpenAI's ChatGPT, which is now available in October 2023 but exclusively for paying customers. This makes Microsoft a leading image generation tool for the foreseeable future. DALL-3 represents the third iteration of the OpenAI's image generation model, with improved prompt understanding and the ability to generate more creative and realistic images. It's designed for user-friendliness, integrated into Bing Chat and ChatGPT, allowing users to engage in conversations with chatbots to create and refine images, eliminating the need for endless fine-tuning of initial requests. (Pierce, 2023)

MidJourney excels in adapting real art styles compared to DALL-E which is realistic images. MidJourney can produce a more contextually creative image with textures, even the imperfections are aesthetically pleasing. While DALL-E deals better with clearly instructed scenes. The developers of MidJourney described themselves as: "An independent research lab. Exploring new mediums of thought. Expanding the imaginative powers of humans" (Scotti, 2022). I will be utilizing Midjourney for my creative output since MidJourney proves to be more artistic with the use of complementary colors and styles. Also, DALL-E 2 for specific generated images.

Stable Diffusion is an application created by Stability AI. Stable Diffusion separates the image generating process into a "diffusion" process at runtime. Starting with only noise, it gradually improves an image until there is no noise left at all, bringing it more and closer to a provided text description. Compared to DALL-E 2, Stable Diffusion has a higher resolution, it can generate up to 1024x1024. Additionally, it is lenient with the text prompt because it allows generations of famous people (Monge, 2022).

Artificial intelligence drastically changed the meaning of art, but how does this affect the artists? The beneficial effects of text-to-image generators would be to speed up the production of artworks and reduce time consuming manual process, with that artists would have more time for other creative activities and spend more time in honing their skills. AI art generators can help artists be more creative. As AI advances, it adds up new tools for artists to explore in creative and unforeseeable ways. It can also be used to create other possibilities beyond what an artist's creative mind. Negative effects of text-to-image generators. This could cause plagiarism and fraud. Aside from that AI struggles to convey emotional impact or delivery of artwork simply because it lacks humanity, it can feel hollow and cold. AI art currently only has a feel to it that can be distinguishable compared to human artworks.

As an artist, I think no skill is useless, especially in art - every single tool has its use, and without understanding the fundamentals, you will never understand what distinguishes bad art from good art and even AI would not help to fix that lack of artistic view of its user. This inspired me to produce a 2D animation film regarding how the emergence of text-to-image AI art will affect artists in my generation or young

artists, while exploring the uses of a text-to-image AI art generation. This will help them realize that AI art generation can never replace human artists because this can only operate with the collaboration of humans, instead this can be a creative tool that will liberate us to extend the boundaries of human creativity.

Figure 1

Creative Framework of the 2D Animation Short Film on How the New Artificial Intelligence Art Generation Affects Artists
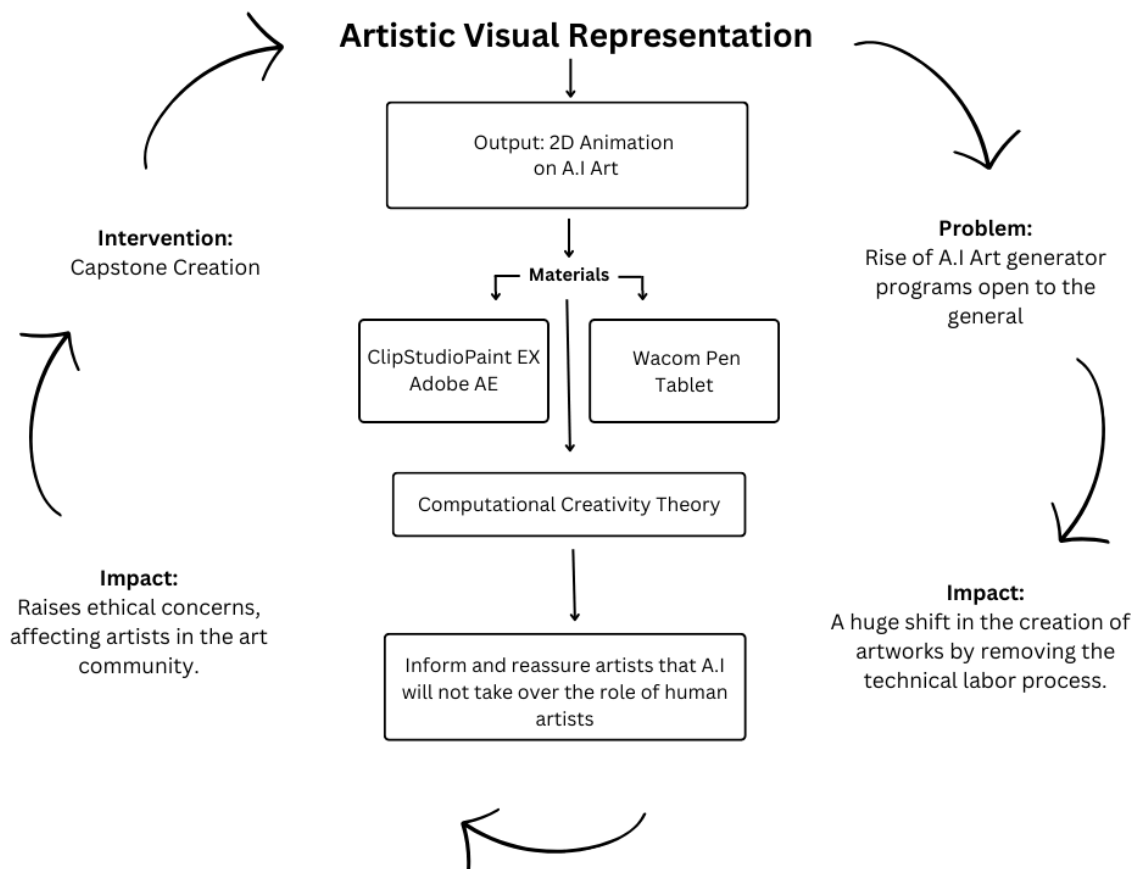
The creative framework that I used is computational creativity theory, it stands at the intersection of Artificial Intelligence, cognitive psychology, philosophy, and arts. Computational Creativity theory is the study of constructing computer programs that display behavior deemed as creative in humans. Creative software enables autonomous tasks, such as paintings, music, and poetry. However, it also helps us understand human creativity and develop tools for creative individuals to utilize, where the software works as a collaborator rather than a mere tool. Historically, it has been difficult for society to acknowledge machines that prove to be intelligent, and people are still dubious of their creative potential, even among computer science (De Mántaras, 2017). This theory provides a thorough, computationally precise, and realistic explanation of the process of creation. By exploring and understanding text-to-image or AI art

generator's technical and creative processes, this helped construct the conclusion to the effects of AI art to artists and whether it will take over the role of artists or not.

In **research design**, I conducted a qualitative research approach questionnaire created via Google Forms to a maximum of 10 respondents. The target respondents are my mutual friends who are student artists and from art communities on social media platforms, specifically on Facebook and Reddit. For me to gather more information on the positive and negative effects of AI art generation to artists and come up with a conclusion whether AI will take over the role of human artists. I was able to collect different perspectives and information on their experiences with AI art.

The results of the qualitative questions that were gathered from the questionnaires were carefully analyzed and explained through content analysis. Furthermore, I also did online research and included articles online that have existing statements and interviews from well-known and professional artists about their thoughts and experience with AI-generated Art. This served as a basis for the development of the world, details, and ending of the animation's narrative.

For the **design process**, I created a 2D animated short film, which was done digitally using Clip Studio Paint and Adobe Premiere for post-production editing. Through utilizing computational creativity theory, I explored two AI art generations that are popularly used, Midjourney.AI and DALL-E 2. While I generate images, I also analyzed its creative process by experimenting on the prompts or descriptions I feed the program with the question was the program able to provide outputs that are deemed to be creative and exact from what I desired. After that, I used the AI generated images as references and refined the images in Clip Studio Paint into my preferred art style. Lastly, finish the animation in Adobe Premiere for compiling of scenes and sounds.

My 2d animated short film is entitled "DITTO" meaning to repeat or imitate, since artificial intelligence is the simulation of human intelligence by machines programmed to imitate humans and mimic their actions, hence the title of my animation. The conclusion of the storyline was based entirely on the data gathered from the preliminary questionnaire.

The **target audience** are student artists or new generation artists, ages ranging from 16 to 23 years old. I have seen a lot of young artists who share their sentiment online about AI art and how some of them felt threatened and discouraged to continue being an artist because of it. This creative output helps reassure artists that AI will not take over our role as an artist but instead it can be a helpful tool if we use it to our advantage to inspire them to create more human made art

Pre-production Stage

For the pre-production stage, I primarily focused on planning the process of my 2d animated short film, I created a Gantt chart to have a clear idea on what is needed to be done. I also did the budget planning to estimate the expenses that I will be spending. After budget planning, I conducted a survey questionnaire that served as my reference for writing the storyline. Furthermore, I used an AI art generation, Midjourney and DALL-E 2, to help me visualize my ideas for the characters and environment. Then I

did sketches for each character based on the AI generated images. The same process applies for the animation backgrounds. This was finalized before the production stage.

Figure 2

AI Generated Image via Midjourney

Figure 3

Neo Character Sheet

The image in Figure 2 are images generated by Midjourney that was based on the description of Neo's character. Neo is a 19-year-old boy who is conflicted to continue growing as an artist, because of the sudden rise of AI-generated art. Neo is quite pessimistic in personality, so I visualize him to have a simple

but cool style, usually wears dark colors and has slight long and messy hair, almost covering his eyes. The AI generated images were able to help me construct his overall final color scheme and details. Shown in Figure 3 is Neo's final design. I did not copy the whole design and instead I added my own ideas in to make it simple to animate.

Production Stage

The production stage is mainly about creating the whole animation. I first made an animatic with sound effects so I would have an expected duration of the animation. Secondly, I did the rough animation and had a few changes in some scenes compared to the storyboard. After that, I did the clean-up and in-betweens to smoothen the movement of the animation. Lastly, I applied the colors.

Post-production Stage

The post-production stage is where I compile the animations scenes on Adobe Premiere and fix some camera movements to enhance the overall visuals of the animation. Additionally, this is where I applied the voice-overs, sound effects and background music. The sound effects and background music that I used are royalty free, which are taken from YouTube, Pixabay and Envato.

Review of Related Literature

In relation to my 2D animated film, this section discusses previous literatures and articles on the role of AI in creating art and human artist in the process, the notion of AI creativity, dilemmas or issues that shows the effects of AI art generators on artists. This would further deepen our understanding of Artificial Intelligence in Art.

Role of Artificial Intelligence and Artists in the Creative Process

AI has been incorporated into many of the already available artist software programs to help with the automation of simple repetitive tasks. The objective is to make it possible for people to utilize their products more efficiently and reduce time-consuming manual processes. The complexity of AI and machine learning (ML) components in digital art packages expands, new tools for artists to experiment in creative ways. AI-based solutions can also be used to create things that an artist would not have thought were possible. AI is assisting creatives in a variety of ways, one of which is by helping them imitate the painting styles of famous artists from the past. Both the creation of a work and its restoration can benefit from this ability to imitate and reproduce. A new genre of art known as AI-art is the subject of a lot of speculation. Appropriately referred to as neural network art because it is produced using complex algorithms. These neural networks use generative adversarial networks (GAN), and the results prove to be convincing and can be unsettling to artists. GANs are kept as creative tools by humans defining the underlying coding and the goal-defined parameters. For an artist, the AI assistance can produce works of art, music, and even films. Given that this is a novel concept in the field, we should think about the consequences. Some artists nowadays are employing AI to improve or increase the public's accessibility to their work (Thomas, 2021).

Figure 4

AI Art Creative Process Diagram by Ahmed Elgammal
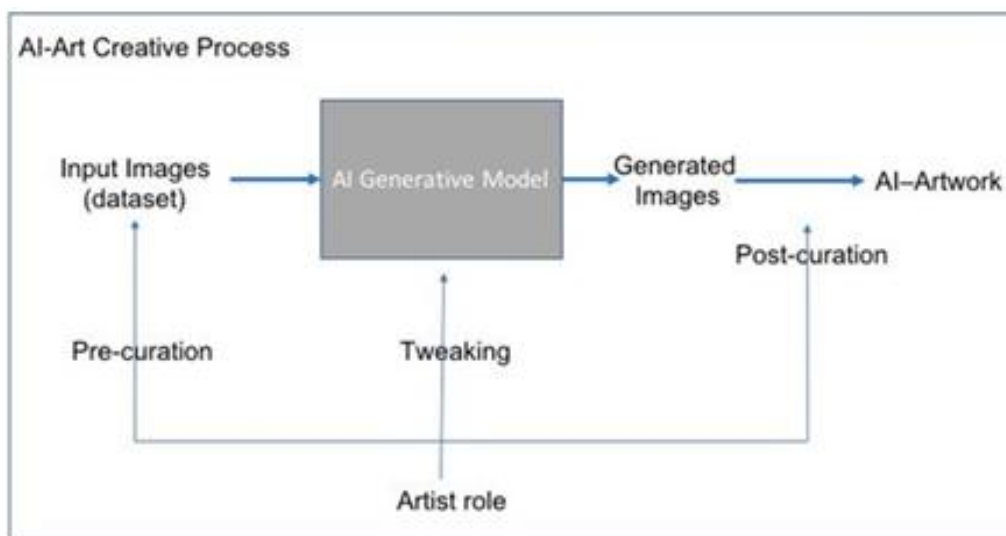
Shown in Figure 4 is an illustrated diagram showing the role of an artist in using an AI-generated model. Pre-curation happens when the artists select images to be fed into the generative AI algorithm. While in Post-curation, the artist examines the output images to curate a final collection. The diagram shows the role of an artist in using AI-generated model and AI in this process serves as a tool to produce art. The artist is primarily responsible for the pre- and post-curatorial activities as well as algorithmic tweaking (Elgammal & Mazzone, 2019). Artists can now view their work from a new perspective due to the changing link between humans and artificial intelligence as a tool. AI will facilitate the creation of artworks and make possibilities that were sometimes unimaginable previously available to everyone. The role of AI in the creation of art is that of an instrument, not the artist, much as the brush is for painting and the piano is for music. And how people utilize it will determine how creatively it can be used.

Notion of AI Creativity

Creativity has no definite meaning, though it involves imagination, inspiration, and skill. Creative works typically refer to written or visual products that are appealing to the eye and convey a unique idea. Writing, music, and design are just a few examples of the numerous sectors where creativity can be found. It is not just restricted to the arts. But can AI be creative? Just like humans, AI observes and learns from data to develop creative abilities such as writing, composing music, and drawing. By feeding it 1000 artworks, AI analyzes patterns from paintings and recreates its own. This is commonly called *Machine Learning* for AI. (Wisneski, 2022).
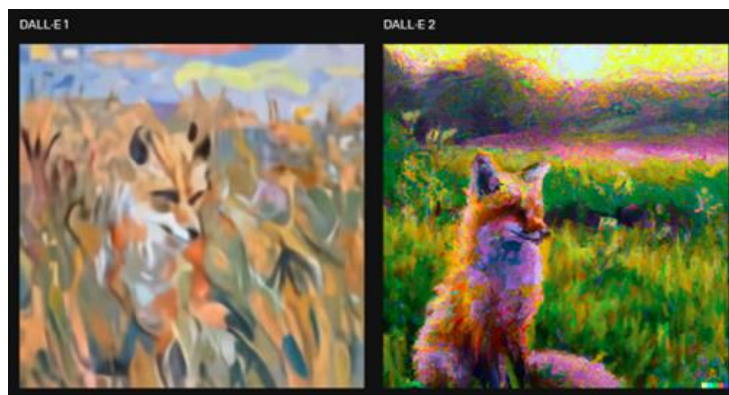
Figure 5

Portrait of Edmond Belamy, 2018

Shown in Figure 5 is an AI-generated portrait of Edmond Belamy using Generative Adversarial Network. The portrait depicts an overweight gentleman, French, and a man of the church, as evidenced by his dark frockcoat and plain white collar. The work appears unfinished, with facial features that are a little blurry and blank canvas areas. Surprisingly, the entire composition is slightly shifted to the north-west. The sitter is identified by a label on the wall as Edmond Belamy, but the artist's signature at the bottom right gives away the work's provenance. It became the very first AI art controversy because it was sold for an incredible $432,500 at Christie's Prints & Multiples sale on October 25, indicating the advent of AI art on the world auction stage (Christies, 2018). The generative Adversarial Network can be accurate depending on how much data the system is fed because deep learning models usually get better as it grows. You can benefit from pre-built AI models even if you do not have a lot of training data by using machine learning strategies like style transfer.

Figure 6

A *Prompted Image of a Fox Sitting in a Field at Sunrise in the Style of Claude Monet*

AI has progressed since then, because of open-source programs such as DALL-E 2. Figure 6 shows a side-by-side comparison of an AI-generated image between DALL-E and DALL-E 2, and it shows greater potential for the future of AI art generation. In comparison to the first version of DALL-E, it can only generate images of 256 by 256 pixels, while the latest version has a resolution of 1024 by 1024 pixels. This makes it clearer to picture a time in the future when artificial intelligence will be able to produce images and eventually films that are impossible to tell apart from reality. The far future may witness AI-generated films that are identical to Hollywood blockbusters when combined with AI-generated audio.

It is interesting to note that DALL-E functions similarly to OpenAI's language model GPT-3, which can produce text in response to a prompt. However, the model is trained using matrices of RGB values for each individual pixel rather than text. While AI art used to have a dreamlike, psychedelic character, it is now convincing enough for the human eye. This has broad repercussions for the world of art as well as for industries like advertising and film (Wisneski, 2022).

Figure 7

OpenAI's DALL-E2 Process
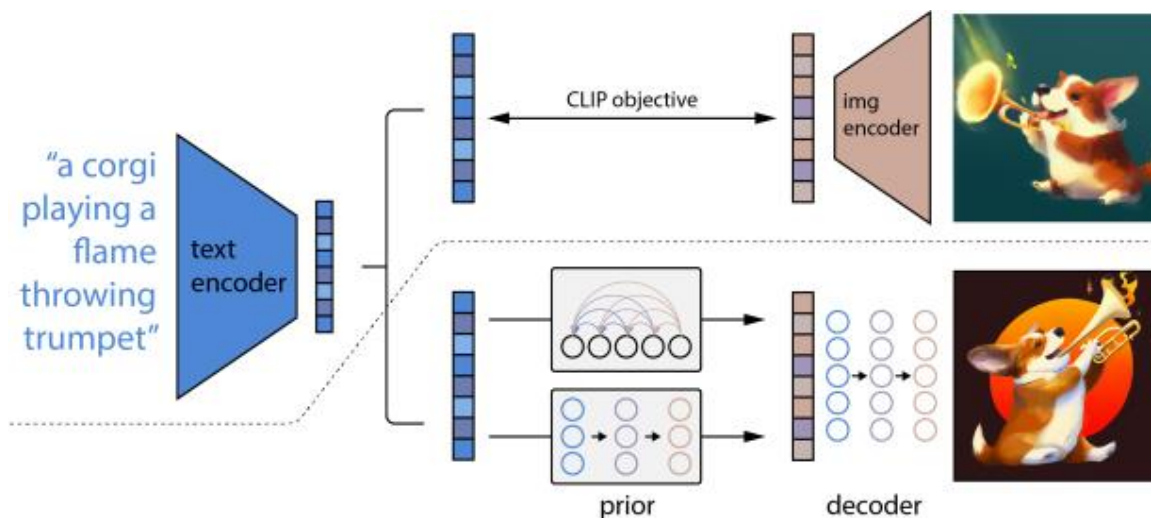
The adaptable model can create multiple variations of outputs for a given input while keeping semantic information and stylistic components. It goes beyond sentence-to-image generations and uses robust embeddings from CLIP, a computer vision system by OpenAI for linking text-to-image. Additionally, CLIP embeds text and images in the same latent space as opposed to other image representation models, enabling language-guided image modifications. Even though constraining picture production on CLIP embeddings increases diversity, it has some drawbacks. For instance, a similar GLIDE model performs attribute binding better than unCLIP, which creates images by reversing the CLIP image decoder. This is because it was discovered that the reconstructions from the decoder frequently mix up attributes and objects and that the CLIP embedding itself does not clearly connect characteristics to objects. UnCLIP produces more variation for comparable photorealism and caption similarity at the higher guideline scales utilized to produce photorealistic images (Dey, 2022).

AI may deceive humans into thinking its generated art was made by another human, but it lacks the genuine meaning of creative art. It can provide infinite outputs based on what you tell it, however it has does not understand concept and why a specific part of an artwork should be the way it is told. To AI, all creative inputs and outputs are simply data. AI can appear to be creative, presumably when you think creativity is a skill that can be learned through data. Given how fast it progresses, we can expect its creativity to improve to a level that we cannot distinguish if it is human-made or not.

Ethical Issues

Deep Fakes

Stable Diffusion-produced photos have been proliferating since the release. A few art-making platforms, including Artbreeder and Pixelz.ai, immediately caught up and adopted Stable Diffusion. Additionally, a lot of problematic photographs appeared along with the brilliantly artistic and photorealistic ones. The model was leaked on the notorious 4chan discussion forum, which was well-liked among young men and was quick to produce pornographic content and pictures of celebrities in their underwear. Deep fakes are now considerably more likely than before because of these AI programs, which were made open source and restriction-free.

Figure 8

Example of Deepfake Images Made via AI Generation

With a fair degree of competence, one might easily produce images of the Russia-Ukraine war, China's invasion of Taiwan, British Prime Minister Boris Johnson dancing with a lady, and arresting Donald Trump. Additionally, Hugging Face's Craiyon (formerly known as DALL.E Mini) and Disco Diffusion's quality were by far inferior to that of Stable Diffusion. Midjourney also allows a few troublesome cues to squeak through the cracks (Chatterjee, 2022). There are some precautions built into the tool. As a component of the Stable Diffusion software package, it contains a configurable AI tool called Safety Classifier that can identify and block inappropriate images. The tool can, however, be easily disabled, making it worthless. Since then, disabling watermarks and NSFW filters have been added to the Stable Diffusion GitHub version, and people have also created Google Collabs to generate designs from prompts.

Copyright and Legal Issues

Besides using these photographs to spread false information and incite frenzy, copyright concerns are another cause of disagreement. There is currently little to no legal agreement regarding an AI art-work's copyright. The US Copyright Office rejected to provide copyright protection for AI-generated photos in February 2022, declaring that "human authorship is a precondition to copyright protection" for works of art. A federal court is currently hearing an appeal in opposition to the decision. The choice is challenging. Most of the inspiration for AI-generated art comes from actual, physical works of art. Projects using Stable Diffusion copies and forging original works of art by other artists have been discovered by artists (Chatterjee, 2022).

AI art-generating programs like OpenAI's DALL-E and DALL-E 2, Stable Diffusion, Midjourney and other latest AI programs are trained using LAION-5— it is a dataset that includes over 5 billion publicly available images. These include personal images that users may have posted on social media. A person's incapacity to withdraw access to their images and the potential for these images to be used to make profound fakes or participate in scams may lead to legal action. AI art should advocate for openness and disclosure, but as algorithms develop and change, their behavior becomes less predictable.

Artist Becomes Most Used Prompt

Figure 9

Greg Rutkowski's Dragon Cave, 2017

Figure 10

Stable Diffusion Prompted Image

    Text-to-image art generators have sparked heated discussions regarding the alleged demise of society's need for professional visual artists. The invention has already given rise to a plethora of amateur artists who use artificial intelligence. Greg Rutkowski is a digital artist in Poland, well known for his fantasy illustrations for role playing games (RPG) like *Magic: The Gathering* and *Dungeons & Dragons.* He recently discovered a lot of people online imitating his style using AI. As shown in Figures 9 and 10, a comparison of his original illustration and a prompted image generated in Stable Diffusion. According to MIT's Technology Review, Rutkowski ranks as the most used prompt in two popular AI art generators Midjourney and Stable Diffusion. Users have input Rutkowski 93,000 times, while in contrast Picasso or Michelangelo's art style only counts 2,000 each (Benzine, 2022). Rutkowski initially considered his recent rise in AI platforms to provide access to fresh audiences. However, when he performed a web search of his name for unrelated purposes, works in his style that he had not been involved in appearing. Text-to-image generators search the internet for photos that can give the algorithms visual cues. The fantasy-inspired works of Rutkowski naturally deal with subjects suitable to the goals of AI, producing otherwise impossible scenarios. The company Stability AI, which created the platform Stable Diffusion, used the LAION dataset of more than 5 billion image-text pairings to train its algorithm. The German charity organization's collection does not include non-art photos like brand logos or images with watermarks. However, technologist and author Andy Baio discovered that many of the 12 million photographs in the collection were from websites like Pinterest and Fine Art America after analyzing them for Technology Review. The artwork by Rutkowski was taken from his ArtStation portfolio. based on a database of pictures that were taken without the owners' consent, and Stability. License AI's agreement absolves them of any liability for how their technology is applied. Those who use the AI must follow a copyright infringement honor code, although rules breakers are not subject to punishment. Rutkowski stated that AI should exclude living artists from its database and focus on works under the public domain instead. Additionally, there is a huge financial issue in evolving AI from nonprofit research to a commercial project without the permission to use an artists' work (Heikkilä, 2022).

Artists Reaction to AI-generated Art

Figure 11

Protest Images Created by Independent Artists, 2022

On December 14, 2022, the trending page on ArtStation—a platform for multimedia artists, was dominated with protest images of "No AI Art". Artists started to get concerned at the popularity of AI-generated art in the platform, which were a derivative of the work of human artists and uses their work without compensation and attribution. Many artists requested ArtStation to ban these AI images, however ArtStation refused which leads to the flooding of protest images. The situation escalated when ArtStation declared that artists would be required to select a new 'No AI Tagging' feature intended to avoid their artwork from getting used to train AI tools—instead of it making it enabled by default. AI-art generation programs are considered unethical to artists because of how they are trained. Artists criticize AI for demoralizing the skills that they honed for years and frustrations over AI-art prompters who gain profit from artists' efforts for selling generative art. It's not surprising that the community has raised concerns about the apparent acceptability of AI art on the platform given that ArtStation is used by creatives to showcase industry portfolios and find paid work. ArtStation announced that they are now moderating posts that violate their terms of service and has removed the protest imagery. It was not clear what terms of service was violated by the anti AI images but the document grants ArtStation extensive authority to remove content under an array of reasons, including when users "send spam or other bulk messages" (Weatherbed, 2022).

Meanwhile, other art platforms have taken a different approach regarding technological advancement. Getty Images has banned AI images due to its legal and copyright issues. The "Contributor Fund," as Shutterstock announced, will pay artists when the company sells their work to train text-to-image AI programs. In cases when companies have expressed support for the rise of generative art, many allude to its potential as an additional tool for artists to use rather than replace them.

Not a New Phenomenon

According to the research *"The Historical Relationship Between Artistic Activities and Technology Development"* by Luis Miguel Girão and Maria Céu Santos of Art. This discusses the intertwining of art and technology is not a new phenomenon and it has become grounded in a long-standing historical cycle. One of the inventions mentioned is photography. Photography when it was first invented brought new dimensions to the technology of art. It took decades before it was widely embraced by artists who artistically explored and developed its range of applications. It has become a medium for artistic expression, realism, and techniques in relation to scale. Photography liberated painting and so painters were now free to explore new frontiers, and movements were created. At certain moments of its development, it supported the evolution of artistic expression. In consequence, artistic demands fueled technological advancement. (Girão et al., 2019). Photography democratized paintings. It was made portable, accessible, and cheaper compared to paintings that takes a lot of time and effort. By pressing a button, a camera can instantly capture a scene or portrait, which made portrait artists lose their privilege. People like Charles Baudelaire thought photography as a refuge for failed painters, because he thinks art should be from imagination, judgement and feeling, while photography is just cheap that replicates the beauty of art. In response, the impressionist art movement began to rebel the classical subjects and embrace modernity. This shares the same sentiment in terms of the raised concerns of people about AI generated art. By simply inputting text, AI can generate an image in a matter of seconds. As with photography, AI might take a while before we fully recognize it as an art form or never.

Review of Related Works

This section includes all related works about AI art and projects that will serve as reference and inspiration for my creative output. Additionally, I included similar animations I used as inspiration for story sequencing and animation style.

Figure 12

Théâtre D'opéra Spatial, 2022

Figure 12 shows the AI-generated artwork by Jason Allen, who is a video game designer in Pueblo, participated in the Colorado State Fair's digital arts competition 2022. He was awarded first place with a $300 prize. When Allen announced publicly online that he had used Midjourney, an artificial intelligence program that can convert text to images, to create his prize-winning artwork, his success took an unexpected turn. This sparked controversy and debate about what defines art. The submission requirements for the fair define digital arts does not specifically mention AI generated art but based on the definition of digital art is an artistic practice utilizing digital technology as part of the creative process. Therefore, it is considered qualified. Two judges were unaware that Allen used AI to create his artwork. However, they would have still given him first place even if they had known. The judges claimed that they decided who would receive the top prize based on the narrative, and impact of the artwork. Allen created *Théâtre D'opéra Spatial* by typing in text descriptions on Midjourney, then the program generates 100 up renders for him to choose. After choosing three from the renders, he worked on them in Photoshop until he was happy with the results. He reproduced the pieces on canvas and enhanced their resolution using a program called Gigapixel. Allen paid a $11 entry fee for each of the three compositions he submitted to the competition. He informs the Chieftain that he set the pricing for them at $750 each piece after taking quotes from other painters into account. *Théâtre D'opéra Spatial* captures a bizarre scene with space like atmosphere, "Classical figures in a Baroque Hall stare through a circular viewport into a sun-drenched and brilliant landscape." Allen thinks the criticism he receives on his artwork is motivated by fear and that artists are getting anxious as technology advances; their jobs will become obsolete (Gault, 2022).

AI art as tools may have unwanted consequences, especially when used by bad actors. Deep fakes—term for fraudulent images and videos that have been digitally altered—can potentially be produced using these technologies and can propagate misinformation. The Colorado State Fair may amend its policies in response to the uproar over Allen's artwork, or they may even develop a stand-alone AI category.

Figure 13

Cyberpunk: Peach John, 2023

Cyberpunk: Peach John is Japan's very first ai-generated by manga author Rootport. The comic is a reimagined version of the Japanese folklore Momotaro—a tale about a boy born from a giant peach—into a dystopian setting. Although the storyline and dialogue were written by the author, the illustration was made using Midjourney to create the panels.

According to CNN, the anonymous author said that he had completed the manga, fully rendered with color in a span of six weeks only. —compared to the normal manga publications, which would take a year or more to complete by hand.

Since online AI art generations are inconsistent with the images it generates, the author struggled to produce images for a specific scene. Midjourney was incapable of replicating the characters in different poses and expressions. To solve this, Rootport gave each of his characters a distinguishing detail (such as pink hair and dog ears) that would make it easier for readers to identify them as the plot developed. Another AI art generation struggle is the incapability of rendering anatomically accurate human hands, which would often look distorted. So instead, he limits scenes that show the characters' hands.

The manga includes a 10-page guide on how to produce an AI-generated manga, encouraging the readers to create their own. Rootport insisted that it should be considered a work of art, analogize arguments in favor of AI art to those in favor of Marcel Duchamp's "Fountain" or Andy Warhol's "Campbell's Soup Cans."

He posted a preview of his work online and he received positively, although some disapproved. They described his work as an insult to the manga artists, while others were argued that Japan has some of the most talented artists, so why publish a manga made by AI. Rootport does not foresee that AI would put out artists and compare his process to making music using MIDI instruments. He states that both humans and AI create from learned data, however humans not only rely on data, but also from emotion, experience and as a means of communication.

Rootport believes that AI will liberate artists from the inhumane working conditions of the industry, which often affects the health of artists due to overwork. Additionally, it has the potential to improve the quality of stories. Authors can devote their time to the creative aspects of manga, which leads to more interesting plots (Oscar Holland et al., 2023).

Figure 14

Best Friend, 2018

The dependence on technology in our daily life increases along with technological advancement. We develop new goods that enhance our way of life, but what happens when we do not have access to those technologies? A short-animated film was released in the year 2018 directed by Nicholas Olivieri, Shen Yi, Juliana De Lucca, Varun Nair, and David Feliu. Which depicts a future where a device called "Best Friend" affects people's daily lives.

The film's main protagonist is a lonely 30-year-old man named Arthur, who is very dependent on a recent technology called "Best Friend." It is a product implanted into the user's temples to create visual or fictional friends that can only be seen by the user. Arthur portrays as an exaggeration of one's dependence on technology in the animation. The 2D aesthetic of Best Friend uses distinctive character designs to distinguish between technological reality and real-world reality. Arthur, the main character, is shown as having a typical human appearance. He wears simple attire, dull hues, and realistic dimensions. In comparison, his imagined friends are more artistically complex creatures. They tie back to the idea of eye drops, but unlike Arthur, they have a brighter color palette and very circular features that support the feeling of warmth. Except for Cami, the main friend, has more realistic elements and proportions like Arthur's. While her design makes frequent use of teardrop and circular shapes, such as those in her earrings, hairstyle, and belt to allude to her affiliation with the "Best Friend" technology. She looks too flawless to be genuine because of the vivid color scheme she is wearing. To create an ideal world that impacts Arthur's dependence on technology, 2D animation is used to show Arthur's friends as cartoonish beings that only live in this technological reality. Aside from their character designs and the tone shifts throughout the scenes both highlight the contrast between virtual and physical reality. When Arthur needed to recharge with the eye drops, his friends paused, and the scene became dark as if all the lights were off. Their celebration resumes as he snaps his fingers, and the lights go on again. The hue shift demonstrates Arthur's level of control over his virtual world as well as the separation between his realities. The tone of the film drastically changed when he followed Cami into a remote area to find a vending machine. The background changes from dazzling city lights to gloomy alleyways. The film represents the crucial contrast

between the two realities by using different lighting. Arthur's virtual reality is more pleasant and warm compared to his real world, which is dreary and ominous (Olivieri et al., 2019).

Best Friend conveys a warning about the addiction to technology through skillful use of character design and tone shifts. Given the expansion of social media and technology, the story is still relevant today. New products that enhance our lives have an impact on how we live, and with the absence of these products make it inconvenient for us. We use social media to deal with loneliness, but strangely, we become even more isolated from the outside world and from one another. Best Friend makes a statement on the perils of our own obsessions with technology and social media through a fictional future in which our civilization is consumed by the cycle of technological addiction. This shares a similar idea to my creative output topic, wherein the development of text to image generator or AI art affected artists and this can serve as both convenience and inconvenience. I will be using this as an inspiration for the efficient use of transitional tone throughout the scenes to have a better depiction on the effects of AI generated art to artists. As well as the character design process, how they effectively incorporate the designs to the cast's personality and traits.

Figure 15

The Dog and The Boy, 2023

"The Dog & The Boy" is a 3-minute sci-fi anime short film released on February 2, 2023. The film depicts the story of a young boy leaving for war while his robot dog patiently waits for his return. It was created in collaboration with Rinna Inc. and WIT Studio. The Netflix Anime Creators Base and Rinna Inc. used Ai-generated art for the background images to address the labor shortage in the anime industry. This experimental effort by Netflix aimed to support the industry and explore the potential of image generation technology. Shortly, Netflix received backlash for the lack of transparency in using this technology and concerns over its potential misuse.

Results and Discussions

    For this study, I conducted an online questionnaire through platforms such as Reddit, and Facebook. Which allowed me to gather qualitative data from my target audience. The online questionnaire focuses on their thoughts and feelings towards AI generated art and how this affects them.

Survey Results

    1. ***What are your thoughts/feelings about the rise of AI generated art?***

Figure 16.1

Respondents' Thoughts on AI Generated Art

Soulless products of unappreciative 'art loving' theives

It seems like AI isn't good at replicating stylized/cartoony art, instead particularly targeting a realistic style, but this is definitely very detrimental to those realistic artists as some may find it easier to just make a machine create art rather than pay those artists to help them, putting them out of a job. Plus, it creates negative reception from customers who unrealistically expect human artists to create the same caliber in the same time, and muddies the water on what's created by AI and not.

I do not think AI art in itself is a bad thing. I would not mind giving certain art pieces of mine to develop the software, too. However, the fact that there are many questionable elements to it makes me not want to give my full support. These include using artists' work without their consent for data, using confidential medical photos, and AI generated pieces being used in contests against human-drawn artwork.

Much like deep fakes a little while ago, AI generated artwork will affect more people negatively than positively and should be banned, illegalized even

Figure 16.2

Respondents' Thoughts on AI Generated Art

I enjoy it a lot. I see how it may put some artists out of business, but that is a problem people have faced for hundreds of years. I believe real artists will still be wanted but perhaps the scope of commissions will change.

I feeling intimidated by AI

it is worrying that it is used for commercial purposes

It's interesting to see from a technical side, however, it's advancing faster than regulations should be.

I feel like the version of AI art we have right now is deeply concerning. Its not like AI has no possible applications - for example, it could be used to generate or upscale textures, provide or tweak concept ideas and the like. But the current iteration seems to be focused on replacing human artists, no assisting them. On top of that, the datasets these AIs use were collected from all around the Internet without consent of artists and photographers.

According to the given statements by the respondent from Figure 16.1 to 16.2, almost all of them feel intimidated, worried, and concerned about the capabilities of AI to generate images that are convincingly as good as human made artworks. Additionally, what concerns them more is the datasets that AI generations use are collected from the internet without consent from the original owners.

2. **Have you tried using any AI art programs? If yes, how was the experience?**

Figure 17.1

Respondents' Experience Using any AI Art Generation Program

No

I used the Dream by WOMBO AI generator. It was honestly fun because it felt like a game for kids. Read: game for kids.

I tried them to see if my friends and I's art was used in them. However, it appears that they have not been registered into the machines. What I got are pieces I do not care much for. I still prefer getting art from real people.

I have also used AI art programs in the past before their negatives were documented, and thought they were cool. After their negatives have been documented, however, aside from that first example, I have not really used AI art programs.

Figure 17.2

Respondents' Experience Using any AI Art Generation Program

Only a discord based bot once, when I was curious

Quite positive. The software still has a lot to learn, but I believe this will be fixed in a year or two.

wombo etc., some images generated provided humour or even inspiration

I've played around with numerous free ones. They always leave me a little disappointed with the result.

No, because I feel like even using these apps in their current form is unethical because of how the companies developing these AIs collect data. Ive read a lot on the subject, though (both pro- and anti-AI arguments)

Based on the answers given by the respondents from Figure 17.1 to 17.2. Most of them have tried using an AI art generation program out of curiosity. They stated that the result images that AI generates are impressive, some even said that it was quite fun to use, which provided humor and inspiration. The others, however, did not bother to try any AI art generation program because the current form of AI is unethical.

3. **How do you think AI art affects you as an artist?**

Figure 18.1

Respondents' Answers on How AI Art Affects Them

> I'm scared of it outshining actual people's works becuase its a stolen mosiac of existing works (instead of it being an inspiration).
>
> AI has no particular bearing on me as an artist yet due to my still-limited reach and my style being far-removed from realistic, but as technology develops I could very well see them invade in this field too, whether simple vector graphics or full-fledged cartoon styles. That will of course put these many stylized/cartoonist artists out of commission as well.
>
> To be honest, I feel like the types of people who would use AI art are the ones who probably would not be courteous customers to begin with or people who cannot afford commissions in the first place. If people actually want artwork that fits their vision to the fullest, they will likely go to an artist themselves. While my thoughts on this might change in the future (especially since I have not sold art yet), I do not think it is really affecting me as an artist so far.
>
> Makes it harder to find work already, it's terribly demoralizing and I genuinely believe it should be banned at the very least

Figure 18.2

Respondents' Answers on How AI Art Affects Them

> Design is still something that is highly individual and I doubt it will affect me personally. I may be able to use artificially generated images in my designs though, so I think it will improve the quality of my work.
>
> It takes over menial artistic jobs, which are the jobs that usually employs us artists
>
> It could reduce my chance of selling pieces
>
> I think it could be an ok tool, if it were properly labeled. Right now, you have too many people trying to pass off ai art as someone they worked hard on, making competition for artists who worked hard for their skill much much tougher. If ai art were required to be marked some way as ai, so that the average viewer could tell, that would alleviate some of the problem, as it'd mean we're no longer competing with each other.
>
> Honestly, I dont think I will be able to pursue an art career anymore and I feel extremely discouraged. Learning how to draw took me a lot of time and effort and even though I will probably still draw from time to time, it doesnt seem like being an illustrator will be an option in the future. People say that artists will still keep drawing, in part this is true but its not possible to dedicate your life to something that doesnt pay your bills.
> I feel like AI and other tech should improve peoples lives, not take away their futures.

According to the answers given by the respondents from Figure 18.1 to 18.2, the development of AI art generations changes the demand to employ artists and the scope of commissioning art from artists since some would now prefer to use AI to spend less money and receive the work quicker. It has affected them emotionally and mentally, causing them to be anxious or stressed out and lose passion for pursuing an art career.

4. Have you experienced/ encountered any issues related to AI generated art?

Figure 19.1

Encountered Issues Related to AI Art

No
Personal experience, none.
Aside from what I have been hearing on social media, not yet.
Yes it stresses me out a lot that all the time I've practiced could be for nothing, the only thing I have going on against an AI is my unique art style, other than that it does everything I do faster and cheaper
Most AI is still quite unsure just how many limbs a human body has. Animals are even worse and good luck if you have very specific designs in mind (i.e. the face of a girl with cheetah-like make-up). That is just beyond the scope of current models.

Figure 19.2

Encountered Issues Related to AI Art

If you aren't too picky however and just need some images to fill a page, AI is great for that sort of thing!
Not personally, no. However, i have seen multiple artists i like have their art stolen and then reworked using an ai generator, and then posted without crediting who made the art. I have also seen more than a couple times where people were lied to and had commissions done using ai.
Well, I basically have to find another career path before its too late.

Based on the given answers by the respondent from Figures 19.1 to 19.2. Most of them have not yet experienced or encountered any issues personally, but they often witness other artists get their artwork stolen, reworked using an AI generation and being posted without credits. Another issue mentioned that some people would lie, pretending to be an artist and provide commissions done using AI.

Additionally, on the technical side, one of the respondents mentioned an issue of AI's accuracy to gener-ate a specific design in mind and the incapability of AI to generate human body and animals, some would appear to be distorted and have multiple limbs.

5. *Would you agree that AI generated art is beneficial to artists? Why or why not?*

Figure 20.1

Respondent Answers to Whether AI Generations are Beneficial or Not

It would honestly be beneficial in the inspiration stage. Specifically used for reference (like Pinterest) and not actually copy pasting it or straight up using it.

While it can be beneficial, like helping create a visualization of something they wish to draw, to peddle AI-generated "art" as true art is disingenuous to the very core and meaning of art, which is to put heart and soul into your work, something a machine doesn't have. Further reasons for the harm of AI are listed in questions above.

If all of the questionable elements were removed, yes. Because it would help them with several things. These include brainstorming for new projects by creating what are essentially collages or mood boards and creating elements that could save time on their pieces.

Perhaps? I'm sure people already started using ai generated artwork as a reference or to draw over it and pass it as original work, but the negatives are inmense, an artist is easily replaced by AI in many cases, but an artist can also sell someone work that the client could've generated themselves, for example.

Figure 20.2

Respondent Answers to Whether AI Generations are Beneficial or Not

To some it may be beneficial, to most I am very sure it's gonna be detrimental. There are role-playing and board games coming out in 2023 that use exclusively AI generated art that would otherwise have to commission artists for 80-150 pictures. That is a very significant investment and might easily take up to a year to complete. A professional AI designer might have those pictures ready in 2-3 days at a fraction of the cost.

I think that could be used as a powerful tool. but I don't think that we will be able to control it enough to use it for our benefits

No, because it is rehashing existing artwork and learning from them. We can do that already- by appreciating pieces by humans.

I think it could be, but as it stands right now, it's more harmful than good, and needs some serious considerations for it to be less harmful, so that any of it's benefits can show.

No. It couldve been, but like I said, the current version is focused on replacing the artists, not helping them. I would not have any problem with art AIs if they were created as tools (like Photoshop and other apps) and were only trained on works of people who actually agreed to participate in AI development.

Based on the given answers in Figures 20.1 and 20.2. Most of the respondents agreed that AI generations can be beneficial to artists. They stated that it can be a helpful tool for inspiration and visualization stage, if the all the concerning elements were removed, such as the copyright issue and stealing from artists concerns. While some disagrees stating that the current AI generations is more harmful than helpful because it only rehashes existing artworks from artists without permission from artists and that artists already do that even without use of AI by appreciating artworks by humans.

Conclusion

The development of text-to-image AI art generations caused a shift on the process of creating artworks by removing its labor process. It has raised ethical concerns and is currently still being debated in the art community. Based on the online survey that I conducted, it shows that most of the respondents felt heated, intimidated, and feared the possibility of text-to-image AI art generation outshining and stealing their role or jobs in the future. Additionally, some of them were even discouraged from pursuing an art career because they would rather not want to dedicate their life to a career that does not let them earn for

Thus, I provided visual representations through my 2D animation short film entitled "Ditto." Which helped reassure my target audiences that text-to-image AI art generations are not something we should fear, because it will not take over their roles as an artist and instead, using AI can liberate and expand our creative boundaries. Furthermore, this helped young artists to try out AI art generations and explore the uses of AI art to our advantage.

Recommendations
Research Topic

This research is still open for improvements in terms of how the online questionnaire is created and conducted and the method of data gathering used. I created and conducted an online questionnaire and gathered 90% of the respondents that I needed. Although, the online questionnaire gave variations and valuable insights in relation to the topic of AI generated art. Proper planning of questionnaire should be considered to avoid a repetitive statement from the respondents. Additionally, some of the respondents gave short statements or answers that need to be explained or further discussed. Thus, the proper data gathering method to collect full discussions would be to conduct a semi-structured interview method. Which still provides the interviewer to follow a plan and a set of questions, however, it makes the discussions flexible, allowing the interviewer to add follow up questions to get the needed data for the thesis. The interview can be either face-to-face or online call via zoom, google meet, and other platforms depending on depending on the interviewee's preference and available schedule.

Creative Output

The process of how the 2D animated film that was made as the output of my study can still be improved in terms of the use of text-to-image AI art generations to create animation assets and the timeline of the production of my animation. The creative output used text-to-image AI art generation to create the animation assets, such as inspiration for characters and backgrounds, I used two programs which are Midjourney and Dall-E 2. The programs can be accessed online; however, it has limitations since

both programs require monthly subscriptions to have the full experience and no limited number of images to generate. The pricing can be costly ranging from $ 10 to $ 60 depending on the subscription plan. Furthermore, a con of being unsubscribed is the image sizes are limited into only one size, which is a bit small for the animation size. Comparing the two, Midjourney has proven to provide better images for ideas and inspiration to use for character designs and the overall aesthetic of the animation. While Dall-E 2 provides images that are good for background art because the images it generates are quite simpler, making it easier to add your own details and enhance the visuals of the images by using painting over or photo bashing techniques. I also recommend trying out AI art generations to help create visual assets for other art mediums, such as visual novels, game design, graphic design, etc. Lastly, following the Gantt chart and the production timeline can further help me to plan a more efficient way of working and creating the output because it also takes time to learn how to write well formulated descriptions for the AI to generate accurate outputs. These recommendations are vital for future references and future researchers upon creating an effective visual representation that can help communicate the problem to their target audience.

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