

# AI Painting in TikTok: From the past to the future

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## Abstract

AI painting in TikTok has gained popularity due to advancements in AI technology. The history of AI art dates back to 1973 when the first AI-generated painting was created. TikTok has incorporated AI technology into various special effects, such as the "comic face" effect. The idea behind AI painting is to represent human creations as vectors in a mathematical space. A survey revealed that the majority of respondents had a basic understanding of AI painting and were highly aware of AI painting technology in TikTok. However, many respondents had limited knowledge of its development and related artworks. Ethical concerns surrounding AI art include the potential devaluation of human effort, legal issues, and the possibility of stereotypical and sexualized portrayals. Some artists have also expressed concerns about their artwork being stolen and flooded by AI-generated art. Despite these concerns, AI art presents new opportunities for representation and participation in the art creation process. It is crucial to consider the ethical implications of this evolving technology.

Keywords: AI painting, text-generated image, Tiktok.

# 1. Project Overview

## 1.1 What is AI painting in Tiktok?

In the field of AI in 2022, the AI painting model based on text-generated images has become a protagonist. The journey started with Disco Diffusion in February, DALL-E 2 and MidJourney opened a private beta trial in April, Google released Imagen and Parti in May and June, and then Stable Diffusion came out at the end of July.<sup>1</sup> The history of AI art dates back to 1973 when American computer scientist Harold Cohen created the first-ever painting generated by AI. Cohen's painting was created using a program he developed called AARON.<sup>2</sup> TikTok Special effects have drawn on many AI technology application practices. In 2021, "comic face" special effects used GAN technology.<sup>3</sup> At present, TikTok's "AI Painting" uses the most popular multimodal generation technology.<sup>4</sup> With the advent of DALL·E., the ByteDance intelligent creation team began to follow up on related technologies in early 2021. After the release of Stable Diffusion at the end of August this year, the TikTok special effects team soon launched its project entitled "AI Painting".<sup>5</sup> In fact, one of the core ideas of an AI-generating model such as Stable Diffusion, or of many deep learning AI models, is to represent a human creation as a vector (or, more simply, a string of numbers) in some high-dimensional or low-dimensional mathematical space.<sup>6</sup>

## 1.2 Why AI painting in Tiktok?

### 1.2.1 Data analysis from questionnaires

From the questionnaire sent out, we learned that about 80 percent of respondents had a basic understanding of AI painting technology, and 8 percent of respondents said that they were very familiar with it or they had done some research on it.

Specific to the AI painting technology in TikTok, more than 90 percent of respondents said that they have used or knew about the "comic face" special

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<sup>1</sup>Zhewei Huang. Learning to Paint with Model-based Deep Reinforcement Learning. ICCV 2019. <https://arxiv.org/abs/1903.04411>. [Accessed 20th February 2023]

<sup>2</sup>Ian J. Goodfellow. Generative Adversarial Nets. <http://www.cs.cmu.edu/~jeanoh/16-785/papers/goodfellow-nips2014-gans.pdf>. [Accessed 20th February 2023]

<sup>3</sup>Christian Ledig. Photo-Realistic Single Image Super-Resolution Using a Generative Adversarial Network. Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR). 2017. <https://arxiv.org/abs/1609.04802> [Accessed 20th February 2023]

<sup>4</sup>A Neural Representation of Sketch Drawings. <https://arxiv.org/abs/1704.03477> [Accessed 20th February 2023]

<sup>5</sup>Draw Together with a Neural Network. <https://magenta.tensorflow.org/sketch-rnn-demo/> [Accessed 20th February 2023]

<sup>6</sup>CAN: Creative Adversarial Networks, Generating "Art" by Learning About Styles and Deviating from Style Norms. <https://arxiv.org/abs/1706.07068>. [Accessed 20th February 2023]. Synthesizing Programs for Images using Reinforced Adversarial Learning. <https://arxiv.org/abs/1804.01118> [Accessed 20th February 2023]

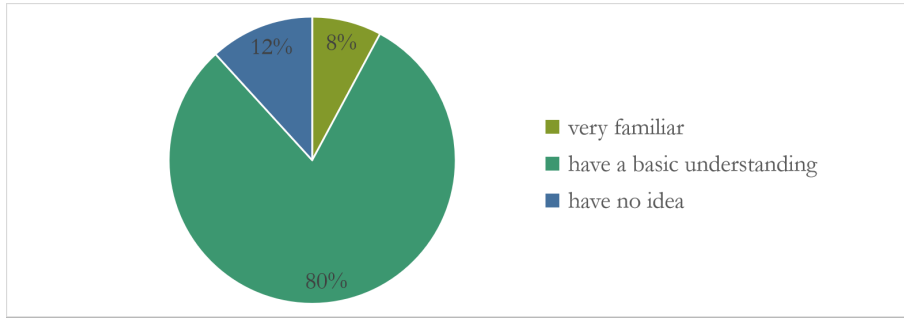


Figure 1: Conclusion 1

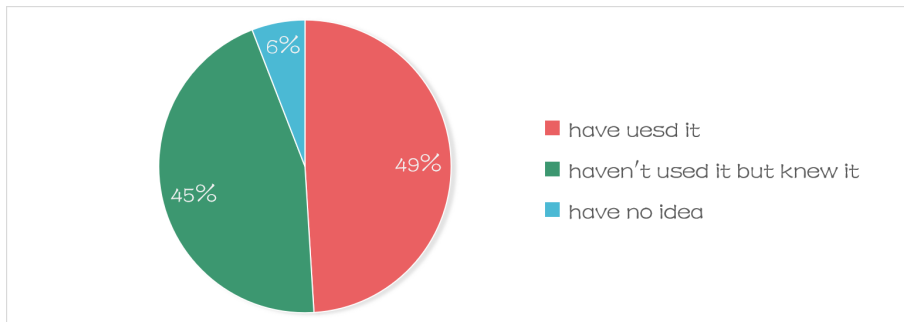


Figure 2: Conclusion 2

effect in TikTok. It can be seen that both AI painting technology and the AI painting technology in TikTok enjoy a high level of awareness.

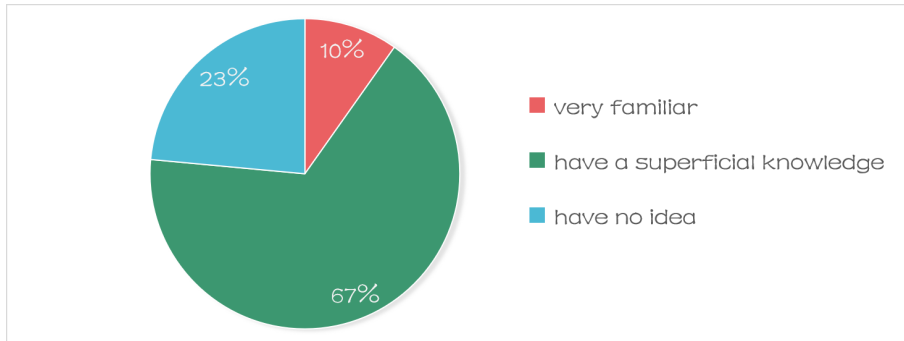


Figure 3: Conclusion 2

However, 67 percent of respondents said they had little knowledge of the development of AI painting technology and related artworks, and 24 percent said they had never paid attention to it. This means that most people's understanding of AI painting technology and products remains on the surface.

### 1.2.2 Text analysis from mediaworks

There are concerns about artificial intelligence eventually replacing humans in every industry, and despite how revolutionary AI art is, it is not free from these three ethical concerns.

1. Does AI invalidate human effort?
2. Are there potential legal issues arising from AI?
3. Can AI lead to stereotypical and sexualized portrayals?<sup>7</sup>

AI image tools still struggle to render hands that look like people's, and body proportions can be skewed. Also, some artists have been angry that their art trademarks had been stolen.

Greg Rutkowski, a conceptual artist and illustrator, said: "It's only been a month. A year from now? I probably won't be able to find my work there because [the Internet] will be flooded with AI art", Rutkowski told MIT Technology Review, "That's worrisome."<sup>8</sup>

In recent years, the art aspect of artificial intelligence (AI) generation has begun to gain popularity, and AI art is an exciting new technological development that may lead to some unique TikTok trends. For example, some non-white creators may find more opportunities to feel represented and participate in art creation. While creators continue to enjoy and experiment with these trending technologies, it is important to consider the ethics surrounding this new software.<sup>9</sup>

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<sup>7</sup>ABEER RAZA, 2023 Ethical Concerns About AI-Generated Art, <https://www.inc.com/inc-masters/three-ethical-concerns-about-ai-generated-art.html>[Accessed 25th February 2023].

<sup>8</sup>Laurie Clarke, 2022 When AI can make art-what does it mean for creativity?, <https://www.theguardian.com/technology/2022/nov/12/when-ai-can-make-art-what-does-it-mean-for-creativity-dall-e-midjourney>[Accessed 25th February 2023].

<sup>9</sup>Passionfruit Staff, 2022AI art is taking over social media, but creators are divided, <https://passionfruit.it/ai-art-creators-divided-2664/>[Accessed 20th February 2023].

### 1.3 How to develop AI painting via TikTok?

Address: <https://growingupman.wixsite.com/dora-the-explorers>

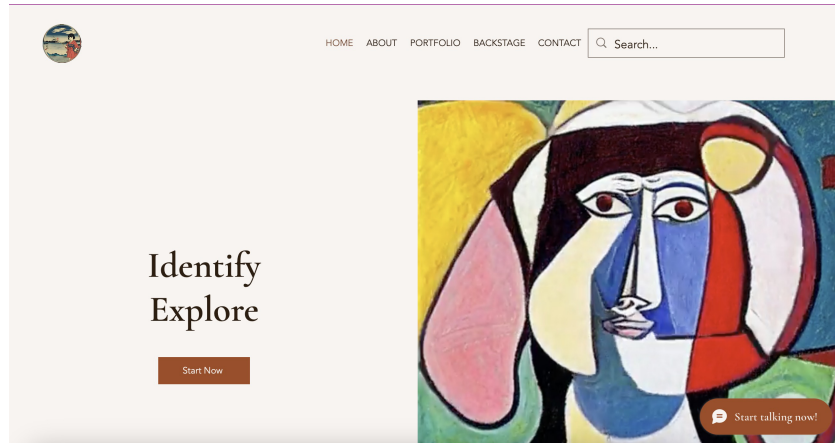


Figure 4: Homepage of AI review website display

On the right is the video made using Andreas Jansson's stable diffusion animation.

According to the keywords of interest provided by our group members [Picasso with mushroom head] and [Dora under ai], we generated a changeable video expressing the unique characteristics of our group.

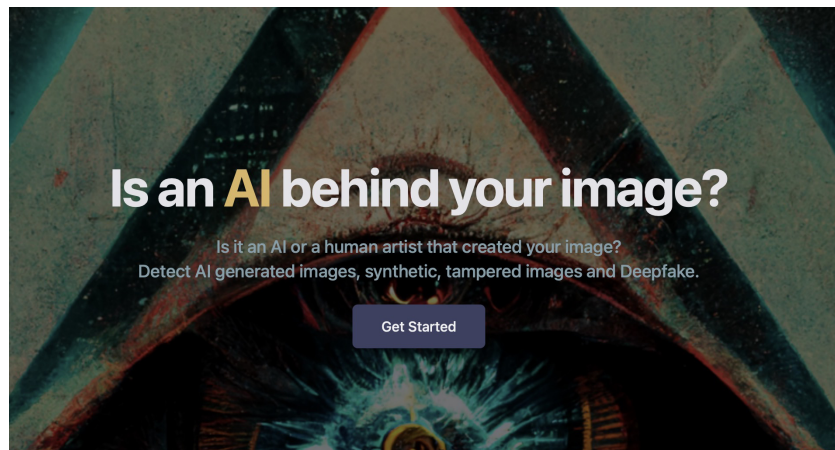


Figure 5: AI review website display

The left side shows the key step in reviewing AI painting. Click start now to enter iluminarity, upload your own picture, and identify the similarity of the painting.

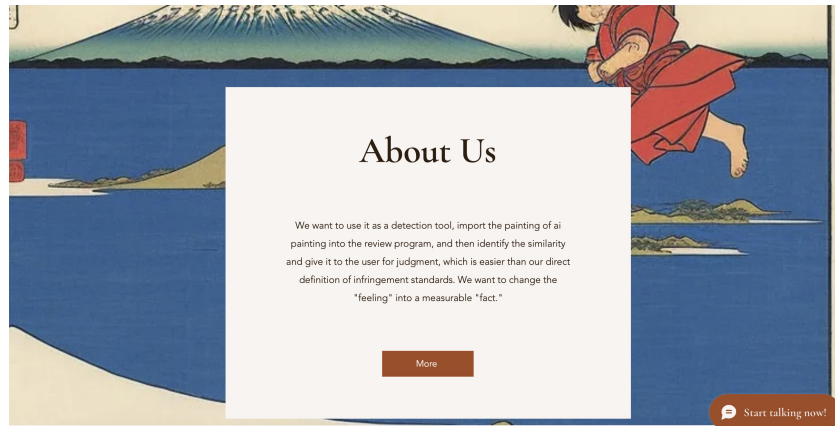





Figure 6: About us

Drop-down is a tool for imagining and making content about our website, and turning feelings into quantitative tools.

## Our Team.

Dora the Explorers

 <p><b>Xiaoli</b> Team leader Designer</p>	 <p><b>Yin Shuoshuo</b> Project proposal Report</p>	 <p><b>Cui Yuqi</b> Data analyst Literature review</p>
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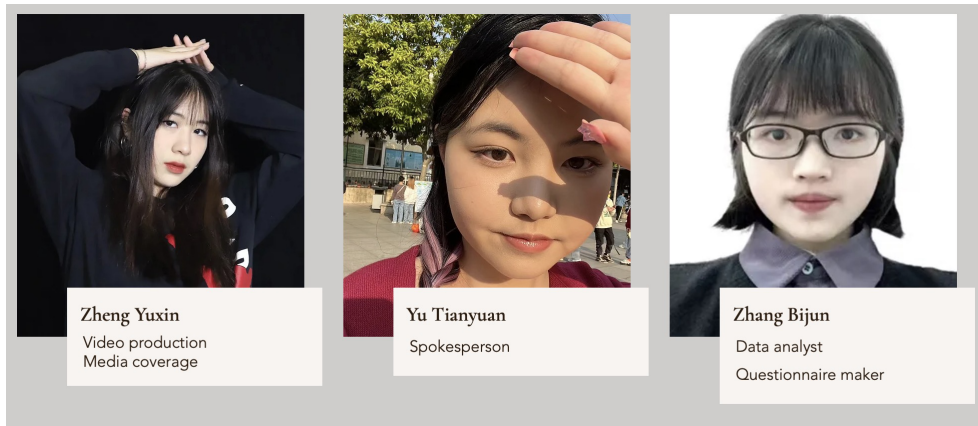


Figure 7: Our team

A brief introduction to our team



Figure 8: Contact us

How and when to contact us

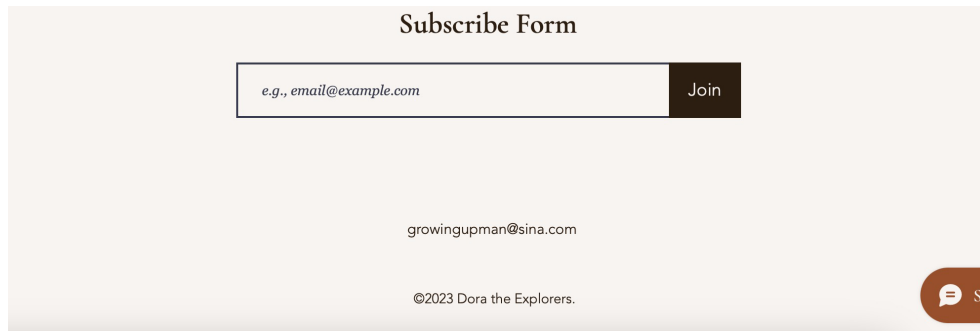


Figure 9: Subscription

Thank you for your subscription!

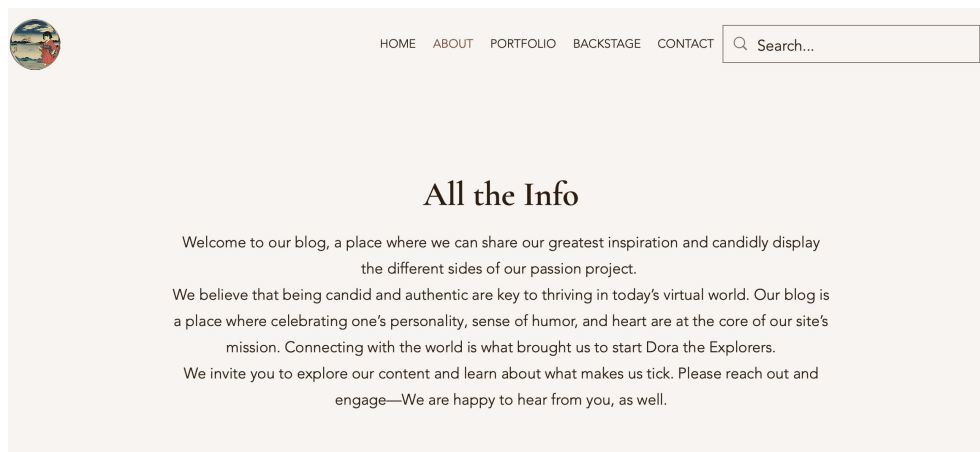


Figure 10: All the info

Here are some good expectations for the website and words to the audience.



Figure 11: Logo

Dora style photo made in Hiroshige Utagawa style, we can click on both sides to read.

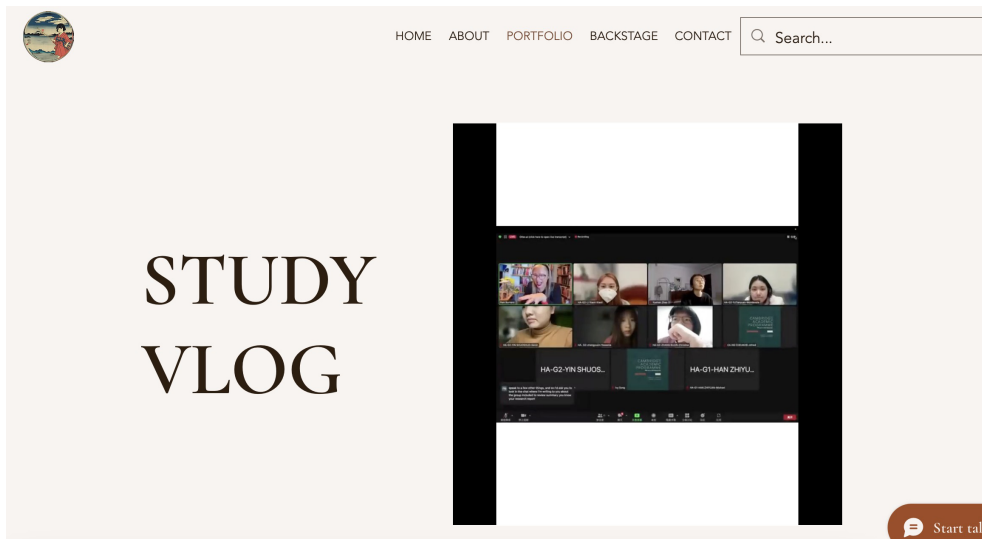


Figure 12: Portfolio

A simple short video recording the day and night of our class.

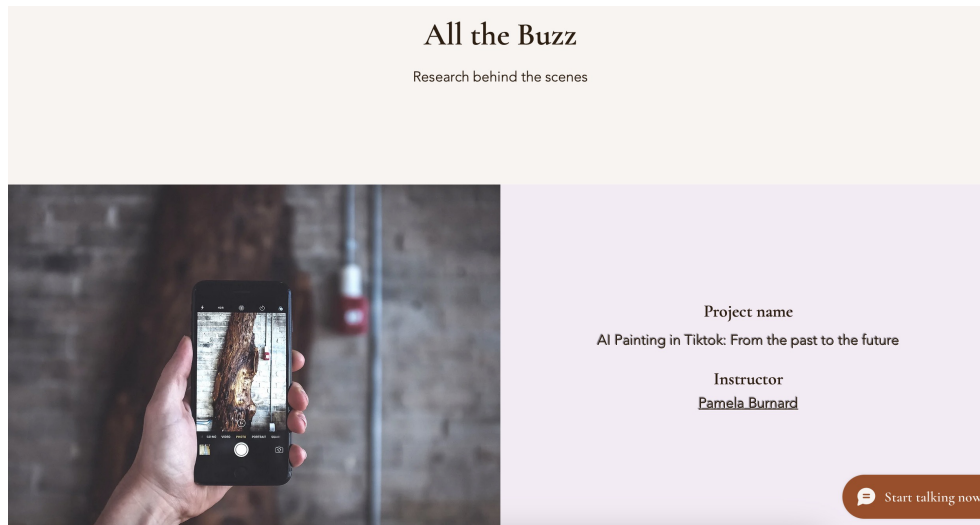


Figure 13: Backstage

For the basic content of the project, we can click on the name of our professor (Pam) to jump to her personal information.

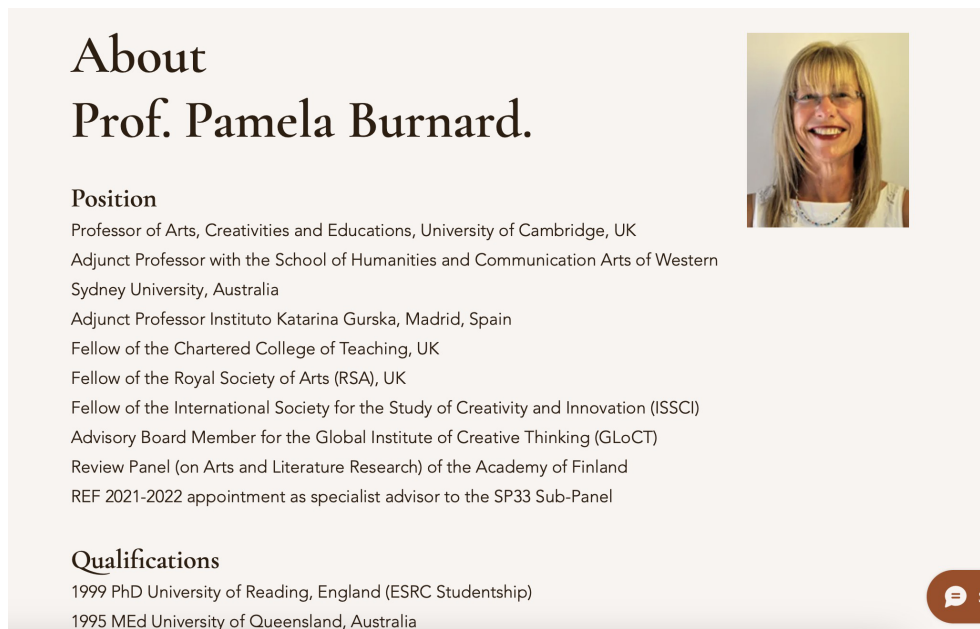
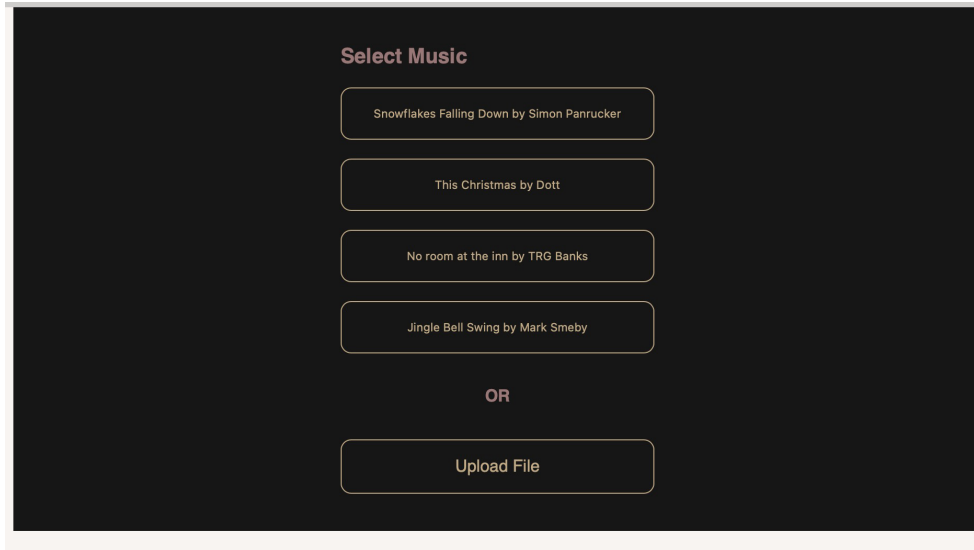


Figure 14: About Pam

For the basic content of the project, we can click the name of professor Pam to jump to the personal information of professor Pam.

A complex block containing a graphic on the left and a list of three bullet points on the right. The graphic features the text 'Research characteristics & innovation.' in white on a black background, with the TikTok logo below it. The three bullet points are:

- Pay attention to the academic frontier and track the latest research direction.
- Be realistic and humane, and break through the barriers between AI and humanity.
- Use the website as a detection tool, import the painting of ai painting into the review program , and then identify the similarity and give it to the user for judgment, which is easier than our direct definition of infringement standards.

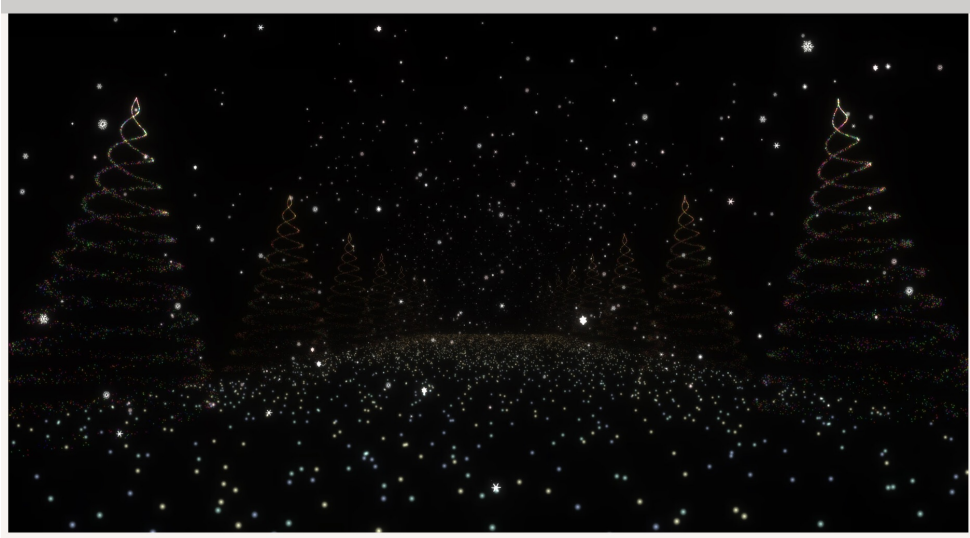


Figure 15: Present

At the bottom of this page is a Christmas tree for professor Pam. You can choose your own music.

## 2. Project Background

TikTok is a short video social application with a wide audience at home and abroad. Previous studies on the relationship between TikTok and AI have focused on how TikTok uses AI technology to guide users. But recently, TikTok has used AI technology to explore a number of technology products related to AI painting, such as AI Art-generated technology and AI portrait, which means it can automatically and quickly generate an AI painting based on descriptive text or through face recognition. For some time now, this artificial intelligence painting technology has been widely discussed. Moreover, the discussion on the relationship between AI painting and human painting has been raised. To study the introduction of AI into TikTok is not only of academic significance, but also of practical and humanistic concern, which reflects its social significance.

### 3. Division of roles & responsibilities

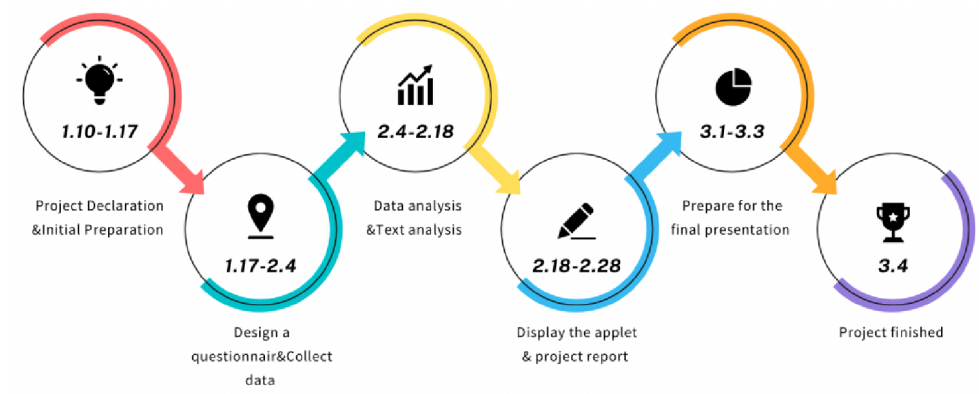


Figure 16: Timeline

name	Roles&responsibilities
Li Xiaoli	Team leader&website display
Yin Shuoshuo	Team leader&project proposal
Cui Yuqi	Data analysis
Yu Tianyuan	Spokesperson
Zhang Bijun	Questionnaire design
Zheng Yuxin	Text analysis

Table 1: Roles&responsibilities

## 4. Challenges & Solutions

(1) The existing research sources are relatively limited and the research perspective is single

The research pays too much attention to the development of technology itself, and neglects the connection with humanity and society.

**Solution:** Through the analysis of the media publicity and the results of the questionnaire survey, the relationship between technological development and humanity and society is reflected.

(2) The information reported by the media is substantial, scattered, and difficult to sort out.

**Solution:** Extensively collect the reports of influential media in Chinese and English, and collate the media including the news, article, pictures and even videos systematically. In the process of collecting and searching, pay due attention to reasonable classification of the data for future collation.

(3) questionnaire survey methods

The number of respondents is insufficient.

**Solution:** It is necessary to carefully consider the question design of the questionnaire itself. After obtaining the questionnaire data, the questionnaire data should be evaluated. Disseminate the questionnaire and collect data as widely as possible.

**Funding:** This research received no external funding.

**Research Guidelines:** This study has followed the research guidelines of Humanities, Arts & Digital Creativity, Cambridge Programme 2023.

Ethical principles were followed according to the guidelines of Humanities, Arts & Digital Creativity, Cambridge Programme 2023.

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study

**Data Availability Statement:** please contact the corresponding author for the reasonable access to the data.

**Acknowledgments:** We would like to give our thanks to our faculty professors and teachers at Cambridge University for their guidance.

**Conflicts of Interest:** The authors declare no conflict of interest.

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ABEER RAZA, 2023 Ethical Concerns About AI-Generated Art, <https://www.inc.com/inc-masters/three-ethical-concerns-about-ai-generatedart.html>[Accessed 25th February 2023].

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