

# Difference Between Virtual Idols and Traditional Entertainment from Technical Perspectives

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## ABSTRACT

The concept of “virtual idols” has a history of over 30 years, and it has become a popular word in many fields in recent years. Virtual idols are productions of technology and society. They meet people’s needs and dreams through technology, such as singing, dancing, and creating more daily life possibilities. Unlike traditional entertainment, virtual idols have characteristics of a high income, strong plasticity and strong controllability. Thanks to the advantages of virtual idols, virtual idols have attracted the attention of various fields. Nowadays, many companies, not only the entertainment companies, launched their virtual idols for efficiency and profit. People are looking forward to a spark between virtual idols and new areas. This paper explores the relationship between virtual idol’s technologies and unique characteristics by examples and gives definitions and classifications of virtual idols.

**Keywords:** *Virtual idol, VTuber, Idol, Hatsune Miku*

## 1. INTRODUCTION

Recently, “virtual idols” have become a popular word in many areas and have attracted game, animation manufacturers, and Internet companies. Moreover, traditional entertainment companies debuted their virtual idols group[1], and the company created virtual idols as a member of their companies to provide service[2].

In China, over 4,000 virtual idols perform on the Internet[3]. They play games, sing, dance and chat with their fans, and even they can hold concerts. The market of virtual idols multiplied last year. According to iiMedia Research [4], the scale of China’s virtual idol industry is ¥ 3.46 billion in 2020, an increase of 70.3%, and it may reach ¥ 6.22 billion in 2021. The sponsorship fee for Luo Tianyi, which is a famous virtual idol in China, can reach ¥ 900,000 (\$ 138,900) [5]. The appearance shocked the traditional entertainment industry, and people tried to answer why virtual idols success.

Virtual idols are productions of technology and society. The rise and development of virtual idols benefited from the developing technologies, especially artificial intelligence, as well as the maturity of the idol industry. Unlike traditional entertainment, virtual idols have characteristics of a high income, strong plasticity

and strong controllability. The aim of this paper is to explore the relationship between virtual idol’s technologies and unique characteristics. The paper has three parts. The first part reviews the technological and social developments related to virtual idols. The second part is concerned with the definitions and classifications of virtual idols. Furthermore, in the third part, the central part of the paper, examples of recent years support the close connection between virtual idols’ technologies and features.

## 2. BACKGROUND

### 2.1 The development of technology in virtual idols

The new phenomenon of virtual idols is made possible by using different kinds of technologies. These technologies together made three-dimensional virtual idol images more vivid than before. For example, creating virtual idols involves sophisticated motion capture technology. Motion capture solutions can be classified as optical and inertial. Using an optical scheme can primarily improve the images’ sensitivity and precision. Despite these advantages, more and more companies prefer to use inertial schemes to lower their

budgets since inertial schemes do not have any limitations on equipment or sites[6].

The gesture control technology is another critical technology that follows three methods: motion capture scheme own gesture capture, independent gesture capture scheme, and in the preset gesture selection. The primary consideration in choosing such a scheme was whether the controller should be used by an actor or if it should be controlled by someone else. By using this technology, virtual idols can make more specific and complicated gestures. These gestures can improve the interactive experiences between idols and audiences[7].

## **2.2 The impact of social and cultural changes on virtual idols**

Usually, virtual idols have many connections with animes. In 1984, the first virtual idol Lynn Minmay came out in Japan. She is a fictional singer in the anime series Super Dimension Fortress Macross, who was voiced by Mari Iijima. Lynn Minmay became the first fictional idol singer to garner major real-world success[8].

In 2007, Vocaloid 2, with the voicebank of Hatsune Miku, was launched by Crypton Future Media and Yamaha[9]. Musicians can make songs for Miku, and then she can sing the songs. Cute comic characters and constantly updated settings help Miku being popular for years. Virtual idols in video games were created in 2015 by Wii U. The Squid Sisters is one of the virtual bands in the game Splatoon, which performed several real-world concerts as holograms[10].

Most virtual idols' fans are fans of the corresponding animes or games because of the origin of virtual idols. These fans are highly loyal to their idols, so they would like to spend much money on their idols. Given the great success of virtual idols in the Japanese market, Chinese companies also started to launch their virtual idols. In China, most fans hope their idols can meet their high demands, which are very hard for humans, for example, not falling in love with others. However, these demands are easy to achieve by virtual idols because they are not humans. So virtual idols can attract many fans.

## **3. DEFINITIONS & CLASSIFICATIONS**

The virtual idol has a history of more than 30 years, but people still have no clear definition of virtual idols. According to Wikipedia, a virtual idol, also known as a virtual band, is a fictional band or music group whose members are animated characters or virtual avatars and exist in the real world[11]. There is a view that the concept of virtual stars corresponds to real-life idols, so virtual stars are those virtual characters generated by animation or computer technology. They impressed the audience with their outstanding performances in the film[12]. Some people also believe that virtual idols are virtual characters designed based on the real world. The

animated character is not a virtual character designed based on the real world but a virtual story[13]. In all, they mainly focus on the background and existence of a virtual idol, ignoring technologies and the relationships between virtual idols and their fan. A virtual idol loses the ability to act as a traditional celebrity. However, this image which is independent of a living body, gives the possibility to build up a new kind of relationship between idols and fans[14]. With the development of artificial intelligence and virtual reality technology, some scholars recently pointed that as long as we can establish emotional relationships, real people, virtual characters, artificial intelligence, and virtual images can be transformed into idols with the help of technology[15].

The virtual idol is a commonly-used notion nowadays, yet it is difficult to define precisely. In this paper, the existing virtual idols are classified according to the technologies used. Also, the techniques and characteristics they use are summarised to facilitate the analysis of the following examples.

The virtual idol is of 3 kinds: (1) The character image designed by the company can have specific functions through certain technologies. This kind is a specific AI, such as Hatsune Miku and Luo Tianyi, using speech synthesis programs. (2) Virtual images acted by humans by artificial intelligence, real-time calculations and motion capture technologies. They have 2D or 3D models and act like humans in the world, which can communicate and think, such as VTuber (virtual Youtubers). (3) An AI framework or robot developed by technology companies and designers gives it human or animal images and characters, which is a general AI. It can communicate according to specific procedures, such as Xiaoice and Xiaoi.

## **4. CHARACTERISTICS OF VIRTUAL IDOLS**

### **4.1 Virtual idols can get a high income**

Most virtual idols have a much lower cost than real idols, especially VTubers. Usually, a live 2D for VTuber only costs about ¥ 2,000(\$310), even including the character's design[16]. Also, it is much easier to become a VTuber than a real idol. People need to have good looks or excellent talents to become real idols. However, if people want to become VTubers, they only need ¥ 2,000(\$310) and a usable computer.

Virtual idols can achieve good scales in traditional entertainment, such as records. The VOCALOID series of the popular music album CD "EXIT TUNES PRESENTS Vocalogenesis feat. Hatsune Miku" released in Japan has officially won the daily ranking of the comprehensive music album on Oricon record charts. And "Birth of Hatsune Miquin", won the Oricon Ranking Champion for the first time[17].

In recent years, the virtual idol industry in China has exploded. According to a report on virtual idols released by Chinese streaming giant iQIYI, 64 % of people aged 14 to 24 were followers of virtual idols. There was a 225 % increase in the monthly average viewing time of virtual idol live streams on Bilibili[18].

Although virtual idols have a low cost, they can bring high profits. For example, a virtual idol called “Xiangwan Big Devil” can earn several ¥10,000(\$1,550) in one video live from virtual girls group A-Soul. The video lives on her birthday even earn about ¥1,000,000(\$155000)[19]. Besides the profit earn from video lives, the group A-Soul also have their peripheral products to sell and video they posted on Bilibili, a video platform like YouTube. Virtual idols from companies with mature technology support can have their concerts, which is also a way to earn money. Hatsune Miku is a perfect example. Hatsune Miku held her first concert in 2009 using 3D hologram technology[20]. The 3D holographic transparent screen used in the concert can display very bright and clear images. So far, Hatsune Miku has already held sold-out concerts in LA, Tokyo, Hongkong, Shanghai and other big cities in the world[21].

L’Oréal Group announced the first virtual idol, Mr Ou in May 2021. As a 24-year-old Sino-French entrepreneur who works in the environmental and beauty industries, this idol is used to provide content on beauty trends and ingredients on L’Oréal’s social media channels[2]. This action may help the company save expenses for promotion, endorsement and consulting.

#### ***4.2 Virtual idols have the characteristics of plasticity***

Virtual idols are artificial intelligence with human behaviours built based on a data framework. Therefore, virtual idols can present virtual images in line with local aesthetics to audiences based on fans’ preferences in different regions and increasingly mature modelling technologies[22].

Hatsune Miku’s popularity caught up with the rise of fan culture in Japan in 2003; Famous fanworks were very popular in Japan. At the same time, Hatsune Miku’s distributors emphasize its identity as a singer rather than computer software, giving Hatsune Miku an iconic status. Hatsune Miku quickly became a household name on the Internet in Japan, thanks to her adorable image as a famous voice actor. In 2011, Hatsune Miku even became the face of an AD campaign for Google’s Chrome browser. In this way, IP feeds IP with a virtuous cycle so that Hatsune Miku’s heat continues today[23]. Virtual idols take on entirely different characteristics in different regions and countries, and they have also experienced a boom in China in recent years.

In May 2020, the girl Ling was officially announced on the social media platform, which gained wide

attention among Chinese netizens. Ling is a trans-dimensional beautiful girl who loves Chinese style. She reflects the charm of traditional Oriental culture and inherits Chinese style culture[24].

People will create unique virtual idol images for specific purposes. Close distance with the audience can effectively promote the three-dimensional sense of virtual idol in the audience’s mind. “Lil Miquela”, a virtual idol, is a girl in Los Angeles. She has freckles on her face, and she has the same teeth as an average person when she smiles. Her hairstyle was uneventful, straight bangs. She stands up for fashion, which has earned millions of fans. The appearance of “Lil Miquela” meets the needs of minority groups to complete their collective and imaginary identity by participating in the image building of virtual idols and provides an emotional outlet and voice channel for related groups[25].

Virtual idols can conform to aesthetic trends and break the limitations of traditional celebrities to have the images and abilities that humans do not have, such as animals and superpowers. In a talent show for virtual idols, the players appeared in the form of a seal and a fox[26]. Moreover, they can complete various actions that only real people can do before based on artificial intelligence.

Virtual idols can also take up a variety of professions. Xiaoice is an AI frame with 660 million online followers worldwide. Unlike the stereotypical image of a virtual idol, Xiaobing breaks the shackles of being a chatbot. Xiaoice connects intelligence and emotion, bringing warm technology to users. Xiaoice can answer questions with standard answers and chat with people and provide emotional companionship. Moreover, her talents seemed to know no bounds: she was a poet, a painter, a television presenter, a journalism expert[27].

As virtual idols enter a boom, different branches of the business are growing fast. IP characters are becoming more idolized; The big IPs in games and movies are becoming avatars of their own and interacting with fans more permanently, consistently. At the same time, the publisher of these IPs can also continue the value created by the IP. Moreover, the professional nature of virtual idols is highlighted. Virtual idols are moving towards web celebrity, anchor, supermodel and other hot career directions. These developments cannot be separated from the empowerment of cultural labels; the interaction of various major entertainment industries is becoming more and more in-depth, and cross-border linkage is becoming frequent.

Virtual idols can also be subdivided into vertical areas to meet personalized needs. Voglogger Tripai has more than 2 million subscribers on YouTube, Makeup Note LMMA has 1.6 million followers on Instagram, and the IP of e-sports blogger Ye Xiu has spread across the world. Moreover, virtual idols take up a large part of

Bilibili live broadcast. The monthly active live broadcast users of Bilibili reached 11.4 million, and the paid quarterly live broadcast users exceeded 1.2 million. The revenue of virtual live broadcasting accounted for 40% of live broadcasting and value-added services[18].

#### **4.3 Virtual idols are strong controllability**

It was difficult for artists to hold concerts and carry out other activities due to the spread of COVID-19. There is no doubt that the pandemic attacked the entertainment industry and its related business. There were hundreds of concerts and shows forced to cancel or postpone, and the loss was calculated over \$30 billion according to the report by the trade publication Pollstar[28]. Nevertheless, the virtual idol industry was likely to have received little impact and even developed better. As more time stayed at home, online amusement became popular, virtual idols' attention and business value were significantly increased.

Moreover, virtual idols can perform without the limitation of location and time, which decrease the loss due to the pandemic. Famous virtual idols, including Hatsune Miku and many VTubers, performed as they used to do without the environment and virus. Miku EXPO 2021 was the concert of Hatsune Miku streamed on YouTube, and it provided three lives for fans around the world. The webpage also allowed fans to send messages to their idols and over 30 kinds of goods sold in the online store[29]. Though people cannot gather to enjoy the show, they were still very enthusiastic about it. Crypton Future Media, the company of Hatsune Miku, launched a crowdfunding campaign, and it attracted 3,588 supporters with ¥ 61,265,492(\$559,600)[30]. Furthermore, the first concert of Virtual YouTubers (VTuber) and Virtual Uploaders (VUp) was held successfully on December 19, 2020, since the outbreak COVID-19[31]. Thousands of fans took part in Shanghai, and about 17,000 people watched online[32].

The performance of human beings is affected mainly by their physical and psychological situation, and there may be accidents. However, virtual idols mainly rely on technology. They will not be affected by diseases, enhance the effect of performance and complete performances that are dangerous for humans to complete.

Apart from controlling the risks of performance by technology, virtual idols are more controllable in emotion, communication and consciousness.

Although celebrities exist to satisfy the audience, excessive attention to idols' private lives has led to the unhealthy idol industry. Avid fans in various countries have been stalking and harassing idols, causing harm to their idols and disturbing social order. A Japanese idol group took the Shinkansen and encountered many fans besieging the platform, which caused the Shinkansen to delay its departure[33]. Moreover, the fans may be disappointed with the image different from their thought.

Virtual idols are products that cater to the aesthetics and needs of the public. Companies and programmes restrict their speech and behaviour to a certain extent, and there is no "private life" for virtual idols. Therefore, there is almost no negative impact caused by the virtual idols themselves. In addition, since the essence of virtual idols is data and algorithms, even if the company abandons the virtual idol, it retains algorithms, data and copyrights. Therefore, they can quickly recreate and improve substitutes for the virtual idol.

There is no doubt that the idol effect has brought substantial economic benefits. At the same time, fans and the industry have become increasingly demanding on the image of idols. In recent years, idol culture has had an invisible rule prohibiting idol dating. The contract prohibits the members of AKB48, a Japanese idol group, from falling in love while they are in the group[34]. In China, an idol having romantic relationships is called "collapsed house (ta fang)", which is thought of as a fault. Such restrictions sound unreasonable or even illegal, but these can be understood. Fans' consumption psychology is similar to investing and buying goods. Fans hope that idols can develop better or return to fans with better services and performances when they spend money on idols, but there is nothing wrong with dating and getting married. The conflict between consumption motives and human needs is currently a complex problem to solve.

However, virtual idols do not have human-specific needs such as love, and they might be a choice for the solution of the conflict between fans and idols. With the support of technology, they can continue to learn and progress, and they can always maintain a beautiful image in the minds of fans.

## **5. CONCLUSION**

The paper introduces features of today's virtual idols industry. All the activities of virtual idols depend on their technology. Because of this, virtual idols can do many things that real idols cannot do. Though virtual idols cost lower than human idols', virtual idols can bring high profits, and they have more possibilities in various areas. Moreover, Virtual idols are also easier to control because they are not real people. They do not have the need like a human.

Thanks to the advantages of virtual idols, virtual idols, as a carrier of technology, have been widely used. As a new market, they have attracted the attention of various fields. Nowadays, many companies, not only the entertainment companies, launched their virtual idols for efficiency and profit. People are looking forward to a spark between virtual idols and new areas.

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