



Virtual Reality, Augmented Reality and Mixed Reality on the Marketing of Film and Television Creation Industry

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Abstract. Virtual reality and augmented reality technology has been on the road to scientific research for many years since the end of the twentieth century, and although the scope of mixed reality application is relatively narrow compared to the first two applications, we have seen the results. Realistic contents also have exploring progress in the field of film and television creation in recent years, such as virtual reality technology can be utilized to make film clips. However, in fact, these technologies can be applied in film and television creation far more than that. I then illustrate some other aspects which these realistic contents can also be applied to in film and television creation in the future and the influence on the industry.

Keywords: Virtual reality · Augmented reality · Mixed reality · Film and television creation · Film clips

1 Introduction

What is realistic contents? Virtual reality blocks the real world and creates a fully digital, immersive experience for users. Augmented reality, which overlays digital creation content in the user's real world. Mixed reality, including augmented reality and augmented virtuality, is a new visual environment that combines reality and virtual worlds [1] (see Fig. 1).

Realistic contents are now in steady development and have achieved good results in all sectors, but in the film and television industry, their development direction is very

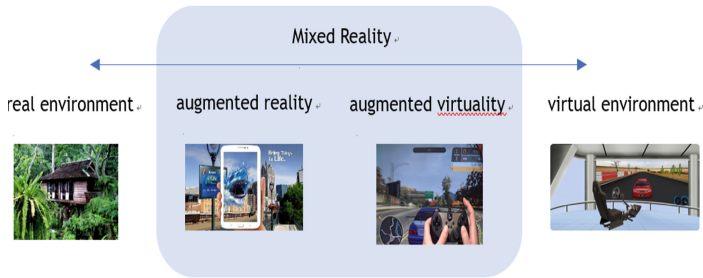


Fig. 1. Reality-virtuality continuum

narrow, with most applications focusing on improving sensory experiences such as VR movies [2], unlike the Comfort that Based on Parallax and Motion 3D movies bring to us [3], VR movies allow viewers to walk into a movie scene to see their surroundings at 360 degrees. What is more, AR immersive panoramic studios and so on.

However, the application of realistic contents in the film and television industry is far more than those, I would like to solve these problems by putting forward existing problems and providing some direction to the film and television industry practitioners to better use this technology.

Here are some examples about what fields these realistic contents have been applied.

- (1) The first example is the VR glove, an open source Etextile data glove which is designed to facilitate detailed manipulation of 3d objects in VR, enabling scientists to accomplish a range of spatially complicated molecular manipulation tasks [4].
- (2) The second example is also about VR. VR can be used by athletes to prepare for the Olympics. Skiers, for example, can wear VR helmets to simulate a run on the mountain, while ski-shaped balance boards provide some tactile feedback. What is more, it can also applied to the court where witnesses use it to restore the scene, education [5–7] and so on.
- (3) The third example is AR mask. Osterhout Design Group, a well-known AR smart glasses manufacturer, has developed a product that uses AR-technology masks that will allow pilots to clearly see other scenes in a smoke-filled cockpit. Designed to help pilots land safely in an emergency, such as in smoke. There are other AR applications, for instance, AR also can enhance awareness on green consumption of electronic devices [8], be applied to sports entertainment [9] and advances designer’s understanding of the fabrication equipment as a platform [10].
- (4) The fourth example is the application of MR in aviation. Microsoft partnered with Western Michigan University to integrate MR technologies such as Microsoft HoloLens into aviation education. Currently, there are two ways to use it. One is a new simulation that can help pilots prepare for changes in the weather. Another application is an interactive MR application that allows students to explore the various components of an airplane.

2 Research Methods

2.1 Screenwriters

When writing a script, screenwriters often encounter the difficulty that they are not familiar with the background of the subject matter to be written, and cannot fully realize the interaction between actors and set scenes, because after all, it is impossible to write a script in the scene.

As an example, now a screenwriter needs to write an aviation-themed TV series, but he certainly did not have a pilot background, do not know the pilot's work process, and also do not have aviation-related knowledge, then to solve this problem, he can use realistic contents to experience the scene, help to complete the work. What is more, in *Harry Potter and the Chamber of Secrets*, the scene of Dobby appeared in Harry's home, needs three parts of the interaction, Harry and Dobby, Dobby and items and Harry and the objects, then in this case, if the screenwriter cannot see the layout of the home will easily increase the pressure of the director and props group, so in order to improve efficiency, more natural interaction, the participation of realistic contents is needed.

Another example is when a story completely occurred in a villa, then the screenwriter can use the realistic contents to be in that villa, he can just write the script at home. This method saves time and effort, greatly improve efficiency, and is suitable for achieve the effect of one shot.

2.2 Directors, Anyone Who Wants to Make a Movie (Especially Movie that Requires Fertile Imagination)

Many young people who love movies will have a dream to become a big director like Christopher Nolan and James Cameron, but even if they have great ideas but cannot find a way to achieve, because even though they have learned how to tell stories, even formed their own genres [11], without the help of the ambitious production team, it simply cannot be achieved. For example, the *Lord of the Rings*, it is impossible to be completed by one person. However, now times are different, with the advent of realistic contents, they can create their own movie world, where they can have unlimited imagination, make their own scenes, actors and so on. This does provide a way for people who don't have a behind-the-scenes team to solve the problems.

Traditional filmmaking requires actors to wear motion-capture suits, and to use green screens and a lot of post-production technology to get the final work by shaping visual effects (VFX) and computer-generated imagery (CGI) characters. The entire production process takes months or even years to create a rendering and output of the movie. Realistic contents can now be used to upend traditions, such as the AR short film NEST mentioned above. It completely subverts tradition. Now, you can put the made CGI characters, import into the camera, mobile phone or other shooting equipment, and then shoot at the real environment. As a director, you can guide its actions in real-time to achieve the combination of virtual characters and real-world environment. Avoiding the limitations of monster characters that can't be shot in real-world scenes and it's also better to realize the simultaneous execution of these thing. What is more, it won't cause

the problem which now exists of virtual and real things not to be combined smoothly in the post-production process.

It will achieve the real popularity of film production, no more restrictions to the site, characters and actors, being able to fulfill what users really want to show considerably.

2.3 Film and Television Theme Park

As we all know, Film and television are inspiring, it would want you to try, to do something. For example, watching documentary film may let you be concerned about climate change [12], then watching movies with beautiful scenery, you will want to go to the location to see. Film and television are an effective way of tourism promotion, this kind of marketing method can attract people to the place they have seen on the screen to travel, and the factor is not only because of the attraction of the natural landscape, in fact, the most important factor is its symbolism, storyline, character relationship, star, thrilling scenes and exciting endings, and even some cartoons without exterior view, such as “Beauty and the Beast,” “The Lion King” and “Notre Dame”, also attract many visitors to the scene of the cartoon.

This has also led to a large number of scholars to research, to find out the different forms and motivations of film and television tourism, and in more than a decade of research, found that most of the film and television cities and theme parks have these problems. First, the sensory nature of environmental experience is too single. Many buildings are only on the level of being taken pictures by tourists, lacking a sense of participation and integration with the real environment. And also the device experience is not interactive.

But if you can show all the film clips taken there at the corresponding shooting venue, then allow visitors to pick and choose their favorite clips, wear glasses, so that fans can actually enter the shooting scene to feel. Such transmission has more effect on people’s emotional transmission [13, 14]. This form will greatly enhance their visiting experience and participation, and also let them pay attention to all aspects of the scene, they can choose to pay attention to the main character, or his favorite supporting role, in order to avoid the film shooting’s disadvantages of only focusing on the main characters. Moreover, some directors may be very attentive to details but cannot be totally showed in the film, such as some costume drama, in fact, each of the main character’s clothing are perfectly restored to the scene at that time, but the film may not reflect this, then this form of visiting will greatly enhance the audience’s favorability, so that the audience feel their intentions.

In fact, the film and television theme park does not have to open in the shooting place, can also be completely virtual, like a game, let fans go into the virtual world playing a role [15].

3 Conclusions

In the film and television industry, such as the division of Time and drama of the show, the conduct of marketing means can actually use realistic contents technology through the algorithm to obtain the fastest, the least steps of the solution. In addition to the above

proposed 3 points of application, the common benefits are bound to greatly improve work efficiency, complete industrial upgrading.

References

1. Milgram, P., Kishino, F.: A taxonomy of mixed realityvisual display. *IEICE Trans. Inf. Syst.* **77**(12), 1321–1329 (1994)
2. Dempsey, P.: VR in movies: Hollywood has fully embraced the dawn of the VR age. *Eng. Technol.* **11**(3), pp. 31 (2016)
3. Tian, F., Xu, H., Feng, X., Sánchez, J.A., Wang, P., Tilling, S.: Comfort evaluation of 3D movies based on parallax and motion. *J. Disp. Technol.* **12**(12), 1695–1705 (2016)
4. Glowacki, B.R., Freire, R., Thomas, L.M., O'Connor, M., Jamieson-Binnie, A., Glowacki, D.R.: An open source Etextile VR glove for real-time manipulation of molecular simulations (2019). https://www.researchgate.net/publication/330357655_An_open_source_Etextile_VR_glove_for_real-time_manipulation_of_molecular_simulations
5. Merchant, Z., Goetz, E.T., Cifuentes, L., Keeney-Kennicutt, W., Davis, T.J.: Effectiveness of virtual reality-based instruction on students' learning outcomes in K12 and higher education: A meta-analysis. *Comput. Educ.* **70**, 29–40 (2014)
6. Lee, J.H., Shvetsova, O.A.: The impact of VR application on student's competency development: A comparative study of regular and VR engineering classes with similar competency scopes. *Sustainability*, **11**, pp. 2221 (2019)
7. Manuel Sanchez-Garcia, J., Toledo-Morales, P.: Converging technologies for teaching: Augmented reality, BYOD, flipped classroom. *Red-Revista De Educacion a Distancia.* (55) (2017)
8. Bekaroo, G., Sungkur, R., Ramsamy, P., Okoloa, A., Moedeena, W.: Enhancing awareness on green consumption of electronic devices: The application of augmented reality. *Sustain. Energy Technol. Assess.* **30**, 279–291 (2018)
9. Mahmood, Z., Ali, T., Muhammad, N., Bibi, N., Shahzad, I., Azmat, S.: EAR: Enhanced augmented reality system for sports entertainment applications. *KSII Trans. Internet Inf. Syst.* **11**(12), 6069–6091 (2017)
10. Poustinchi, E.: Subtractive digital fabrication with actual robot and virtual material using a MARI platform. *Int. J. Archit. Comput. SI.* **16**(4), 281–294 (2018)
11. Tseng, C.-I.: Beyond the media boundaries: Analysing how dominant genre devices shape our narrative knowledge. *Discourse Context Media* **20**, 227–238 (2017)
12. Bieniek-Tobasco, A., McCormick, S., Rimal, R.N., Harrington, C.B., Shafer, M., Shaikh, H.: Communicating climate change through documentary film: Imagery, emotion, and efficacy. *Clim. Change.* **154**(1–2), 1–18 (2019)
13. Fickers, K.M., Piotrowski, J.T.: Content and person effects in media research: Studying differences in cognitive, emotional, and arousal responses to media content. *Media Psychology.* Available online: <https://doi.org/10.1080/15213269.2019.1608257>. Accessed on 30 Apr 2019
14. Castle, J.J., Stepp, K.: Silver screen sorting: Social identity and selective exposure in popular film viewing. *Soc. Sci. J.* **55**(4), 487–499 (2018)
15. Timplalaxi, E.: Shakespeare in digital games and virtual worlds. *Multicult. Shakespear. Transl. Approp. Perform.* **18**(1), 129–144 (2018)