A study on the user experience design for the social VR game to increase the immersion

Seok Hee Oh
Department of Game Engineering
Graduate School of Game, Gachon University
Sujeong-Gu, Seongnam-Si,
Gyeonggi-Do, Korea
seokhee5@gachon.ac.kr

Taeg Keun Whangbo*
Department of Computer Science
Gachon University
Sujeong-Gu, Seongnam-Si,
Gyeonggi-Do, Korea
tkwhangbo@gachon.ac.kr

Abstract—This study aims at investigating the cases showing an effective interaction by means of user experience of social VR games and exploring social interaction such as social presence, spatialization and empathy and physical interaction such as sound, motion, hand gesture and haptics. Furthermore, this study also intends to propose the user experience design which enables to maximize sense of immersion among users of social VR games based on a variety of interaction factors.

Keywords—Virtual Reality, Social, Social VR game, User Experience, Interaction, Perception, Immersion

I. INTRODUCTION
Currently, virtual reality contents are being actively developed into a wide variety of fields including video, game, education and medicine centering on the overseas. Aside from them, highly expensive devices such as Gear VR, Oculus Rift and HTC Vive as well as HMD which is a simple cardboard style of device are also spreading in conjunction with VR contents corresponding to those high-end VR devices. This study focuses on interaction among users who get gradually interested in VR world and attempt to build social relationship with others in the VR world by reflecting themselves in the VR world as avatar by way of VR technology in terms of their personal problems encountered at real world[1]. To do this, this study attempted to reproduce the same situation as reality. Based on this, an effective interaction for achieving interaction among participant users and producing reality was explored. In particular, this study was carried out with focus on social VR game and attempted to identify interaction elements contributing to improving sense of immersion and establishing pleasure of game by investigating cases of social VR games which have been released recently.

II. RELATED WORK
A. VR Interaction
Virtual Reality(VR) indicates the basic technology and theoretical basis necessary for implementing the technology which enables users to indirectly experience the situations which are unlikely to experience in real world due to physical and spatial restriction and limitation by providing various sensory systems in virtual space constructed using computer[2].

In order to strengthen the sense of immersion of users in virtual reality, the system should be constructed using the extended multimodal interface[3]. Interaction felt by hands reaching out user’s arms in VR should be identical in real world if possible.

![Fig. 1. The difference between 360° video and VR game.]

B. Social VR Game
Social VR game has enthusiastic users by means of AltspaceVR and Oculus Social serviced by Samsung Gear VR. This is a VR social network platform which allows users to perform diverse activities and games with other users within social VR space such as watching movies, chatting with others in real time, drawing and dancing together. Recently, social based games tend to be increasingly released in VR gaming industry. Correspondingly, various attempts such as storytelling, interaction and fun factors are carried out. When planning and designing these games, it is required to clearly identify problems and issues that might occur at social relationship as well as physical interaction because the way of playing these games is based on the common space shared by other players rather than playing alone. Consequently, the role of the player in reality should be identified with the role of the avatar in virtual reality. Also the game should provide consistent user experience. As an example, following “Fig.2,” show snapshots of several social VR games which become hot topic these days.

---

*Corresponding author: Taeg Keun Whangbo

This research was supported by the K-ICT Creative Open Campus VR-LAB funded by the Ministry of Science, ICT & Future Planning
III. UX DESIGN FOR THE SOCIAL VR GAME

A. Social Interaction

1) Private spatialization: The game must allow users to securely have private space, though it allows users to perform their activities in common shared space since it is social game. Allowing private space is necessary because it provides the same environment as reality by placing an appropriate distance between users (avatars).

2) Social Presence: The game should allow users to experience feelings and perceptions that they link with other intellectual objects in an artificial environment made by computer, and obtain empathy while they stay in the game[4].

3) Empathy: The game should allow users to respond and correspond to others’ actions and presentations of feeling by others while other users talk to them or take a look at them. Also the game should have a way to give reliability to each other. Even though the talks are carried out by avatars, the game should provide the same interaction as reality so that users are able to perceive existence of others residing in one same space.

4) Time: Though users might exist in different time zone in reality, time within the game must be defined in conformance to the defined rules. While users are participating in the game, time also should be changed properly so as to improve the sense of presence.

B. Physical Interaction

1) Touch: In order to let users feel physical presence in the game, it is required to provide vibration and sense of grip via controller and glove so that users can feel haptics experience effectively[5].

2) Sound: Sound experience should be effectively provided as perfect as possible by making surrounding sound, talks between characters and nature sound rather than using only visual factors.

3) Moving: In VR game using simulator, realistic motion could maximize user experience. In fact, presence felt by users could be maximized when they are identified with game characters through simple movement in the game[6].

4) Feedback: Feedback between users should be properly provided in order to share users’ activities with each other when they give and take some objects, attack enemy and take pictures of others.

IV. RESULT AND CONCLUSION

Apparendy, VR devices and contents are not being implemented perfectly so far. There are several problems pointed out such that users could feel dizziness and sense of difference when they use VR for long time. Also people point out that uncomfortable hardware, too expensive device and lack of contents are obstacles of growth of VR. In the long run, those problems would be overcome by evolution of technology. However, if an integrated and explicit user experience design for VR is not defined, it could be abandoned by users. Since social VR game emulates real life environment in virtual world, ethical, moral and social human relationship as well as user experience must be considered in virtual reality just same as real world.

In future, taking advantage of VR technology such that it could generate sense of reality in anywhere and anytime, further study will be conducted on VR interaction that can be specially used for rehabilitating treatment for both general people and people who have outstandingly low level of social capability like the early stage of dementia patients and low cognitive functioning groups by producing VR contents for education purpose.

REFERENCES


