A Study on Exhibition Contents Interaction based on Motion Recognition Technology

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Abstract. This study is to implement the effect of immersion and experience by grafting interactive exhibition content based on motion recognition technology with interactive storytelling. The motion recognition technology storytelling structure is divided into four categories, first to build primitive, set the tool and decide motion through the tool, set variation and meaning in the motion and set recognition process in motion. The second, generic storytelling set the event based on motion, the role and purpose of the participants and the rule to evaluate the participation process and the result of event from participation. Third, form of plot, set the connecting point of event and structure of event. Fourth, set the surrounding which is setting the reality space and virtue space.

Keywords: Interactive Contents, Exhibition Contents, Interactive Exhibition, Motion Recognition, Interactive Storytelling.

1   Introduction

Motion recognition Technology is based on the interaction of the computer algorism by changing the user's actual movement into digital signal which is being actively studied after experience console game Nintendo Wii was commercialized. Currently, technologies that do not require tools like Kinect are being consistently developed in the field of experience console game or virtual sports simulator. Motion recognition technology has the benefit of allowing the user to participate directly with an intangible material like body movement or object movement to acquire an embodied experience. The application of commercialized experience based console game provides elements of heightened sensory experience and entertainment; however, it tends to focus on individual experience only disregarding the story structure.

This study is to implement the effect of immersion and experience by grafting interactive exhibition content based on motion recognition technology with interactive storytelling.

2   Motion Recognition Interactive Storytelling

2.1   Procedural Feature and Motion Recognition

An interactive storytelling is a storytelling technique that accomplishes immersion[1] by allowing a user to interact with heightened sensitivity in the storytelling by use of digital media. This interactive storytelling has an important implication in using motion recognition technology in exhibition contents. The motion recognition technology does not only exist as technology that simply reacts mechanically in a one way interaction. It makes it possible for each exhibition element, space-time, exhibition material, participant and director, to communicate with one another. And it can structuralize the process, so that the user can understand the information and experience it.

2.2   Motion Participation Structure and Interactive Storytelling

Janet Murray suggested that in the computer based digital environment, the computer has to be set into 'procedural' structure so that it can understand the logical sequence and flow for the participant to interact in the narrative. According to Janet Murray, the method is to set the primitives wherein the participant's shape is structured, to establish the environment wherein the participant is participating, to set a unit for the divided units of comprehensive story that has consistent theme and object, and to establish a multi-plot[2] whereby numerous plots and stories are created ultimately through participating based on plot structure with variety of themes combined into a pattern.

  How can we construct a story telling structure in motion recognition based environment? First, composition of the motion recognition based primitives content's formation should be explained.

> "In computer programming systems the "premitives" are the smallest components upon which the larger operations are built. In an interactive narrative the key primitives are the actions of the interactors themselves, as structured by the author"[3]

  Thus, primitive is the basic substance of an action of participating in the storytelling. As mentioned previously, in motion recognition-based contents, interaction is allowed through the participants' action or object's movement. Various content studies show that not the ability of a character (or role) but the tools held by the character acts as key factor in solving and participating in the event.

  Thus, motion recognition based interactive storytelling induces physical movement

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[1] Murray, Janet. H. (2001). Interactive Storytelling (Han, Yongwhan & Byun, Jiyong, Trans.). Seoul: Ahn graphics. (Original work published 1997): p.112.

[2] Ibid., pp.220-228.

[3] Ibid., p.221.

through tool (item) from the game or objects of real life (device or motion controller) and carries out with the game based on this. The reality movement and the virtual world are coincided and induced through the tool. Participant's motion or the object's movements become diversified depending on the tool so that the participant is induced to be involved. Thus, the participant's role, the ability of a character, or rule of the game are associated with tools, thereby controlling the motions. Limiting motion into a form that can be technically recognized will be determined by the tool.

Thus, the characteristic will be distinguished within the scope whereby motion can be technically recognized during the process of identifying the motion of the tool or the characteristic thereof. It is been discussed how the tool makes the participant to be part of the storytelling and limits the scope of the participant movement recognition. And how the participant can be part of the storytelling based on the movement recognition in primitive configuration. Though, the movement recognition based on primitive configuration provides one time instant cause and purpose to participate and the participant repeats the same process.

Thus, while the participant's motion is repeated, it does not lead a new message or a new motion form or pattern of the next stage. This participation structure is a single purpose structure which participant repeats the motion like the golf simulation and this simple reaction and interaction can limit the significance of the participating motion. Motion recognition storytelling is not just explaining the movement of the participant, it is explained into two means, storytelling action and act. The difference between act and action depends on the participant's awareness or purpose in the motion. From the process of experiencing the repeated motion through primitive, the participant's motion is recognized in the virtual world. The process of calculation responds to the participants and makes the participant to move with the change of sequence act and action. The first movement in primitive has the concept 'act'.

The first participating motion has the purpose, role and game rule and it is revealed through the tool and shows the participant's will. In the process of recognizing the medium, the participant's 'behavior of act concept' is transformed as positional information to 'behavior of action concept'.

Afterwards, depending on the motion's variation elements the form of motion changes. When the result of the motion is delivered to the participant through the display, it changes into 'behavior of act concept'. And the participant can receive a new significance for the next motion. Through this process, before displaying the result of the motion, it sets a meaning for a new motion so that it can make the motion into 'behavior of act concept'.

So, the participant takes the action into the computer's 'behavior of act concept' and feels the intellectual interaction that demands a new action. Through this process, the computer needs to have a logical structure to calculate the motion recognition. So, primitive which is the basic process of participating can be completed through setting intellectual interaction into the motion recognition based contents.

This describes how Janet Murray constructs primitive from the constructing method of participating narrative structure. To sum, these steps, set the motion through the tool, decide the sequence through the tool, set the variation or the motion, set the meaning of the motion and set the recognition process or the motion.

3 Exhibition Storytelling structure change by motion participating

Let's check the method in generic narrative unit and composing the plot from the method of constructing participating narrative structure. Generic narrative unit suits multi-form storytelling which can be described as a scene in a play and chapter for a book .[4] This generic narrative unit structure is a certain point in the process of the full story. It is like a unit that forms a structure of four steps in composition or movie sequences. This generic narrative unit solves the problem through the motion participation. So it needs to set the event for the story.

After setting the event, the structure shows the process of the event being solved by the motion participation. This process includes, the participant's participating evaluation and the result is established. To form the plot, the participant's motion in the storytelling leads from an event to another event connecting one point to another and the participant's participation has to form a connecting structure for the story.

Building surrounding is a way to build the elements such as the character, event, background of the individual event. As it is mentioned before, motion recognition is divided into reality space and virtue world. The participant takes virtue world which has various elements; the purpose, concept and experiencing that the event carries. This is in the creativity element which is not appropriate to be discussed in the structure method.

Table 1. The steps of motion interaction storytelling structure and it adds the form of primitive structure method.

Elements	Form of Storytelling Structure Step
Build Primitive	① set the tool through motion form ② decide the motion sequence through the tool ③ set variation in the motion ④ set meaning in the motion ⑤ set recognition process in the motion
Form of Generic Storytelling	① set the event(theme) based on motion. ② set the role and purpose of the participant ③ set the rule to evaluate the participation process ④ result of event from participation
Form of plot	① set the connecting point of the event ② set the connecting structure of the event
Set of surrounding	set the reality space and virtue space

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[4] Ibid., p.222.

Table 2. The motion storytelling structure to form intellectual interaction
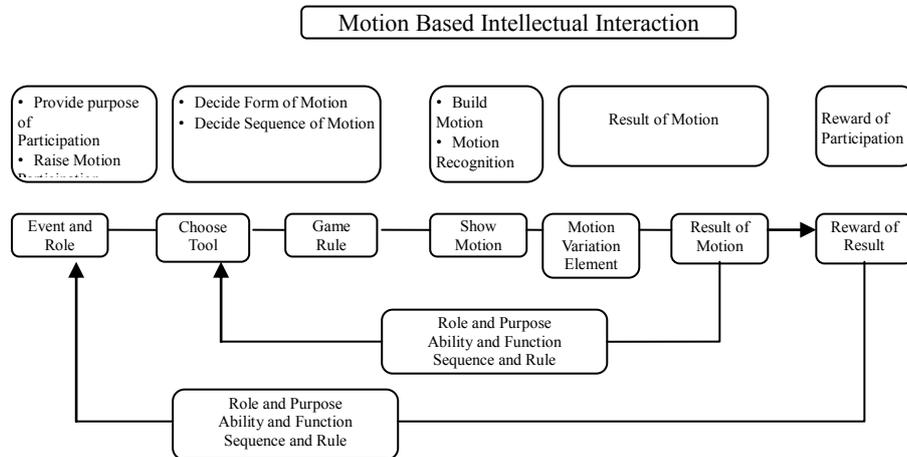
4   Conclusion

This study is about interactive storytelling in the motion recognition environment through grafting the motion recognition technology into display content to make intellectual interaction with the participants.

Motion recognition object environment's interactive storytelling limits the participant's motion, form and scope recognition in reality through the tool. Providing a new significant meaning during the repeated motion and making motion is the process of primitive. Also, It is choosing an event and to solve through the motion. Each event has to be connected into a multi-plot by casual link.

Exhibition content is from the exhibits. So, motion recognition objects environment's interactive storytelling should be formed with the motion element, the casual link of the event and analyzes exhibits. Also, in the process of analyzing the exhibits, it is more effective to utilize the criteria of the element of interactive storytelling narrative structure. These days there are more exhibitions that bring intangible source. It does not just deliver the percipient's action but exhibits the intangible culture like dance or martial art's exhibits as an essential.

References

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