

Virtual Chinese Characters and Emotion System in E-Teatrix

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Abstract: With the wide application of computer graphics and virtual reality in education field, people inevitably think of using computer graphics and virtual reality to extend the traditional class activities. E-Teatrix is a cooperation research results between our lab and INSEC in Lisbon under the EU-project ELVIS. It first let children design a story creatively, and then let children create 3D interactive virtual scene. The aim of E-Teatrix is to develop children's innovation and action ability. In order to communicate with the outside world, it adopts complicated technology of agent. At the same time, E-Teatrix system also supports the virtual emotion change.

Keywords: Virtual Reality, Emotion, Affective computing, Intelligent VE, Intelligent agent

1. Introduction

With the rapid development of Computer technology, computer using is getting more and more deep in the education field and gradually plays import role in modern education. Comparing to the traditional classroom method, computer-teaching method has some advantages. Mostly it can integrate text, photograph, video and data, so it can update the book information swiftly. For this reason, most universities and colleges in our country use computers to aid the classroom education. However, all these applications have some same problems: students can only accept teacher's knowledge; they can't select the content according to his/her favorite. In a word, this classroom education is lack of interaction.

Our goal is using graphics and virtual reality technologies, to build real immerse virtual environment with virtual characters. Having selected the favorite environment, children can select the corresponding characters to compose a story theme. Each child in the group controls a character then they can all interact in the story.

In the pasting several years, some psychology researchers begin to cast their attentions to the bully problems in the primary and middle schools, and get some results in this field, such as [Zhang 2002] and [Smith 2000]. Governments and teachers now have recognized this problem and commence to solve it. But because of various factors, it is difficult for teacher to detect the bully actions in the group of children, even if noticed; it already exists for several months or much longer. The best way is: let children express their feelings and do trending actions in playing a game or through other methods, so the teacher can gather useful information about the bullying problems and settle it quickly and directly.

E-Teatrix is just the software, which is the product of the unite project of European and Zhejiang University. This software is extended from the Teatrix, which is developed

by INSEC in Lisbon, and it is special for Chinese children. In E-Teatrix, scenes and characters are all known well by Chinese children, so it can help teachers to distinguish bully actions quickly.

In the following paper, we will first introduce the characters design of E-Teatrix, and including their role definition in the story. Then we will discuss the design of E-Teatrix. After that, we will show how to compose the story, the last in our conclusion and future work.

2. Characters design of E-Teatrix

In E-Teatrix, The characters are all come from the fable story and cartoon movie, so the Chinese children are all very familiar with them. In E-Teatrix, they can be divided into four kinds:

Villain: They are peace-breaker, and always been a threat to some person. Their goal is to destroy the world. In E-Teatrix, the villain is usually the big-head son or the magician.

Hero/Heroine: They are the ordinary character in the story, and they can be divided into two kinds: one is the pursuer; the other is victim of the villain.

Magician: There have some special functions in the story.

Provider: They provide some items with hero/heroine, to help them defeat the villain.

All Characters in E-Teatrix (see Figure 1)

				
Father	Big-head son	Poor girl	Bad boy	Magician

Figure 1- Characters in E-Teatrix

Although we have only five characters now, in the following days we will enrich this set.

3. The General design of E-Teatrix

The design of E-Teatrix is almost inherited from the Teatrix.

First let us see how the Teatrix builds the agents. Every story is performed in the 3D virtual world, in which including some agents and some props. Every agents react to the outside changing world through their respective own sensors and effectors. The following figure 2 shows the agent environment.

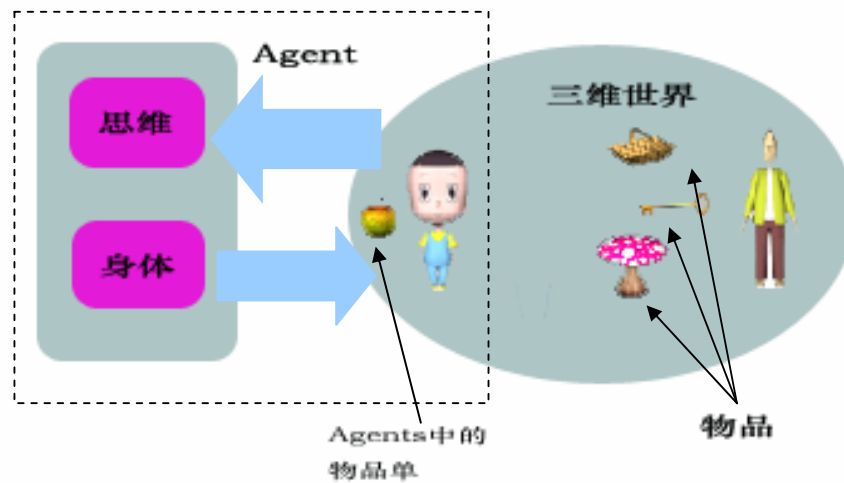


Figure 2 - The inner system architecture of Teatrix agents

We will now explain some parts of the figure using as an example the big head son:

- Sensor — It is used to collect the world information and give it to the mind, it also can filter some information, such as the agent do not interested in.
- Effector — It responsible for the execution the agent actions, including walk, pick and drop etc. The effector contains all the needed information during the action process.
- Body — The body represents the agent itself in the environment. From the body we can see the agent's feature and its physical situation etc.
- Inventory — Which means the agent have collected items from the world by now.
- Mind — It defines the almost actions of agent, including the agent characteristic and the destination it want to reach.

4. The realization of virtual characters in E-Teatrix

E-Teatrix system is a distributed multi-user virtual environment, through which clients can interact with each other. The system is designed as the backstage, on stage, the audience. The backstage is used to select the interested scenes, characters and props of users. Having finished the backstage, user can play on stage, and that in this section; users can interact with other virtual character by controlling their own virtual character. The audience is the place where to re-watch the performances that they have done. Figure 4 is some pictures of E-Teatrix system environment.



Figure 4.1 -The interface of E-Teatrix



Figure 4.2 -Select a character to act



Figure 4.3 - Big head son is walking



Figure 4.4 - A magician is hitting a girl

5 Conclusions and future work

This paper introduces the virtual characters of E-Teatrix and also analyzes the design of the E-Teatrix. Finally realize the virtual character in the E-Teatrix. It shows the great application potential in the future education of our country.

On the basis of the exist characters, we will continue to add some other famous and beloved characters by Chinese children, such as WuKong Sun in West Travel story and Blue Cat in Blue Cat story, this is part of our future work. How to make virtual characters appeared in 3D environment with 3D body, this is another future work of ours.

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