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Adaptative execution of game: unfolding a correct story

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1. INTRODUCTION

Computer games have improved this last decade on technical aspects (graphical, sound design, *etc.*) as well as on the content. Actually games are getting more and more complex. Plot has been improved and is getting close to scenario movie or scenario novel.

Interactive narrative game corresponds to a game in which player unfolds a story. As a consequence, he is more or less free to choose actions to be executed according to a narrative framework a scenario writer has defined.

2. ADAPTATIVE EXECUTION OF GAME

An adaptative execution of game consists in keeping the unfolding within the bounds of the narrative frameworks. This implies that we have to be able to change the game unfolding by controlling the player interactivity. And also we have to be able to change the bounds of the narrative framework.

In [CPE05, PCE05] we have been proposed an architecture for adaptative execution. This architecture is made up of a simulation of a process and story director (or planner). It defines a set of agent that analyses the unfolding of a game and compute an adaptative execution of narrative during a game. The simulation process catches player's interactions and react to them and proposes a consistent unfolding. The story director can enable or disable parts of stories.

As In the framework of complex and critical system, a fault tolerant conception allows designer to produce a system that will be able to follow correct narrative even if faced to inconsistent inputs.

The planner is made up of an observation agent which interprets player actions; a narrative agent which performs a supervisory control of the storytelling; analysis agent which makes "on-the-fly" verification; scripting agent that defines a new set of possible action and a director agent that chooses

a set of relevant actions to be executed.

3. NARRATIVE FRAMEWORK

In [CPE05] a formal model for interactive narration has been introduced as a set of resource, character, action, and outcomes.

This modelling has been improved by adding the notion of narrative framework. The narrative framework does not describe the whole scenario in details but gives some part on different situations that hold in this one.

A narrative framework is divided into situations that player will encounter during game execution. These situations can be in a sequence or as a tree. Situations are being connected to each other as bridges between a situation input and another situation output.

A situation is a specific state of the game involving actors, objects and constraints by system capacity. Actions characterize dynamics of a situations.

4. ADAPTATIVE GAME EXECUTION

The dynamics of game execution has been characterized by a state vector made up by actors, objects, resources, player and context.

Let us consider S^o has the observed state of the system and S^e the expected state of the system. In order to make an optimization we only consider the significant variables and states to observe (given by the action to be executed)

The distance between the expected state and the observed one corresponds to the difference of their state vector

The execution loop for director agent is: select an action, configure the observer, perform action (at that point, we have a new state S^e , compute S^o then compute the distance between S^o and S^e and go back to select an action.

5. REFERENCES

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